INFLUENCE OF HEALTH SYSTEMS' SUPPORT FACTORS ON PROVISION OF QUALITY HEALTH SERVICES AT THE NATIONAL REFERRAL SPINAL INJURY HOSPITAL.

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DECLARATION

"I declare that this thesis is my original work and has not been presented in any other university."

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DEDICATION

I dedicate this research to God and to my family.

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Thank you. God bless you!

ABSTRACT

Quality healthcare is a basic human right. Quality in healthcare is a product of mutual interaction of both the patient, the healthcare provider and the environment of care. Quality in healthcare results in satisfaction for the clients, the provider and overall better performance for the organization. This study sought to evaluate the influence of Health Systems' Support factors on provision of quality Health Services at the National spinal injury hospital. The study focused on the service delivery pillar. The study was based at National spinal Injury hospital. The specific objectives were to determine the influence of governance, health workforce, and information communication technology and hospital infrastructure on provision of quality health services. The Donabedian model, a paradigm in quality health care guided the study. The study adopted a descriptive cross sectional study design. A census method was done on 80 health workers using Likert based structured questionnaires and at least 10 in-depth interviews were conducted purposively on patients. Quantitative data was analysed using IBM-SPSS version 24, for descriptive and inferential statistics. A response rate of 78 (97.5%) was attained. Male respondents were 29 (37%), female 49 (63%). Majority of the respondents were between (36-45) years, 46% were degree holders with only 37% having a diploma qualification. All the staff had served the facility for over a year with the majority 54% having served for between 6-10 years. The results of the bivariate analysis indicated that, Governance (p<0.001), Health workforce (p< 0.001), Information Communication technology (p< (0.001) and Hospital infrastructure (p<0.001) were significantly associated with Provision of quality health services. Further, multivariate regression analysis indicated that Governance (p< 0.008), Health workforce (p<0.016) and Hospital infrastructure (p<0.032) were significantly

associated with Provision of Quality health services while Information Communication Technology (p-value=0.078) insignificantly influenced provision of quality health services. The four independent variables combined accounts for 50.9% variation of the dependent variable(NagelKerke R^2 =.509) with a goodness of fit (X^2=,14.493;p value=0.75)This study concludes that staff and systems responsiveness, shared direction and accountability are embraced in the facility, Health workforce were well trained, well supervised and well-motivated, The information system infrastructure was in place although not well utilised, Facility was well designed to support spinal injury patients. The study recommends that the hospital should adopt a horizontal system of leadership with the aim of promoting the relationships between the management and the employees and also the facility to embrace support supervision to the staff and establish non-punitive measures for error admission and error reporting. The facility to introduce a reward system aimed at promoting the morale of the staff, also more specialised training to be done on emerging SCI technologies. Sufficient training should be done on staff on the use of ICT at the facility for ease of decision making. The facility's management should seek the services of architects, engineers and other construction planners with the aim of improving the existing structures or constructing new ones aimed at promoting the quality of services provided.

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ABREVIATIONS AND ACRONYMS

DALYs	Disability Adjusted Life Years
EHR	Electronic Health Records
EMR	Electronic Medical Records
HSS	Health Systems' Support
ICT	Information Communication Technology
ISCOS	International Spinal Cord Society
KeMU	Kenya Methodist University
KORC	Kikuyu Orthopaedic and Rehabilitation Centre
LMICs	Low and Middle Income Countries
NACOSTI	National Commission for Science, Technology and Innovation
NRSIH	National Referral Spinal Injury Hospital
QHS	Quality Health Services
SCI	Spinal Cord Injury
SERC	Scientific Ethical Review Committee
SPSS	Statistical Package for Social Science
UHC	Universal Health Coverage
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A functioning health system comprises of organizations, people and their undertakings whose primary intent is to promote and maintain health. According to World health organization (World Health Organization [WHO], 2000), the health system is structured around the WHO framework which is composed of six core pillars: Leadership and governance, healthcare financing, service delivery, health information systems, human resources for health and medical products, vaccines and technologies. In this study the pillar of focus was service delivery with a focus on provision of quality spinal injury health services.

Quality health services (QHS) is the level of consistency in providing desirable health outcomes of individuals and populations in accordance with the new and advanced technology and adoption of new evidence based clinical guidelines and treatment protocols (WHO, 2018). According to Moshi et al. (2020), spinal cord injury health care providers should understand and address the major domains of quality impacting this group of people. Wavomba and Sikolia (2015) indicated that quality in healthcare comprise of newer technologies, scientifically sound and evidence based medical

products, professional practice, better staff - patient ratio, affordability, efficiency and effectiveness of service delivery.

Globally, spinal cord injury (SCI) accounts for up to half a million deaths annually. This is as a result of misdiagnosis leading to medication errors and inappropriate treatment, delayed surgical interventions due to slow facility internal processes, inadequate or unsafe environment of care as a result of poor facility design, inadequate specialist-staff patient ration due to lack adequate training and expertise. The World Health Organization and the International Spinal Cord Society (WHO & ISCoS, 2013), revealed a wide spread evidence of poor health service quality leading to between 5.7 and 8.4 million deaths. Therefore, this is increasingly being recognized globally as a health priority in terms of financial responsibility in treatment and rehabilitation and complexity of care it necessitates (James et al., 2019). As a result, the WHO framework of action on essential health services in developing countries revealed major deficiencies in the quality of care received as a result of constrained resources and technical expertise (WHO, 2007).

In Africa and other Low and Middle-Income Countries (LMICs), data reveals that 10 in 100 of patients who get adverse effects to treatment are harmed while receiving care, 7 in every 100 hospitalized patients can acquire hospital acquired infection, 25% of patients die due to unsafe surgical procedures. This imposes a loss of between 1.4–1.6 trillion US dollars each year in lost productivity and increases Disability Adjusted Life Years DALYs (WHO & ISCoS, 2013). There are also inadequate essential infrastructures for

achieving quality care: 13 % of health care facilities have no water service, 25% have no sanitation service, and 17% has no sinks for hand washing at the points of care (WHO et al., 2018). In Uganda, a study done by Ouma (2018) revealed that 42% of people with SCI died within one year. This was attributed to health workers' attitude towards patients, unavailability of specialized services, unstructured transport system, scarce surgical units with severe deficit of specialist expertise specific to SCIs, limited diagnostic imaging and discharge without comprehensive follow-up or physiotherapy referral.

In Kenya, SCI accounts for 40.8% of mortality rate in Kenya (Kinyanjui et al., 2016). Kenya is served by only one spinal cord referral hospital situated in the capital Nairobi. According to a report by the Departmental committee on health (United Nations & Department of Economic and Social Affairs [UNDESA], 2019), National referral hospitals suffers acute shortage of specialized staff, inadequate medical equipment and equipped rooms to handle emergencies, the information communication system is often down. It is on this basis that this study was considered to evaluate the influence of Health Systems' Support (HSS) factors on provision of quality health services at National Referral Spinal Injury Hospital (NRSIH) Nairobi, Kenya.

1.2 Statement of the Problem

Spinal cord injuries require emergency response and proper rehabilitation. Patients should arrive and be attended to at the acute care setting within 24 hours of injury (WHO & ISCoS, 2013). However, in 2016, the National Referral Spinal Injury Hospital experienced

pre-hospitalization delays lasting to up to 72 hours, long theatre waiting periods lasting to up to 7 days, serious delays in diagnostic analysis which led to some patients going to other facilities for professional diagnosis, these delays contribute to the overall preventable death of up to 40.8% of patients in need of the institutional services (Kinyanjui et al., 2016). Given that the facility serves patients in East and Central Africa, these delays are costly for both the patient and the facility.

This study aimed at evaluating the influence of health systems' support factors on provision of quality health services at the facility.

1.3 Purpose of the Study

The purpose of this study was to evaluate the influence of health systems' factors on provision of quality health services focusing on National Spinal Injury Hospital, Kenya and overall for improving Spinal Cord Injury (Disability) health outcomes of the population in line with the Kenyan constitution 2010 article 43(a) which guarantees everyone the right to highest attainable standards of care which also includes emergency treatment.

1.4 Study Objectives

1.4.1 General Objective

To evaluate the influence of Health Systems' Support factors on provision of quality health services at National Referral Spinal Injury Hospital.

1.4.2 Specific Objectives

The study was guided by the following objectives:

i. To determine the influence of governance on provision of quality health services at the National Referral Spinal Injury Hospital.

ii. To establish the influence of health workforce on provision of quality health services at the National Referral Spinal Injury Hospital.

iii. To determine the influence of information communication technology on provision of quality health services at the National Referral Spinal Injury

iv. To establish the influence of hospital infrastructure on provision of quality health services at the National Referral Spinal Injury Hospital.

1.4.3 Research questions

i. How does governance influence provision of quality health services at the National Referral Spinal Injury Hospital?

ii. How does health workforce influence provision of quality health services at the National Referral Spinal Injury Hospital?

iii. How does information communication technology influence on provision of quality health services at the National Referral Spinal Injury Hospital?

iv. How does hospital infrastructure on provision of quality health services at the National Referral Spinal Injury Hospital?

1.5 Research Hypothesis

i. $H_{0i=}$ Governance does not significantly influence provision of Quality health services at National Referral Spinal Injury Hospital.

H_{1i} = Governance significantly influences provision of Quality Health services at National Referral Spinal Injury Hospital.

ii. H_{0ii}= Health workforce does not significantly influence provision of Quality health services at National Referral Spinal Injury Hospital.

H_{1ii}= Health workforce significantly influences provision of Quality health services at National Referral Spinal Injury Hospital.

iii. H_{0iii}= Information Communication Technology does not significantly influence provision of Quality health services at the National Referral Spinal Injury Hospital

H_{1iii}= ICT significantly influences provision of Quality health services at the National Referral Spinal Injury Hospital.

iv. $H_{0iv=}$ Hospital infrastructure does not significantly influence provision of Quality health services at National Referral Spinal Injury Hospital.

H_{1iv}= Hospital Infrastructure significantly influences provision of Quality health services at the National Referral Spinal Injury Hospital.

1.6 Justification of the Study

Reports in most sub-Saharan African countries showed serious gaps in the provision of quality health services for emergency spinal injury and medical rehabilitation with limited research being undertaken in this area (WHO & ISCoS, 2013). For instance, in South Africa there was scarce epidemiological data on SCI due to scarce in national registry leading to poor resource distribution and improvement of service delivery (Bengat et al., 2017).This has resulted to generalization of results with little focus on specialized spinal cord health care. In Kenya Spinal cord health is not given high priority like other ailments due to lack of critical data or documented evidence of all its cases in the country (Kinyanjui et al., 2016).

1.7 Limitation of the Study

During the study some respondents were unwilling to share all the information and others filled in questionnaires partially, this would lead to poor generalization of results. To address this limitation, the researcher assured the respondents of absolute confidentiality of the information shared and that it would be used solely for academic purpose only. Due to the nature of staff work schedules, some staff working on night shifts were not easily reachable as the study it was done during the day. To address this, the researcher organized the data collection period to up to four weeks to allow staff on night duty to resume day shift and be able to take up the study. COVID 19 pandemic posed a challenge of interaction between the researcher and respondents due to restriction by the facility to

protect the staff and patient. To address this, the researcher emphasized on use of masks and regular hand hygiene as a way to mitigate spread of corona as stipulated by the Kenya Ministry of Health.

1.8 Delimitations of the Study

This study took place at the Kenya National Referral Spinal Injury Hospital (NRSIH) which is a level six referral hospital and the only facility qualified to offer specialized SCI health services serving Kenya, east and central Africa. The facility is information rich on matters spinal cord treatment and rehabilitation. The study independent variables included governance, health workforce, Information Communication and Technology (ICT) and hospital infrastructure. The dependent variable was Provision of Quality Health services at the National Referral Spinal Injury Hospital. Governance provides oversight and leadership, spells the vision and mission, and communicates the policies and clinical guidelines governing different spinal surgical procedures. ICT ensures quick and prompt communication among different teams and overall prompt decision making. The hospital infrastructure is the environment of spinal injury care comprising of different rooms designs and the general design of the facility, medical equipment, and supplies. These variables were considered relevant for this study in promoting prompt delivery of quality spinal injury services. The study population included the clinical staff and the patients. As the main service providers and users respectively, they were considered relevant in assessing quality service provision.

1.9 Significance of the Study

Spinal Cord Injury is a public health issue (WHO &ISCoS, 2013). It is a crucial element to comprehensive health and an integral part of Universal Health Coverage (UHC). The beneficiaries of the study include: citizens, healthcare providers, national government, development partners, and researchers.

1.9.1 Citizen

The Kenyan constitution 2010, guarantees everyone the right to highest attainable standards of healthcare. In general, this report forms a basis for spinal cord health systems strengthening as we seek to fulfil the constitutional mandate.

1.9.2 Healthcare Provider

This study assists in building the foundation for drafting policies and guidelines in SCIs management. Brings to an understanding of the gaps in quality service provision to produce desired outcomes.

1.9.3 National Government

Through the Ministry of Health in Kenya, this report will assist the National government to identify level of services provision for SCI patients and priority areas of investment to address in order to improve quality and coverage in healthcare uptake for SCI patients on

treatment and rehabilitation as informed by Kenyas' vision 2030 and global health commitments.

1.9.4 Development Partners

This report will enable development partners to make targeted investments decisions. It identifies the importance of having most if not all professional diagnostics in one facility, an area that requires investment in specialty hospitals.

1.9.5 Researchers

Little research has been done on Spinal cord injury quality improvement. With mortality rate estimated by 2030 to be 4.6 % according to DeVivo (2012) this report forms a foundation for Future researcher work in this area.

1.10 Assumption of the Study

The researcher assumed that all the questionnaires were filled completely and well, and the respondents were open and honest with sharing information and giving feedback.

1.11 Operational Definition of Terms

Governance	Governance in healthcare is a system through which an organization oversees continuous improvement and consistently provide endeavour to offer effective and efficient care and support
Health Systems Support	Factors that if strengthened will improve spinal cord health outcomes
Health workforce	Clinical staff supporting spinal cord health.
Hospital infrastructure	Environment of care. It is the physical and support systems platform for SCI health service
ICT	Information Communication Technology is the use of modern electronic information and communication strategies to deliver SCI quality healthcare (electronic software)
Responsiveness	An institutions' ability to processes and serve the needs of the patients within a reasonable timeframe.
Service integration	Having all the SCI services provided within one facility.
Specialist hospitals	These are hospitals providing limited range of services with an emphasis of a part/organ of the body.
Spinal cord injury	Traumatic event that leads to permanent loss of function, sensation or paralysis by blocking communication between the brain and the body resulting to temporary or permanent function of limbs.
Timeliness	Facility ensures that the services are provided to the resident in a way that meets their needs within certain timeframes.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section encompassed familiarization and understanding of current research as per study objectives, theoretical framework and conceptual framework. The aim was to critique the existing works so as to make a case for research.

2.2 Provision of Quality Spinal Injury Health Services

Quality services is the degree to which health services produce desired health outcome for individuals and populations and are consistent with newest standards and guidelines and satisfy the provider (Mosadeghrad, 2014; WHO et al., 2018). The major dimensions of service quality include effectiveness, safety of services, people-centeredness, timeliness, equitability, integration and efficiency (WHO, 2007). This study covered timeliness of care, integration of care and patient safety as measures of healthcare service quality.

2.2.1 Timeliness of Services

Timeliness in healthcare is the systems and peoples' capacity to respond quickly to a need when recognized. Timely response with appropriate care can help reduce untimely deaths and disabilities (WHO, 2007). Timeliness of service improves the quality of services by reduction of waiting times. This is made possible through integration of well distributed

and motivated staff, use of electronic records and functional information system improves the timeliness of services, well-functioning medical equipment operated by well trained staff, and improves retrieval of information (Shonhe & Grand, 2019). SCI is a medical emergency requiring urgent intervention. The turnaround time for services should be considerable to avoid delays and adverse effects for late attention. Within a considerable time as indicated in the service charter.

2.2.2 Integration of Care

Integration of care is best suited to multidisciplinary teams bring together expertise and skills of different professionals to manage individuals with complex yet long term healthcare needs jointly (Goodwin, 2016). The technical aspects of care would include use of expertise to accurately diagnose and give appropriate therapy and overall seamless co-ordination of care across delivery settings. Continuity of care depended on availability of patient information at the point of care. However, according to the Organization for Economic Co-operation and Development (WHO et al., 2018), there is a substantial gap in the co-ordination of health care. For instance, a survey of patients with requiring complex care in high-income countries found severe care gaps in care co-ordination, such were unavailability of patients' information and test at the point of care, inability to share appropriate information due to poor infrastructural capacity, inability of the specialist to retrieve medical history or regular doctors not informed about specialist care leading to poor co-ordination of care.

2.2.3 Patient Safety

The World Health Organization (WHO et al., 2018) defined patient safety as prevention of harm or injury. It emphasizes on prevention and risk reduction, elimination of errors and adverse effects which may occur to patients in the course of treatment (Lee & Kim, 2017). Spinal cord injury patients suffer multiple impairments which is safety risk, this requires adoption of new technological facility designs which creates a conducive environment of care. This averts patient fall, assist in movement and communication, prevent patient and provider injuries during work processes and even treatment be carefully determined because of their delicate nature. Emphasis is put on the capacity of the healthcare systems to acknowledge the effects of patient safety in terms of financial burden associated with medication errors, drug adverse effects, unsafe surgical procedures leading to patient harm (Alotaibi & Federico, 2017; WHO et al., 2018). To improve on safety of patients during treatment there must be clear treatment guidelines, staff training on the novel use of technology, staff motivation and well supervised staff.

2.3 Governance and Provision of Quality Health Services

The Kenya Health Policy 2014-2030 defines governance in healthcare as all processes and mechanisms of overseeing seamless delivery of services where all stakeholders' needs are met and their capacity is built. It involves articulation the organizations expectation and direction (WHO et al., 2018) and measuring performance and corrective action for better

the performance. It also includes the clinical aspect caring for patients, managing clinical practices and administration (Eisenstein, 2019).

2.3.1 Responsiveness

Responsiveness is the efforts and strategies put in place by a healthcare institution to provide helpful and responsible services to those who need it as basic human rights (Robone et al., 2011). It entails a set of eight dimensions including prompt attention, dignity, clarity of communication, autonomy, confidentiality, choice of provider, quality of basic amenities, and access to family and social supports (Jafari et al., 2019). It involves listening and understanding the needs of a patients and the service provider making an effort to connect the client to the service or assistance that they require. Responsiveness can be provider based or facility based. To achieve high level of responsiveness, the institution must ensure the services are accessible, communication between service provider and client is comprehensible, and the institution mandate to training its staff on problem solving skills.

To assess the level of responsiveness of healthcare system, a study was done in Kaduna state in Nigeria between October 2010 and March 2011 by Mohammed et al. (2013). Their report indicated that interpersonal relations toward clients, better hospital internal processes, and improved staff-patient ration greatly improved health care services. In Tanzania, Kapologwe et al. (2020), assessed the level of responsiveness in some selected healthcare facilities, this indicated that respect for confidentiality, prompt to attention,

basic amenities and access to care were found to greatly influence ability factors that influenced ability of the healthcare facilities to respond to patient's needs. Responsiveness also has an aspect of non-clinical dimensions, for instance in a study done in Tehran, Iran on the facility responsiveness on patient satisfaction showed that availability and quality of basic amenities greatly influence patients satisfaction (Priyadarshi & Kumar, 2020).

2.3.2 Shared Direction

Shared direction or shared purpose is the strategy of getting people connect to the vision and mission of the organization (Sfantou et al., 2017). Leadership in healthcare should support its staff in developing their skills with an aim of developing their capacity to become transformative change agents. This is achieved by clear communication of the mission vision, goals and values of the organization and also providing essential practical development activities such as support in adoption of policies and guidelines, service charters, Standard Operation Procedures which provides clarity of purpose and direction.

Formalizing these aspects of governance ensures that the organization is moving in a positive direction, there is improved care coordination and responsiveness to the patients, Defining the goals and objectives that should be met to achieve the vision and mission; and defining the structures in that need to be place to achieve, monitor, and evaluate the performance of the desired outcomes and overall transformation of care delivery (Ayeleke et al., 2018). In a study by Ngaruiya (2018), on the effects of leadership on the quality of

healthcare in Kenya in 2018 with a focus on Mama Lucy Kibaki Hospital and North Kinangop Catholic Church indicated having the mission and vision of the institution is paramount in defining the direction of the institution. However, the resources provided are not aligned with the mission and vision provided.

2.3.3 Accountability

According to Emanuel and Emanuel (1996), accountability entails all processes and procedures undertaken by a party as a way of taking responsibility for its activities. It is core in an effort to improve quality of services, build cohesion in teams and also ensure patients get the services they require (Priyadarshi & Kumar, 2020). Improved accountability is an element of improved health systems performance. Accountability entails but not limited to reduction of wastage of resources, use of established procedures and standards, all coupled to meet goals and objectives. The National health policy 2017, indicates that accountability is central to determining the institutional structures for health-care organizations and type of health-care delivery system we should have. A culture of accountability in healthcare coupled with collective responsibility improves interpersonal patient-provider relationship, better resource utilization, non-punitive corrective action and continuous improvement in service quality. Among the parameters which have been sited to achieve accountability include but not limited to awareness and gratification, professional competence, technical skills, information accessibility and daily monitoring and evaluation the activities in reference to the end user (Genovese et al., 2017).

Accountability depends on managerial competence, commitment and courage to offer solution and guide the institution.

2.4 Health Workforce and Provision of Quality Health Services.

According to WHO (2000), health workforce consists of all persons involved in promotive, curative, and rehabilitative actions in order to achieve positive health outcomes. Health workforce must be fairly distributed, responsive to the needs of patients, well trained and sufficiently distributed, produce maximum health outcome with available resources (WHO, 2007).

2.4.1 Staff Training

Employee training is a continuous efforts of an organization meant for employees to attain new and specific knowledge and skills in order to improve performance in their current roles. Employee training is done through continuous medical programs, employee training keeps the employees updated on the new technologies and this leverage excellence in healthcare performance (Avortri et al., 2019). In a study done in Jordan private hospitals by Ajlouni and Diab (2015), on the relationship between employee performances, quality of care and training revealed that training had a positive influence on performance of health workers and overall quality of medical services. Of the 380 respondents sampled, the study was analysed using Analysis of Variance (ANOVA).The study revealed that training influenced work performance value (6.974) and also influence the quality of

medical services value (7.123).This study was echoed by a study done in Kakamenga County by Khaemba (2017) on the effects on staff training and development on quality of care. Of the 93 respondents sampled (85%) recorded a positive impact on personal development and productivity as a result of training.

2.4.2 Support Supervision

Support supervision is the art of overseeing and respectfully assisting staff to better performance. It emphasizes capacity building, non-punitive error reporting, facilitative corrective action and continuous job improvement focusing on the needs of those being supervised (Hill et al., 2014). Therefore, supervision of your workplace ensures proper implementation of your workplace policies and procedures by all employees.

In a study in Upper west of North Ghana, indicated that support supervision was key to delivery of quality primary health care services. The study indicated that a good technical support system, clear verbal and written modes of communication, regular review meetings for teams to function well in the communities were at the center of quality healthcare delivery (Aikins et al., 2013). Facilitative supervision approach leads to collective problem solving and overall improvement of quality delivery because there is a shift from fault finding to assessment. Corrective action and continuous improvement.

2.4.3 Staff Motivation

Motivation is inspiration to remain energized to power through an organizational goal on a daily basis (Chmielewska et al., 2020). In health service delivery it remains the main method when attempting to achieve efficiency and effectiveness. In an empirical study done among public health workers in Northern Greece by Kitsios and Kamariottou (2021), indicated that motivation was central in remaining effective and independent and overall staff required support in improving their position. This was echoed by Mosadeghrad (2014) in his Iranian contextual study where he found that remuneration, organizational policies, leadership and management, working environment, interpersonal relationships, recognition, job identity and security, and chances for promotion important in delivering high-quality services to patients. Motivation of staff in healthcare has been recognized by WHO as the main indicator for quality. In a study by Chmielewska et al. (2020), sought to identify the motivational factors which affect organizational performance and staff attitude in public hospitals Warsaw, Poland indicated that the greatest source of motivation was a good work environment, job security and remuneration in that order with other factors like interpersonal relations, supervision, recognition, autonomy, recognition, lack of training, absence of information being listed as some of the leading demotivation factors.

2.5 Information Communication Technology and Provision of Quality Health Services

Information communication technology (ICT) is a technical enabling platform meant for handling information and aiding communication by use of telephone lines and wireless signals and computer software and hardware that enable user to transmit, access, understand and store information. The use of ICT platform impacts healthcare professional practice by modifying the way they plan, execute clinical care, document and store patient information (Rouleau et al., 2017).

2.5.1 Adoption of E-health Systems.

According to Black et al. (2011), eHealth is the use of secure electronic means to deliver safe healthcare intervention by means of a software. Use of the computer applications in healthcare is propels quality of medical care for instance use of electronic medical records (EMR) allow clinicians to share information quickly and easily for quick and effective diagnosis and decision of care plans (Itumalla, 2012). Communication network fosters provider- patient interaction through use of software and hardware with increased access to secure patient information. In a narrative review on communication in healthcare done on 69 articles showed that, poor communication led to discontinuity of care, in-efficient use of valuable resources, unnecessary investigations, compromised patient safety and overall source of patient dissatisfaction (Vermeir et al., 2015). eHealth records make

information available instantly and securely to physicians and operational efficiency and quality of patient care (Li et al., 2016).

The adoption of health in the public health sector has greatly been challenged. In a study done in Nairobi County on factors influencing health service delivery by Omondi (2016), 57 % of the respondents indicated that Heath Information Systems was not fully integrated in most hospitals. This was echoed by Kimanzi (2014) in a similar study in Kitui County. Of the 38 respondents sampled 83.33% indicated that modern technology techniques are lacking in public facilities with only 25% of the respondents saying that they use E-Systems in their health practices while 75% do not use. In a systematic review done among private health centres in Ghana by Kesse-Tachi et al. (2019) on the factors that influence of adoption of electronic health technologies revealed that healthcare leadership and management and facility design greatly influence adoption of e-health with human resource capacity (training) being the greatest threat to e-health adoption. This was echoed by Hargie (2016) who indicated that for a facility to meet the needs of its patients and provide safe, high-quality care and even manage healthcare delivery effective communication is of paramount importance. In a systematic review presented at the Aga Khan University Kenya on the influence of electronic health records (EHRs) on healthcare quality in hospitals demonstrated that adoption and use EHRs significantly influences healthcare quality by ensuring timely, effective, equitable, efficient and patient-centred services (Gatiti et al., 2021).

2.5.2 Automation of Information

Automation of information makes accurate information available to doctors so that treatment and services provided to patients are safer, affordable, and faster and the resources used in the course are used efficiently (WHO et al., 2018). Technology for accurate sharing of patient information is critical in delivery of quality service delivery in hospitals (Alotaibi & Federico, 2017). Automation of information improves scheduling of patient appointments, reduction of cost of labour since the physicians could achieve more during their shift hours, makes transfer and access of data between departments and other facilities easier, fewer errors during treatment decision making, higher patient satisfaction, timeliness, privacy, scheduling patients more quickly.

In a systematic study on information technological influence on health service quality in India recommended use of technology by public healthcare facilities. Use of technology positively influenced service quality though automation of information thus patient's records are kept to date, there is easier retrieval of information retrieval helped reduce patient overcrowding (Itumalla, 2012). On the contrary, a study in Iranian context showed that insufficient financial resources poor infrastructure and equipment hindered delivery of quality medical services. For instance, in an in-depth interview one of the respondents said that they had no information system in place, no patient history records available especially for chronic patients and overall poor patient reviews.

2.6 Hospital Infrastructure and Provision of Quality Health Services.

Health care infrastructure constitutes a major component of the structural quality of a health system (WHO et al., 2018). It entails the physical structures or the built environment, communication network and the supporting elements, equipment, systems and processes that provides the environment of care. Hospital infrastructure integrates the hospital into the broader health care system so as to provide the critical domains of quality which are patient experience, effectiveness, efficiency, timeliness, safety, equity and sustainability (Luxon, 2015). Overall, these interwoven facets should enable patients to move seamlessly, with their privacy and dignity maintained at all times.

2.6.1 Facility Design

According to Reiling (2006), environments of care tailored to fit patients' needs is important for health, safety and wellbeing. It supports accessibility, privacy and security of the patient and the care giver. Studies have shown that design of a health institution has impact of quality perception and satisfaction of care received during a hospitalization. Facility design has an impact on patient safety, efficiency, effectiveness, and timeliness of services (Reiling et al., 2008). A good architectural facility design improves work processes, thus improving efficiency, it provides sufficient space, having clearly marked signages to navigate the hospital, standardizing room layout, having sufficient consulting rooms. The availability of assistive devices like lifts and ramps to support and avert patient falls (Kruk et al., 2018). This was emphasized by Parsia and Tamyes (2018), in a study

conducted in Malaysia on the influence of facility design on quality of services. The study showed that health facilities designed to promote patient safety, assist in movement, and amenities were more preferred for health services.

2.6.3 Medical Equipment and Supplies.

Health care staffs need sufficient and reliable inventories of supplies both consumables, instruments and working equipment necessary to ensure uninterrupted delivery of high-quality services (Kaur et al., 2001). Equipment must be functional and available, well serviced for quality service delivery. Medical equipment requires maintenance, user training, backups such as the presence of a generator for power and network backup required in its operations.

In a study done in Iran by Mosadeghrad (2014), showed that healthcare service outcomes are greatly influenced by resource availability which in this case is severely limited. In an interview, one respondent reported that the condition of their medical equipment is poor, the equipment are old and the time taken to process results is way longer than usual, the results are not reliable thus employee productivity is greatly affected by the quality of working materials. He concluded that health input must match the output desired. This study was echoed by another study in Kasarani Sub County, Nairobi County by Mbangua et al. (2012), on the factors influencing quality of healthcare. In this study medical supplies and equipment were emphasized as essential in delivery of quality healthcare. Majority of

respondents identified that insufficient supply of medical supplies and equipment as one of the biggest setbacks in the quest for quality healthcare delivery.

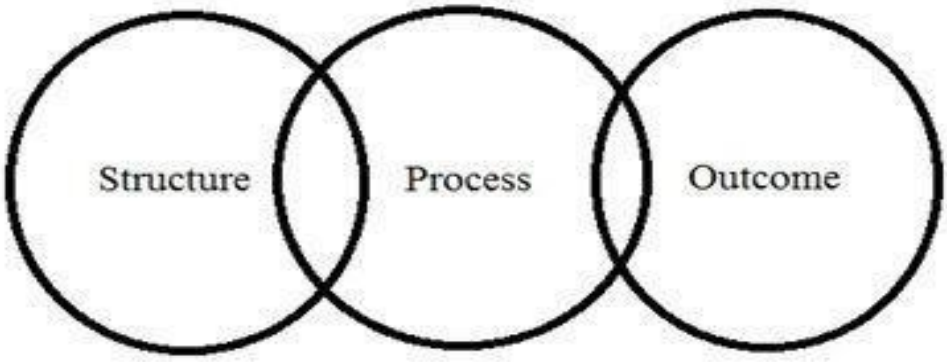
2.7 Theoretical Framework

This study adopted the Donabedian Model by Avedis Donabedian in 1980**.** Donabedian model acts a guide to evaluation of quality in healthcare (Ayanian & Markel, 2016). Quality in healthcare is divided into three domains: Structure, Process and Outcome. Structure is the organizational and physical characteristics where healthcare occurs. It entails physical facility, equipment, supplies, records as well financial management. Process is activity put into healthcare. These commonly include diagnosis, preventive care, counselling, rehabilitation, treatment process, surgical procedures. Outcomes are the results of patient-provider interaction, and entails experiences on healthcare which includes improved health status, changed behaviour or knowledge as well as patient (Berwick & Fox, 2016).

Figure 2.1

Donabedian Model (Structure, Process, Outcome relationship)

Structure	**Process**	**Outcome**
(Environment/Resources)	*(Techniques/Practices)*	(*Results)*



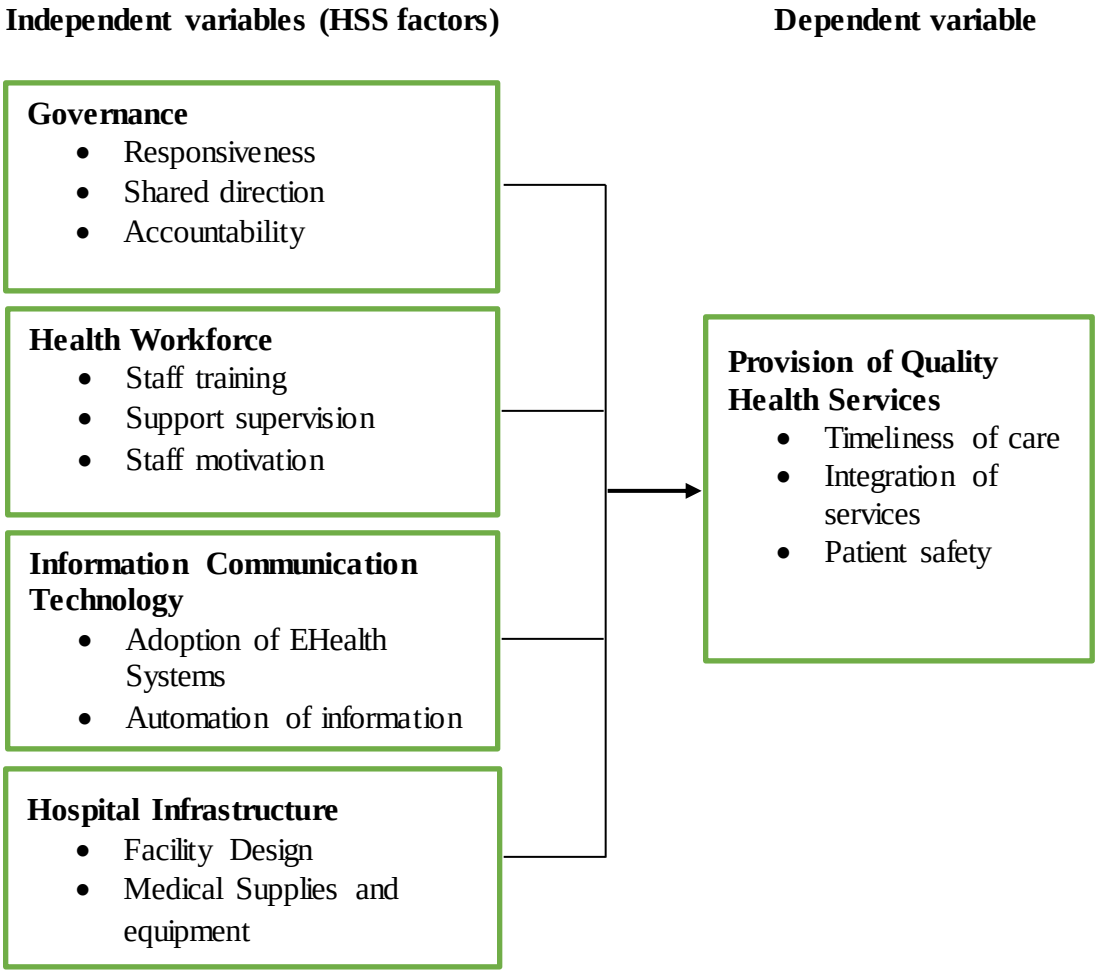
Quality healthcare provision is a collaboration of the environment of care and healthcare provider but also the patient-provider interaction. This study borrows the structural and the process aspect of the framework. Inputs or the resources should be sufficient and in good shape while the practice of healthcare must be effective, following the set service delivery norm and clinical guidelines. Governance, health workforce, information communication technology, hospital infrastructure borrowed the structural aspects of the model. Governance supports the function and performance of the facility, ICT and Hospital infrastructure provides the environment for prompt provision of quality services, safety for the patient and overall satisfaction.

2.8 Conceptual Framework

Conceptual framework (figure 2.2) is a diagrammatic representation of relationship between variables derived from theories and existing studies about a topic.

Figure 2.2

Conceptual Framework



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covered research philosophy, study design, target population, sampling and sampling technique, instrumentation, and data collection procedure, pre-test of data instruments, logical and ethical considerations applied in the study.

3.2 Research Philosophy

Lehaney and Vinten (1994), defined research philosophy as an assumption that guides the way of developing knowledge and nature of the study. This study assumed a descriptive cross-sectional study design. This is because the study describes the phenomena as it is, the objectives are real, and information obtained are factual through structured questionnaire in a natural setting (Kumar, 2012). Therefore, the study adopted positivism research philosophy.

3.3 Research Design

A research design is a systematic approach used to conduct a scientific study. It helps answer the what, when, where, and how questions regarding the research problem (Kumar, 2012). This study employed a descriptive, cross-sectional study design because the researcher obtained information to systematically describe a phenomenon, situation, or

population (Kothari, 2008). In this study, the information collected related to governance, health workforce, information communication technology and hospital infrastructure on its influence provision timely and integrated quality health services.

3.4 Target Population

According to Kothari (2008), the target population is the entire universe population of interest in which the researcher intends to examine to draw conclusions. In this study the universe was the total number of the clinical health workers and the total number of in-patients at NRSIH. The facility is served by a total of 80 clinical staff including doctors, nurses, laboratory technicians, pharmacists, clinical officers, orthopaedic technologists, radiologists, psychologists, physiotherapists and social workers at the time of the study. Also, the facility could accommodate 40 patients at any given time which is equivalent to the bed capacity.

Table 3.1

Target Population Distribution

Cadre	Total
Doctors	10
Nurses	30
Laboratory technicians	5
Pharmacist/Pharmaceutical technologists	3
Clinical officers	3
Orthopedic technologists	5
Radiologist	4
Psychologists	2
Physiotherapists	4
Social workers	4
Total	**80**

3.5 Sample Size and Sampling Procedure

3.5.1 Sample Size Determination

Sample size is a part of the population selected to represent the whole. In this study, due to the nature of the study and the total target population, the sample size of healthcare worker was the same as the target population. Patients with longer stay, over 30 days at the facility were purposively selected. Ten patients who had sufficient interaction and stay at the facility were used in the study.

3.5.2 Sampling Procedure

According to Kothari (2008), sampling procedure is the process of choosing part of a population to represent the entire population. This study did not employ sampling technique. The study used Census method to collect information. Census is applicable where the total population is small and manageable. Census was done for the 80 healthcare workers. Purposive sampling was done for the 40 patients admitted at the facility; ten patients who have been at the facility for more than 30 days be included in the study for the in-depth interviews. The healthcare worker was an information rich population who gave information on the influence of governance, health workforce, information communication technology and hospital infrastructure on the provision of timely and integrated health services while the patients shared their experiences and views concerning the services offered.

3.6 Instrumentation and Data Collection

3.6.1 Structured Questionnaire

This is a written list of statements, where the respondents read the questions, interprets what is expected and then records the answers (Kumar, 2012). The questions should be clear and easy. The health workers responded to the structured questionnaire. The structured questionnaire (see appendix 2) had two sections. Section A & B. Sections A collected basic demographics information of the respondents. Section B had Likert based

questions with a five-point psychometric scale ranging from Strongly Agree (1), Agree (2), Not Sure (3), Disagree (4) and Strongly Disagree (5) to collect different of aspects of indicators of independent and dependent variable.

3.6.2 In-depth Interview Guide

In-depth interview guide **(s**ee appendix 3) is qualitative research instrument used to collect detailed information from a smaller number of individuals on their perspectives about a particular situation offering a more complete picture in context other than data. It is used to ask participants about their experience and expectation of services offered. For this tool the respondents were the patients. In-depth interview guide was a face-to-face interview and contained a list of eight open ended questions which acted as the guide for the discussion. The researcher asked questions, clarified where necessary and recorded the responses from the respondents.

3.6.3 Data Collection Procedure

Data collection aims at gathering observations or measurements. The researcher introduced the study to the respondents, presented the research permit, defined the purpose of the study, the researcher then issued the questionnaires to the respondents and allowed them to give their honest opinions to the questions given since they are self-administered. Filling in of questionnaires took approximately 30 minutes. The filled in questionnaires were be handed over back to the researcher at the end of the exercise.

3.6.4 Inclusion and Exclusion Criteria

Inclusion Criteria

All the clinical staff working at the facility and willing to take up the study were included in the study. In-patients who had been at the hospital form more than thirty days were also be included in the study.

Exclusion Criteria

The study excluded support staff, staff on leave and staff not willing to take up the study. Also, the study excluded staff who are unable to communicate.

3.7 Pre-test

A pre-test is a measure of quality, reproducibility and repeatability of research instruments in terms of consistency in measuring what it was intended to measure. The researcher introduced the questionnaires on a smaller scale to determine how long it would take to fill in the questionnaires and whether the questionnaires are understandable.

Pre-test was done at PCEA Kikuyu Orthopaedic and Rehabilitation Centre (KORC) which is situated in Kikuyu sub-county. This is a fully equipped facility with 37 bed capacity and is served by 32 clinical staff. The pre-test was done on all the clinical staff and ten (10) patients from the wards. The hospital provides orthopaedic, spinal surgery reconstructive and rehabilitation of clients.

3.7.1 Validity

According to Kumar (2012), validity is the degree of acceptability of the research tool where it measures adequately the specific purpose for which it was designed for. This study used the principle of component analysis to measure both face, content and construct validities. For face validity, supervisors reviewed the research instrument to ensure that the language used is fit and appropriate. For content validity, the questionnaire measurement items were picked from the conceptual framework (see figure 2.2). Construct validity

ensured that aspects of study variables are captured as contained in the conceptual framework. For construct validity the study used factor loadings of between 0 and 1 with an expected minimum of 0.4.

3.7.2 Reliability

Reliability is the degree of consistency and stability of an instrument (Kumar, 2012). It infers reproducibility and repeatability. In this study the researcher issued the questionnaires to the thirty available clinical staff and contact in-depth interviews were done on five patients. Using Cronbach's alpha correlation coefficient, the resulting α - coefficient of reliability ranged from 0 to 1 with the measurement items expected to achieve a minimum threshold of 0.7 as a measure of reliability.

3.8 Operational Definition of Variables

In this study independent variable entailed governance, Health workforce, Information technology and Hospital infrastructure. The information was be captured on a five Likert based psychometric scale spanning from Strongly Disagree to Strongly Agree measures. In this study dependent variable is health service quality entails Patient safety, Timeliness of services, Effectiveness of services and Efficiency of services.

Table 3.2

Operationalization of Study Variables

	Variables	Indicators	Type	Data collection tool
Independent Variables	Governance	• Responsiveness • Shared direction • Accountability	Likert Scale	-Structured questionnaire -In-depth Interview Guide
	Health workforce	• Staff training • Support supervision • Staff motivation	Likert scale	-Structured questionnaire -In-depth Interview Guide
	Information Communication Technology	• Adoption of E-health systems • Automation of information	Likert scale	-Structured questionnaire
	Hospital infrastructure	• Facility design • Medical equipment and supplies	Likert scale	-Structured questionnaire -In-depth Interview Guide
Dependent variable	Provision of quality healthcare services	• Timeliness of services • Integration of care • Patient safety	Likert scale	-Structured questionnaire -In-depth Interview Guide

3.9 Method of Data Analysis

Data was filed and screened for completeness. The rationale of data cleaning was to make sure outliers, which often compromise the authenticity and reliability of study results, were reduced. Version 24 of the Statistical Package for Social Sciences (SPSS) tool was used to analyse data using descriptive statistics and Binary Logistic Regression Descriptive statistics included the use of frequencies, percentages and cross tabulations. Logistic regression was used to link the independent variables to the dependent variable because the dependent variable was categorical or dichotomous. That is, it had only two possible outcomes. Provision of quality health services can be either timely or delayed. Hosmer and Lemeshaw test was used to establish the goodness of fit for model that describes the relationship between the binary characteristics of the dependent (outcome) variable and independent (predictor) variables.

This method generated coefficients, standard errors, and significance levels of a formula to predict a logit transformation of the probability of presence of the characteristic of interest. The logistic regression is expressed as

$$\text{Logit } (p) = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + B_4 X_4$$

Where:

P= Probability of presence of the characteristic of interest

B_0 = representation of the reference group

$\beta_1, \beta_2, \beta_3, \beta_4$ = the regression coefficients associated with the reference group

X_1, X_2, X_3, X_4…. predictor variables

The five Likert scale data was filed into the IBM-SPSS tool for analysis. All the parameters-Strongly agreed, Agreed, Not sure, Disagreed and strongly disagreed were captured accordingly. The data was then computed and recoded. All the strongly agreed and Agreed were given Code-one (1), the Strongly Disagreed, Disagreed and Not Sure were recoded with a different Variable- Code two (2). This would ensure dichotomy of analysis. Provision of Healthcare services were either of Quality (1) or not of Quality (2). The data was transformed into a categorical output with 1 or 2 indicators.

3.10 Ethical Considerations

Permission for data collection was obtained from the KeMU Scientific Ethical Review Committee (SERC), Ref no: KeMU/SERC/HSM/9/2022 (appendix 5) and also National Referral Spinal Injury Hospital, Ref: NRSIH/6/2022 (appendix 6) to carry out the research in order to make the process legal. Approvals for academic research was also obtained from NACOSTI, Ref NACOSTI/P/22/17749 (appendix 5). The researcher sought for consent (appendix 1) from respondents seeking for voluntary participation and submission of information. This report was made without reference to any participant and information shared was be treated with utmost confidentiality. Respondents were contracted on voluntary basis.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The purpose of the study was to determine the influence of health systems' support factors on provision of quality health services at the national referral spinal injury hospital. The specific objectives were: To determine the influence of Governance, to establish the influence of Health workforce, to determine the influence of Information Communication technology, and to establish the influence of hospital infrastructure on provision of quality health services at the National Referral Spinal Injury Hospital. Frequency tables and figures were used in the presentation of the findings while interpretations and explanations were done in prose. Further the study used inferential statistics in establishing the predictive power of the independent factors on the provision of quality health services at the National Referral Spinal Injury Hospital.

4.2 Reliability of Study Instrument

The researcher conducted a pre-test study at PCEA-KORC, situated within Kikuyu sub-county. The pre-test envisioned to collect data from 32 respondents. However, thirty (30) respondents successfully filled and retuned the questionnaires. This represents a response rate of 93.8%. The internal consistency of the study tool was determined by the use of Cronbach's alpha. The results are presented in Table 4.1

Table 4.1

Reliability Results

	Cronbach's Alpha	N of Items	Conclusion
Governance	0.764	13	scale reliable
Health workforce	0.842	10	scale reliable
Information technology	0.734	8	scale reliable
Hospital Infrastructure	0.836	11	scale reliable
Provision of Quality Health Services	0.758	9	scale reliable

As depicted in Table 4.1 the five items had an alpha coefficient of 0.7868. Which indicates that the tool is good since any reliability coefficient above .70 is taken as sufficient for analysis.

4.3 Response Rate

The study sample was eighty (80) clinical staff working at the National Referral Spinal Injury Hospital, Nairobi. The response rate was as Table 4.2

Table 4.2

Response Rate

Response	**Frequency (N)**	**Percentage (%)**
Completed questionnaires	78	97.5
Uncompleted questionnaires	2	2.5
Total	**80**	**100**

From the Table 4.2 out of 80 questionnaires issued out, 78 respondents completed the questionnaires contributing to 97.5% response rate. Accoring to Mugenda and Mugenda (2009), any response rate that is above 50% is adequte for analysis and that a response rate of above 60% is good while that of 70% is execelent. This is to mean that the study response rate of 97.5% is excellent for analysis and generalization of the study.

4.4 Clinical Staff Social Demographic Characteristics

The social demographic characteristics of the respondents are presented in Table 4.3:

Table 4.3

Clinical Staff Social Demographic Characteristics

Characteristics	Frequency(n)	Percentage (%)
Gender		
Male	29.000	37
Female	3.000	63
Age		
Less than 25 years	3	4
26-35 years	28.000	36
36-45 years	38.000	49
above 45 years	9.000	11
Level of education		
Diploma level	29.000	37
Degree level	36.000	46
Postgraduate level	13.000	17
Duration of service		
1-5 years	12.000	15
6-10 years	42.000	54
over 10 years	24.000	31
Cadre		
Doctors	9	12
Nurses	29	37
Laboratory technicians	5	6
Pharmacist/Pharmaceutical technologists	3	4
Clinical officers	3	4
Orthopaedic technologists	5	6
Radiologist	4	5
Psychologists	2	3
Physiotherapists	4	5
Social workers	4	5

The finding established in Table 4.3 shows that females represented the majority of the respondent accounting for 49 (63%) while males were (29) 37% of the respondents. The

results implied that greater percentage of staff at national referral spinal injury hospital at the time of the study were females. Further, the outcome implies that the workforce recruitment focuses on securing a female faced workforce as they are held as gentle and caring while dealing with the patients.

Results also showed that most 38(49%) of the respondents were aged 36-45 years, 28 (36%) were aged 26-35 years, 9(11%) were aged above 45 years while 3 (4%) of the respondents were below 25 years of age. This means that the largest age group of respondents fell between age 26 and 45 years with a combined percentage of 85%. The bracket represents professionals at their optimal age and level of skills for productivity and performance aimed at realizing personal and organisational goals.

On education, Majority 36(46%) of the respondents had a degree as the highest level of education, 29 (37%) were diploma holders while 17% of the respondents had a post graduate level of academic qualification. Since majority had achieved specific level professional training, they were deemed competent enough to sufficiently respond to questions contained in the questionnaires. In addition, the result implies that professionalism was a key factor during the recruitment of staff at the national referral spinal injury hospital.

Results shows that majority 42(54%) of the respondents had served in the hospital for between 6-10 years and 24 (32%) had served for over 10 years. Further, 12 (15%) of the respondents had served 1- 5 years. This implies that the respondents were conversant

with the health systems' support factors at the NRSIH as the majority of the respondents had served for over five years. Majority of these respondents were nurses and doctors respectively.

4.5 Descriptive Responses on Governance

Governance variable had three parameters: Responsiveness, Shared Direction and Accountability. The indicators for each parameter were analysed and reported in Table 4.4

Table 4.4

Descriptive Responses on Governance

Variable	Frequency (n)	Percentage (%)
Responsiveness		
Not responsive	35	44.9
The staff and system are responsive	43	55.1
Shared direction		
No shared direction	36	46.2
There is shared direction	42	53.8
Accountability		
No accountability	31	39.7
High level of accountability	47	60.3
Total	78	100

From the Table 4.4 above, majority of the respondents 43(55.1%) indicated that the facility and system were responsive to the needs of the patient with 35(44.9%) indicating

that the facility and system was not responsive. Majority of the respondents agreed that they exhibited courage and commitment in solving problems that occur in their line of duty, and that they endeavoured to meet the service charter requirements when offering services.

This agrees with what some of the patients had to say;*" The staff are very prompt in attending to our needs, when I first came here, I was received very fast and well and was made comfortable." (In-depth interview 003).*

"*The staff are good, they always explain to clearly what very procedure is all about, they give us medication on time, and I find this to be very professional."(In-depth interview 010).*

Slightly more than half of the respondents 42 (53.8%) indicated that there was shared responsibility and direction with 36 (46.2%) indicating that there was no shared direction. In other words, the respondents felt that they were just working because it's a duty and they had nothing compelling to work towards, majority were aware of the vision and mission of the institution however there was not supervisory direction given on how to handle issues or who reports to who.

Majority of the respondents 47 (60.3%) indicated that they were accountable in their day-to-day tasks with 31 (39.7%) indicating they were not accountable. Most of the respondents indicated that they were not able to work towards realization of the hospitals

vision and mission and also they were not able to report errors made during their work. Majority indicated that they were afraid of the punitive measures that could be taken against them in case of error reporting and overall they were not willing to admit to any error or mistake caused during service delivery.

These findings agree with Sfantou et al. (2017) who alluded that leadership in healthcare should support its staff in developing their skills with an aim of developing their capacity to become transformative change agents. This is achieved by clear communication of the mission vision, goals and values of the organization and also providing essential practical development activities such as support in adoption of policies and guidelines, service charters, Standard Operation Procedures which provides clarity of purpose and direction. The study is in agreement with the National Health Policy 2017 which indicated that a culture of accountability in healthcare coupled with collective responsibility improves interpersonal patient-provider relationship, better resource utilization, non-punitive corrective action and continuous improvement in service quality, as seen in this study if the way errors are corrected and staff are supported with non-punitive measures of correcting errors, only then that staff would feel safe and it could promote accountability hence greatly improve provision of quality health services.

The report also agrees with a recent systematic review done on Kenya's faith-based facilities on the role of organizational culture on hospital performance illustrated that having a shared strategic direction, hospital board accountability and holding management

accountable for facility performance significantly improves the general performance and service delivery of healthcare facilities (Ndege et al., 2022). There is a correlation between governance and provision of quality healthcare (Mkaya, 2010). In his study, he indicated that the management exercise strong influence over the direction and control of the hospitals however in his study, the facilities lacked clear written guidelines and policies to guide in the direction of operations.

4.6 Descriptive Responses on Health Workforce

Health workforce variable had three parameters: Staff training, Support supervision and Staff motivation. Each parameter was analysed and reported in the Table 4.5.

Results indicated that majority of the respondents 49 (62.8%) were well trained to handle SCI emergencies with 29 (37.2 %) indicating they were not well trained. There were continuous medical education programmes with staff at least attending four training sessions on new development of SCI management.

Table 4.5

Responses on Health Workforce

Variable	Frequency	Percentage
Staff training		
Not well trained	29	37.2
Well trained	49	62.8
Support supervision		
No support supervision	32	41
There is support supervision	46	59
Staff motivation		
Staff not motivated	25	32.1
Staff are motivated	53	67.9
Total	**78**	**100**

Majority indicated that they got employed based on technical skills and knowledge they possessed. Though some indicated that they did not get specialist trainings on new developments on spinal injury management.

Also, the table shows that majority of the respondents 46 (59%) indicated that there was support supervision, there was an in-charge who controlled the operations of the department and who supported teamwork and team spirit when working and solving problems, with 32 (41 %) indicating that there was no support supervision. This may be attributed to irregular review meetings held in their departments with the supervisors.

More so, majority of the respondents 53 (67.9%) indicated that they were motivated with 25 (32.1 %) indicating that there they were demotivated. The respondents indicate that they got remunerated adequately based on experience and job group placement and that promotions were based on experience and expertise. More so, majority of the respondents 53 (67.9%) indicated that they were motivated with 25 (32.1 %) indicating that there they were demotivated. Most of the indicated that they did not have medical insurances for them and their families in case of medical emergencies.

This study is in tandem with a study done in Jordan private hospitals by Ajlouni and Diab (2015), on the relationship between employee performance, quality of care and training revealed that training had a positive influence on performance of health workers and overall quality of medical services. This study contrasts with another study done in Ghana which indicated that support supervision was key to delivery of quality primary health care services. In this study, Aikins et al. (2013) indicated that a good technical support system, clear verbal and written modes of communication, regular review meetings for teams to function well in the communities were at the central in quality healthcare provision and that facilitative supervision approach led to collective problem solving and overall improvement of quality delivery because there is a shift from fault finding to assessment.

This agrees with what some of the patients has to say: *"The staff are very good and friendly, they are always ready to give a helping hand whenever I need them, and they are approachable." (In-depth Interview guide 006).*

Another patient had this to say:*" the staff will act very fast to the ringing of the assistive bell whenever I call for assistance, all I can say is the support system at the hospital is very good, I have received excellent services since my admission." (In-depth interview 009).*

4.7 Descriptive Responses on Information Communication Technology

Information communication technology (ICT) variable has two parameters: Adoption of E-Health Systems and Automation of Information. The indicators for each parameter were analysed and reported in the Tables 4.6 below:

Table 4.6

Responses on Adoption of eHealth

Variable	Frequency	Percentage
Adoption of E-health systems		
No adoption of E-health systems	38	48.7
There is adoption of E health	40	51.3
Automation of information		
Information not automated	35	44.9
Information is automated	43	55.1

Total	**78**	**100**

From the Table 4.6 above, slightly over half of the population 40 (51.3%) indicated that there was adoption of E-health at the facility. This implies that only half of the population was aware of use and application of electronic health system at the facility, only these are trained to use the E-health system to support their day-to-day tasks, with the rest of the population not well trained on application and use of E-health systems. These findings show that there was an electronic operation system in place at the facility and that the computers that they used had a software that integrated all the functions of the facility.

More so, results from the table shows that slightly above half of the population 43(55.1%) were aware that patient information is automated with 35(44.9%) on the contrary. Most of the staff did not make use of the information available. However, majority were not well trained on the application of the operation system (software) and that they did not use the system in place to support their day-to-day operations and that they had no access to patient information when they required it.

This study is contrary to Omondi (2016), the adoption of health in the public health sector has greatly been challenged. In his study in Nairobi County on factors influencing health service delivery 57 % of the respondents indicated that Health Information Systems was not fully integrated in most hospitals. This was echoed by Kimanzi (2014) in a similar study in Kitui County. Of the 38 respondents sampled 83.33% indicated that modern technology techniques are lacking in public facilities with only 25% of the respondents

saying that they use E-Systems in their health practices while 75% do not use. This facility has electronic health systems in place however it's not fully in use.

4.8 Descriptive Responses on Hospital Infrastructure

Hospital infrastructure variable has two parameters: Facility design, and Medical supplies and equipment. Each parameter was analysed and reported in the Table 4.7 below:

Table 4.7

Responses on Hospital Infrastructure

Variable	Frequency	Percentage
Facility design		
No proper facility design	32	41
There is proper facility design	46	59
Medical supplies and Equipment		
No sufficient Medical supply $ equipment	71	91
Equipment are sufficient and functional	9	9
Total	**78**	**100**

From the Table 4.7 above, majority of the respondents 46 (59.0 %) indicated that there was proper facility design tailor-made for spinal injury patients with 32(41%) indicating that the facility did not meet SCI requirements. Majority of the respondents agreed that

the facility had lifts for easier movement, and that every patient had an assistive device to use when calling for assistance and that there were signage(s) for easier location of the facility, however the facility did not have sufficient ramps to support patient movement. In addition, the respondents indicated that the floors were made of non-slip material, and that there was sufficient space for patients to manoeuvre with wheelchairs. More so, above majority of the respondents 71 (91%) indicated that there is no sufficient medical supplies and equipment at the facility, with only 7 (9%) indicated that the facility was well supplied with medical supplies and equipment.

This agrees with what some of the respondents had to say; *"My care giver has had to transfer me to another facility for an MRI, the machine was broken at the time, it was difficult and costly to move because I was confined in bed." (In-depth interview guide 004)*

"*I was admitted with a C9 level spinal injury, I needed an immediate surgery, only to be told, that Laminar Flow had filters that were yet to be replaced, I had to be transferred to the nearby facility and it was very expensive for my family." (In-depth interview 002).*

"*I am also Hypertensive, my medications are expensive, some drugs are not available at the pharmacy, I have to buy them from outside and this is really draining my family financially (in-depth interview 008).*

This agreed with Kruk et al (2018) who indicated that a good architectural facility design improves work processes, thus improving efficiency, it provides sufficient space, having clearly marked signage to navigate the hospital, standardizing room layout, having sufficient consulting rooms. This was emphasized by Parsia and Tamyes (2018), in a study conducted in Malaysia on the influence of facility design on quality of services. The study showed that health facilities designed to promote patient safety, assist in movement, and amenities were more preferred for health services.

4.9 Descriptive Responses on Provision of Quality Spinal Injury Health Services

The dependent variable had three parameters: Timeliness of services, integration of services and patient safety. The indicators for each parameter were analysed and reported in the Table 4.8

Slightly half of the population agreed that there is timeliness of services with 42 (53.8%), with 46.2% indicating that they spend more time in serving clients. The respondents indicated that they met the needs of their clients promptly however not fully within the time stated in the service charter, and that they are able to serve clients from start to finish within the time stated in the service charter and that they're always ready to attend to the any emergency that may occur in their respective departments.

Table 4.8

Responses on Provision of Quality Spinal Injury Health Services

Variable	Frequency	Percentage
Timeliness of service		
Services not timely	36	46.2
Services timely	42	53.8
Integration of care		
No integration of care	38	48.7
There is Integration of care	40	51.3
Patient safety		
No patient safety	32	41
There is patient safety	46	59
Total	**78**	**100**

Further, at least 40 (51.3%) of the population indicated that care is well integrated at the facility while 38 (48.7) indicated that there is no sufficient integration of care. and that there are no clear guidelines and protocols in place for procedures respondents, and that not all services required by the patients were available at the facility, the staff have had to send patients to other facilities for some diagnostic services though the facility is keen on patient satisfaction.

Also, a higher percentage 46 (59%) of the population indicated that the facility observes patient safety measures with 32 (41%) indication that there were no safety measures. The

respondents agreed that there was a patient safety policy in place, there are assistive devices to support patient movement, and however there are no clear guidelines and protocols in place for procedures when handling SCI patients.

This study agrees the Organization for Economic Co-operation and Development (WHO et al., 2018), who indicated that there is a substantial gap in the co-ordination of health care. For instance, a survey of patients with requiring complex care in high-income countries found severe care gaps in care co-ordination, such were unavailability of patients' information and test at the point of care, inability to share appropriate information due to poor infrastructural capacity, inability of the specialist to retrieve medical history or regular doctors not informed about specialist care leading to poor co-ordination of care.

This agrees with what some inpatients had this to say; *"When I came for admission, it took so long before I was attended to, I was booked for surgical procedure but it took three days to attend to me, the theatre was fully booked and only on surgeon was available to attend to us." (In-depth interview 005).*

"I acquired bed sore on my 1st week of admission because I was not able to turn because of the injury, when I complained, I was told to wait for the physician to come and attend to me, he came after 2 days, I am still in a lot of pain." (In-depth interview 004).

4.10 Bivariate Analysis

The study employed the Pearson chi square correlations with the aim of determining the magnitude and direction of the connection that exists between the study variables. Cross tabulations were done establishing the Pearson Chi-Square statistic for each variable.

Table 4.9

Pearson Chi Square statistics

Variable	**Value**	**df**	***p-value***
Governance	658.51	1	0.001
Health workforce	422.861	1	0.001
Information Communication Technology	453.79	1	0.001
Hospital Infrastructure	465.563	1	0.001

Table 4.9 above shows that all the independent variables significantly contributed to Provision of Quality Spinal Injury Health services. They all had $p\text{-}value \leq 0.05$.

Governance ($p < 0.001$), Health workforce ($p < 0.001$) ICT ($p < 0.001$), Hospital Infrastructure ($p < 0.001$). This shows a great significant relationship between the four independent variables to the dependent variables.

Governance (*p-value*=0.001) involves articulation the organizations expectation and direction, supporting the staff to perform according to the expectation and measuring performance and corrective action for better the performance. In this study it entailed Responsiveness, shared Direction and accountability. Governance shows a great prediction of Provision of quality health services. For instance, in a study by Ngaruiya (2018), at Mama Lucy Kibaki Hospital and North Kinangop Catholic Church indicated having the mission and vision of the institution is paramount in defining the direction of the institution. Governance was also echoes in a study in Upper west of North Ghana, indicated that support supervision was key to delivery of quality primary health care services. The study indicated that a good technical support system, clear verbal and written modes of communication, regular review meetings for teams to function well in the communities were at the centre of quality healthcare delivery (Aikins et al., 2013).

Health workforce (*p-value*=0.001) also shows significant relationship between the four independent variables to the dependent variables. In this study, Health workforce entails Staff training, support supervision and staff motivate which is achieved through deliberate continuous efforts by an organization meant for employees to attain new and specific knowledge and skills in order to improve performance in their current roles. For instance, in a study done in Jordan private hospitals by Ajlouni and Diab (2015), on the relationship between employee performance, quality of care and training revealed that training had a positive influence on performance of health workers and overall quality of medical services. This was echoed by Aikins et al. (2013) in Ghana. He indicated that support

supervision was key to delivery of quality primary health care services. The study indicated that a good technical support system, clear verbal and written modes of communication, regular review meetings for teams to function well in the communities were at the center of quality healthcare delivery.

Information communication technology (*p-value*=0.001) is also significant predictor of provision of quality health services. In this study, ICT entails adoption of eHealth, and automation of information. It entails secure electronic means to deliver safe healthcare

intervention by means of a software. Use of the computer applications in healthcare is propels quality of medical care for instance use of electronic medical records (EMR) allow clinicians to share information quickly and easily for quick and effective diagnosis and decision of care plans (Black et al., 2011; Itumalla, 2012). In a narrative review on information sharing in healthcare done on 69 articles showed that, poor communication led to discontinuity of care, in-efficient use of valuable resources, unnecessary investigations, compromised patient safety and overall source of patient dissatisfaction (Vermeir et al., 2015). eHealth records make information available instantly and securely to physicians and operational efficiency and quality of patient care (Li et al., 2016).

Hospital infrastructure (*p-value*=0.001) is also a significant predictor of Provision of quality health services. It entails facility design and medical supplies and equipment. Hospital infrastructure includes the physical structures, communication network and the

supporting systems that provides the environment of care.it includes the rooms for consultation, power and electricity, amenities and any other physical structure.

Environments of care tailored to fit patients' needs is important for health, safety and wellbeing. It supports accessibility, privacy and security of the patient and the care giver. Studies have shown that design of a health institution has impact of quality perception and satisfaction of care received during a hospitalization (Black et al., 2011). This agrees well with Reilings et al. (2018) who indicated that Facility design has an impact on patient safety, efficiency, effectiveness, and timeliness of services also by Parsia and Tamyes (2018) in Malaysia, the study showed that health facilities designed to promote patient safety, assist in movement, and amenities were more preferred for health services. A good architectural facility design improves work processes, thus improving efficiency, it provides sufficient space, having clearly marked signage's to navigate the hospital, standardizing room layout, having sufficient consulting rooms (Kruk et al., 2018).

4.11 Multivariate Analysis

Binary logistic regression was performed to determine the effects governance, health workforce, information communication technology and hospital infrastructure had on provision of quality health services. Hosmer and Lemeshow Goodness-of-fit test was used to test whether the study model was correctly specified. The results indicate that the logistic regression model was statistically significant, χ 2 (4) = 14.493, *p-value* =0.075. Where the goodness of fit value was $p \leq 0.05$, you fail to accept the study model, and

where the goodness of fit value $p \geq 0.05$, the model passes the test (Table 4.10). The model explained 50.9% (Nagelkerke R^2) of independent variables are accounted for in the dependent variable.

Table 4.10

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	70.234[a]	.381	.509

From the Table 4.12 above this analysis accounts for 50.9% of the variations in the dependent variable had been accounted for by the independent variables, still 48.1 of other critical factors which have not been considered in the study

Table 4.11

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	14.493	7	.075

From the Table 4.13 above this model was deemed fit because it had a high *p-value* ≥ 0.05 which is .075.

Table 4.12

Multivariate Logistic Regression Analysis

Variable	B	S.E.	P – value	*Odds Ratio*
Governance				
Good Governance	-	-	-	1.000
Poor Governance	-0.995	1.001	0.008	0.369
Health workforce				
Good Health workforce	-	-	-	1.000
Poor health workforce	-0.553	1.257	0.016	0.038
Information communication Tech.				
Good ICT	-	-	-	1.000
Poor ICT	-1.694	0.135	0.078	0.575
Hospital Infrastructure				
Good Hospital Infrastructure	-	-	-	1.000
Poor Hospital Infrastructure	-0.801	0876	0.032	0.575

Results show that Governance (*p-value*=0.008) is significantly associated with provision of Quality Health Services. This implies that the system and staff are responsive, the staff are work towards realization of the services charter requirements and that staff are cognizant of the patients' rights in the way they handle them and that the staff have sufficient resources to deliver the vision and mission of the institution, the staff exhibit courage and commitment to solve problems that occur in their line of duty and that they are normally willing to admit to error and overall collective responsibility for errors made during work. In cases where there was poor governance provision of QHS was 0.3697

time lower when compared to the cases where Governance was good. The results were significant at 5% level of significance.

Further, the result also show that health workforce is significantly associated with provision of QHS (*p-value*=0.016). Good health workforce entailed well trained, well supervised staff who are motivated. This implies that the staff were well trained to handle SCI emergencies, and that there are continuous medical education programmes for staff. Team work is emphasised when solving problems and that the staff and management holds regular departmental meetings to review progress. The staff are well motivated with adequate remuneration, promotion and employment are done is done on merit, technical expertise and experience. In cases where there was poor health workforce, provision of QHS was 0.0388 time lower compared to good health workforce. The results were significant at 5% level of significance. These results are key supported by a study in Upper west of North Ghana, indicated that support supervision was key to delivery of quality primary health care services. The study indicated that a good technical support system, regular review meetings for teams to function well in the communities were at the centre of quality healthcare delivery (Aikins et al., 2013). Support supervision approach leads to collective problem solving and overall improvement of quality delivery because there is a shift from fault finding to assessment. This was echoed by Mosadeghrad (2014), in his Iranian contextual study where he found that remuneration, organizational policies, leadership and management, working environment, interpersonal relationships,

recognition, job identity and security, and chances for promotion important in delivering high-quality services to patients.

Further, the results also show that Information Communication Technology *(p-value*=0.078) is not significantly associated with provision of QHS. This facility has where the Software and hardware are installed and functional, the facility has adopted to the eHealth systems and the staff are using the system in their daily tasks. The results were measured at 95% confidence interval.

Results show that Hospital infrastructure is significantly associated with provision of QHS. Hospital infrastructure entails the design of the facility friendly to SCI patients and also sufficient supply and maintenance of medical equipment. This implies that the facility is well designed to accommodate SCI patients, there are images for easier location and direction, ramps and lifts are in place to support movement. There is sufficient space for patients to manoeuvre with wheelchairs. Also, diagnostic equipment to support SCI patients are in place and functional, medical supplies are also sufficient. In cases poor Hospital infrastructure, the provision of QHS was 0.0388 times lower when compared to the cases where the infrastructure was good. The results were significant at 5% level of significance. This study is agrees with Kruk et al. (2018) and Parsia and Tamyes (2018), who indicated that a good architectural facility design improves work processes, thus improving efficiency, it provides sufficient space, having clearly marked signage to navigate the hospital, standardizing room layout, having sufficient consulting rooms.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The section presents the findings summary, derived conclusions and recommendations on the influence of health systems' support factors on provision of quality health services at NRSIH. This shows what the researcher found from the study on the relationship between the contribution of Governance, Health workforce, Information Communication Technology and hospital infrastructure on the quality of health services provided. It also gives recommendation for filling the gaps in order to improve the health services.

5.2 Summary of Findings

The aim of this study was to evaluate the influence of Health Systems' Support factors on provision of quality health services at National Referral Spinal Injury Hospital. The study objectives were: to determine the influence of governance, to establish the influence of health workforce, to determine the influence of information communication technology and to establish the influence of hospital infrastructure on provision of quality health services at the National Referral Spinal Injury Hospital. The facility is served by a total of 80 clinical staff. In this study, due to the nature of the total population, all the clinical staff were included in the study. Sample size of healthcare worker was the same as the target

population. A sample of 10 inpatients were also included in the study for an in-depth interview.

The study achieved a 97.5% response rate. Majority of the respondents were females accounting for 49 (63%). The largest age group of respondents fell between age 26 and 45 years with a combined percentage of 85%. Majority 36 (46%) of the respondents had a degree as the highest level of education, and 42 (54%) of the respondents had served in the hospital for between 6-10 years.

On governance, majority of the respondents 43 (55.1%) indicated that the facility and system were responsive to the needs of the patient, with slightly more than half of the respondents 42 (53.8%) indicating that there was shared responsibility, in addition majority of the respondents 47 (60.3%) indicated that they were accountable in their day-to-day tasks. Governance was a significant contributor of timeliness of service and also integration of care. From the report, staff exhibited courage and commitment in solving problems that they encountered, and that they endeavoured to meet the service charter requirements when offering services. Most were aware vision and mission of the institution, were able to work towards realization of the hospitals vision and mission although they indicated that they had no sufficient resources required to deliver the vision and mission of the hospital and were neither willing to admit nor report errors made during service delivery.

On health workers, majority of the respondents 49 (62.8%) are well trained to handle SCI emergencies with 29 (37.2 %) indicating they were not well trained. Also, majority of the respondents 46 (59%) indicated that there was support supervision, in addition, majority of the respondents 53 (67.9%) indicated that they were motivated to perform their duties. The study found that remuneration was based on experience and job group placement and that employment and promotion was based on technical skills, knowledge, experience and expertise possessed. Majority had specialist training on new developments and even handling Spinal injury emergencies. Although there was no sufficient support supervision as there was no in-charge who controlled the operations of the departments. The employees did not have medical benefits such a medical cover for them and their families. The findings imply that the Health Workforce were qualified, however they had no sufficient support supervision to deliver but were well-motivated to provide quality health services.

On ICT, slightly over half of the population 40 (51.3%) indicated that there was adoption of E-health at the facility, also that slightly above half of the population 43 (55.1%) were aware that patient information is automated. On hospital infrastructure, majority of the respondents 46 (59.0 %) indicated that there was proper facility design tailor-made for spinal injury patients. With 32 (41%) indicating that the facility did not meet SCI requirements. More so, above majority of the respondents 71 (91%) indicated that there is no sufficient medical supplies and equipment at the facility. This study found out that each department had a phone for easier communication and also computer hardware were

installed at every station. Additionally, there was an electronic operation system in place at the and the computers had a software that integrated all the functions of the facility Further there was a generator in place for power backup whenever there was power blackout However the staff were not well trained on the application of the operation system (software) and that they did not use the system in place to support their day to day operations, and mostly they had no access to patient information when they required it These findings imply that the facility has adopted use of eHealth and have the infrastructure in place, however the staff are not sufficiently trained and the information was not fully automated at the time of the study.

On hospital Infrastructure, majority of the respondents 46 (59.0 %) indicated that there was proper facility design tailor-made for spinal injury patients. A large number of respondents 71 (91%) indicated that there is no sufficient medical supplies and equipment at the facility, with only 7 (9%) indicated that the facility was well supplied with medical supplies and equipment. The study found out that the facility has lifts for easier movement, and that every patient had an assistive device to use for communication and asking for assistance. In addition, the floors were made of non-slip material and there was sufficient space for patients to manoeuvre with wheelchairs which were also available at the facility. Moreover, the equipment were functional and frequently repaired and serviced and that there were clear signage(s) for easier manoeuvring. However, the facility had no sufficient ramps to support patient movement and that there was no sufficient supply of medical

infrastructure entails the design of the facility friendly to SCI patients and also sufficient supply and maintenance of medical equipment.

On provision of quality health services, slightly half of the population agreed that there is timeliness of services with 42 (53.8%), at least 40 (51.3%) of the population indicated that care is well integrated at the facility, also a higher percentage 46 (59%) of the population indicated that the facility observes patient safety measures. The study found out that there was a patient safety policy in place, and that they met the needs of their clients promptly. However, the respondents were not able to serve their clients fully within the time stated in the service charter, and that there were no clear guidelines and protocols in place for procedures Moreover, there were no sufficient assistive devices to support patient movement. And that not all services required by the patients were available at the facility, patients would be sent to other facilities for some diagnostic services.

The bivariate analysis showed that that all the independent variables significantly contributed to Provision of Quality Spinal Injury Health services. They all had *p-value* $\leq$ 0.05. Governance (*p-value* =0.001), Health workforce (*p-value* = 0.001) ICT (*p-value* =0.001), Hospital Infrastructure (*p-value* =.001). The multivariate analysis indicated that Governance (*p-value*=0.008) is significantly associated with provision of QHS, in cases where there was poor governance provision of QHS was 0.3697 time lower when compared to the cases where governance was good. Also, health workforce (*p-value*=0.016) was significantly associated with provision of QHS, in cases where there

was poor health workforce, provision of QHS was 0.0388 time lower compared to good health workforce. The results on ICT (*p-value*=0.078) indicated that ICT was not significantly associated with provision of QHS. Finally, Hospital infrastructure *(p-value*=0.032) was significantly associated with provision of QHS. Hospital.

5.3 Conclusions

The study concluded that Governance significantly influences provision of quality health services, therefore we reject the Null hypothesis. The study concludes that staff and systems responsiveness, shared direction and accountability are embraced in the facility. This study concludes that the systems and staff were responsive to the needs of the patients, the staff had the courage and commitment in solving problems that they encounter in their line of duty and they are committed to meet the service charter requirements when offering services.

The study also concluded that, Health workforce significantly influences provision of Quality health services at National Referral Spinal Injury Hospital and therefore we reject the null hypothesis. The facility embraced staff training, support supervision and staff motivation to large extend. The staff were employed based on training and remuneration was based on experience and job group placement and that employment and promotion was based on technical skills, knowledge, experience and expertise possessed.

The study also concluded that, ICT had no significant influence on provision of Quality health services at the National Referral Spinal Injury Hospital and therefore accept the null hypothesis. The facility has adopted the use of eHealth, although not being utilised. The staff lagged behind in using the systems because they lacked particular training on the application of the operation system (software) and that they did not use the system in place to support their day-to-day operations and it becomes hard for them to make medical decisions on time making treatment process very costly.

More so, the study also concluded that, Hospital Infrastructure significantly influenced provision of Quality health services at the National Referral Spinal Injury Hospital and therefore we reject the Null hypothesis. The facility design is friendly for SCI patients, found out that the facility has lifts for easier movement, and that every patient had an assistive device to use for communication and asking for assistance. In addition, the floors were made of non-slip material and there was sufficient space for patients to manoeuvre with wheelchairs which were also available at the facility. The equipment were functional and frequently repaired and serviced. On the ground and that there were clear signage(s) for easier manoeuvring. However, the facility had no sufficient ramps to support patient movement and that there was no sufficient supply of medical commodities at the facility

5.4 Recommendations

The study recommends strengthening the critical success factors.

i. On governance, the hospital should adopt a horizontal system of leadership with the aim of promoting the relationships between the management and the employees. These relationships allow the employees to give honest feedback/opinion to the management on how improve the service quality and delivery. The facility should embrace support supervision to the staff and establish non-punitive measures for error admission and error reporting

ii. On health workforce, the study recommends that the facility should introduce a reward system aimed at promoting the morale of the staff towards the provision of quality health services. The staff should be specially trained on emerging SCI technologies.

iii. Sufficient training should be done on staff on the use of ICT at the facility. Also, staff should be supported to embrace the use of this technology in their day-to-day activities. Patient information should be automated for ease of retrieval by the staff for ease of decision making.

v. In order to strengthen the hospital infrastructure, the facility's management should seek the services of architects, engineers and other construction planners with the

aim of improving the existing structures or constructing new ones aimed at promoting the quality of services provided.

5.5 Areas for Further Research

1. The study recommends further study on other Critical success factors of quality services provision outside of these four. These four factors contribute to 50.9 % Study on others that contribute to 49.1 %.
2. This study can be replicated in other specialist facilities for comparison.

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APPENDICES

Appendix 1: Informed Consent Form

Kenya Methodist University,
P. 0 Box 267-60200,
Meru, Kenya.

Dear Respondent,

My name is Susan Mule. I am a Masters student from Kenya Methodist University. I am conducting a study titled: **Influence of health systems' support factors on provision of quality health services the national referral spinal injury hospital.** The findings will be utilized to strengthen the spinal cord health systems in Kenya and east and central Africa which is serviced by this facility. As a result, countries, communities and individuals will benefit from quality primary health services. This research is critical to strengthening health systems as it will generate new knowledge in this area that will inform decision makers to make decisions that are research based.

Procedure to be followed: Participation in this study will require that i ask you some questions in a self-administered questionnaire. You have the right to refuse participation in this study. You will not be penalized nor victimized for not joining the study and your decision will not be used against you nor is affect you at your place of employment. Please remember that participation in the study voluntary.

Benefits: If you participate in this study you will help us to strengthen the Spinal Cord health system. As a result, countries, communities and individuals suffering from Spinal Cord Injury will benefit from improved quality of healthcare services. This field attachment is critical to strengthening the health systems as it will generate new knowledge in this area that will inform decision makers to make decisions that are research based.

Rewards: There is no reward for anyone who chooses to participate in the study

Confidentiality: The interviews will be conducted in a private setting within the hospital. Your name will not be recorded on the questionnaire and the questionnaires will be kept in a safe place at the University.

Contact Information:

If you have any questions you may contact the following supervisors:

Dr. Eunice Muthoni and Dr. Kezia Njoroge.
Department of Health Systems Management,
Kenya Methodist University, Nairobi campus.

Participant's Statement

The above statement regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand that my records will be kept private and that I can leave the study at any time. I understand that I will not be victimized whether I decide to leave the study or not and my decision will not affect the way I am treated..

Date…….Signature……

Investigator's Statement

I, the undersigned, have explained to the volunteer in a language s/he understands the procedures to be followed in the study and the risks and the benefits involved.

Name of Interviewer: Susan Mule Vundi

Interviewer's Signature…… Date…

Appendix 2: Structured Questionnaire

Please tick and answer appropriately

Section A

Demographic information of the respondent:-

1. What is your gender?
   Male [ ] Female [ ]
2. What is your age bracket?
   Less than 25 years [ ] 26-35 years [ ]
   36-45 years [ ] Above 45 years [ ]
3. What is your highest education level?
   Certificate level [ ] Diploma level [ ] Graduate/Degree [ ]
   Postgraduate [ ] Others-specify……[ ]
4. Field of Specialisation (Cadre)…….……..……..……..
5. For how long have you worked at the national referral spinal injury hospital?
   Less than 1 year [ ] 1-5 years [ ] 6-10 years [ ] Over 10 years [ ]

Section B

Kindly answer the following questions: Tick the correct box **[ ].** Either: **5-Strongly Agree(SA), 4-Agree(A),3- Not Sure (NS), 2-Disagree(D) or 1-Strongly Disagree(SD)**

	A: Governance	**SA**	**A**	**NS**	**D**	**SD**
	Responsiveness					
	I **e**nsure that i work towards realization of the hospitals vision and mission in my daily activities					
	I have the resources required to deliver the vision and mission of the hospital					
	I endeavour to meet the service charter requirements when offering services					
	I am cognizant of patients' rights in the way I handle them					
	The facility has amenities tailor made for spinal injury patients					
	Shared Direction					
	I'm aware of the vision and mission of the institution					
	The vision of the institution is clear and compelling to work towards					
	There is clear chain of communication					
	There is a policy on workload for me as a staff					
	Accountability					
	I'm able to report error made during my work					
	I exhibit courage and commitment to solve problems that occur in my line of duty					
	I am normally willing to admit to an error when I make one during my service					

	There is a collective responsibility for errors made during work.					
B: Health workforce						
	Staff training					
	I'm well trained to handle emergencies due to spinal cord injury					
	There are continuous medical education programme for the staff on the new technologies					
	I attend a least 4 trainings on new developments on spinal injury management					
	Support supervision					
	There is an in-charge who is controls the operations of the department					
	Teamwork and team spirit is emphasized when working and solving problems					
	We hold regular review meetings in my department with my supervisor					
	Staff motivation					
	I got my employment based on my Technical skills and knowledge					
	I have medical benefits such a medical covers for my family and I					
	I get remunerated adequately based on my experience and job group placement					
	Promotion is based on experience and expertise					
C	**Information technology**					
	Adoption of eHealth systems					
	There is an electronic operation system in place at the facility					
	I use the system in place to support my day to day operations					
	I am well trained on the application of the operation system(software)					
	I have access to patient information when I require it.					
	Automation of information					
	The computer that i use has a software that integrates all the functions of the facility					
	There is generator in place for power backup whenever there is power blackout					
	Telecommunication					
	I have a computer that supports my work					
	I have a phone in my department that I can use to communicate with other staff					
D: Hospital Infrastructure						
	Facility design					
	There are signage for easier location of the facility					

	The facility has ramps to support patient movement					
	The floors is made of non-slip material					
	The facility has lifts for easier movement					
	Every in-patient is provided with a bell for to use when asking for assistance					
	There is sufficient space for patients to manoeuvre with wheelchairs.					
	Medical Supplies and Equipment					
	There is sufficient supply of medical supplies at the facility					
	Equipment in my department is functional					
	Wheel chairs are available at the facility					
	The equipment are frequently repaired and serviced					
	Every patient has an assistive device to use when calling for assistance					
E: Provision of Quality Health Services						
	Timeliness of services					
	I am able to serve my clients from start to finish within the time stated in the service charter.					
	I meet the needs of my clients promptly					
	Im always ready to attend to any emergency that may occur at my department					
	Integration of care					
	I have sent patients to other facilities for some diagnostic services					
	All services required by the patients are available at the facility					
	The facility is keen to ensure patient satisfaction					
	Patient safety					
	There are assistive devices to support patient movement					
	There are clear guidelines and protocols in place for procedures					
	There is a patient safety policy in place					

-Thank you for your time-

Appendix 3: In-depth Interview Guide

Date: .....

Name of Interviewer: ……. Name of Interviewee: ……

My name is Susan Mule. I'm conducting an interview to get your experience as an end user of spinal cord health services. I am especially interested in any problems you have faced or are aware of and recommendations you have. I assure you that all your comments will remain confidential. I will be compiling a report which will contain all patients' comments without any reference to individuals.

I will start by asking you:-

1. How would you describe your experience at the facility *(probe to gather the information you need).*
2. How is your response to the treatment regime that you've been put on?

Has there been any improvement, Was there a change of medication?, Have you reacted to any medication given?

3. How would you describe your relationship with healthcare providers (probe to gather the information you need).How do you call for assistance?
4. Would you describe the facility as favourable for spinal Injury patient? Why?
5. Over the time that you've been admitted, was there a time you were sent to purchase medication or other services from other facilities (probe to gather the information you need).
6. What has been your greatest challenge in seeking for Spinal Injury Healthcare? (probe- how has been your experience?" have you experienced any problem?", "Do you know why these problems are occurring?
7. What other problems are you aware of? Probe to gather the information you need).
8. What would you like improved to enable better services even you other patients (probe)

- Thank you for your time

Appendix 4: Pearson Chi-square Output

Governance

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	658.510[a]	266	.000
Likelihood Ratio	286.166	266	.189
Linear-by-Linear Association	22.562	1	.000
No. of Valid Cases	**78**		

Health workforce

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	422.861[a]	196	.000
Likelihood Ratio	244.912	196	.010
Linear-by-Linear Association	24.105	1	.000
No. of Valid Cases	**78**		

Information Communication Technology

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	453.793[a]	224	.000
Likelihood Ratio	245.560	224	.154
Linear-by-Linear Association	21.542	1	.000
N of Valid Cases	**78**		

Hospital Infrastructure

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	465.563[a]	196	.000
Likelihood Ratio	233.700	196	.034
Linear-by-Linear Association	10.941	1	.001
N of Valid Cases	**78**		

Appendix 5: Ethical Approval-KeMU

KENYA METHODIST UNIVERSITY
P. O. BOX 267 MERU - 60200, KENYA
TEL: 254-064-30301/31229/30367/31171
FAX: 254-64-30162
EMAIL: INFO@KEMU.AC.KE

25 April 2022
KeMU/SERC/HSM /9 /2022

SUSAN MULE VUNDI
HSM-3-0224-1/2019
Kenya Methodist University

Dear SUSAN,

SUBJECT: INFLUENCE OF HEALTH SYSTEMS' SUPPORT FACTORS ON PROVISION OF QUALITY HEALTH SERVICES AT THE NATIOANL SPINAL INJURY HOSPITAL

This is to inform you that Kenya Methodist University Scientific Ethics and Review Committee has reviewed and approved your research proposal. Your application approval number is KeMU/SERC/ HSM/ 9 /2022. The approval period is 25th April 2022 – 25th 2023.

This approval is subject to compliance with the following requirements

I. Only approved documents including (informed consents, study instruments, MTA) will be used.

II. All changes including (amendments, deviations, and violations) are submitted for review and approval by Kenya Methodist University Scientific Ethics and Review committee.

III. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KeMU SERC within 72 hours of notification.

IV. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KeMU SERC within 72 hours.

V. Clearance for export of biological specimens must be obtained from relevant institutions.

Appendix 6: NRSIH permit

Ministry of Health
National Referral Spinal Injury Hospital

Lenana Road
P.o Box 20906-00202
Nairobi.
Tel: 2726336
nsihospital@yahoo.com

Date06/06/2022
REF: NRSIH/6/22

TO WHOM IT MAY CONCERN

Susan Vundi M.

The above named person is a student at the Kenya Methodist University is undertaking a research on: ***Influence of Health Systems' support factors on provision of Quality Health Services at the National Spinal Injury Hospital, Nairobi*** She has been accorded permission to collect data from the facility from 15th july-15 august,2022.

Please accord her the necessary support.

Thank you,

Medical Superintendent

Appendix 7: NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **454399**

Date of Issue: **31/May/2022**

RESEARCH LICENSE

This is to Certify that Ms.. Susan Mule Vundi of Kenya Methodist University, has been licensed to conduct research in Nairobi on the topic: INFLUENCE OF HEALTH SYSTEMS' SUPPORT FACTORS ON PROVISION OF QUALITY HEALTH SERVICES AT THE NATIONAL REFERRAL SPINAL INJURY HOSPITAL. for the period ending : 31/May/2023.

License No: **NACOSTI/P/22/17749**

454399

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.