



Influence of Physical Resource Infrastructure on Health Sector Service Delivery in Nyeri County, Kenya

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Abstract

The effect of physical resource infrastructure on health sector service delivery has been a major concern among health practitioners on health sector service delivery system. These include human resource and physical facilities at primary, secondary and tertiary levels of the health sector. The sector requires well maintained functional equipment and other resources, as well as trained personnel to operate and repair them. The study adopted convergent design to integrate both qualitative and quantitative data analysis. The target population of 916 health workers and a sample size of 266 were used in the study. The study contributes to the theory by giving physical resource infrastructure components through which health sector can reciprocate in order to enhance service delivery among its workforce. This study was undertaken in the context of a devolved health system in Kenya focusing on Nyeri County, three sub-county hospitals and one level five referral hospital. The study findings revealed that physical resource infrastructure has significant and positive effect on service delivery. Health sector administrators will use the findings of the study to formulate policies that enhance quality of service delivery. Physical infrastructure is a key component in determining the level of health sector service delivery.

Keywords: Physical Resource, Infrastructure, Health Sector, Service Delivery

INTRODUCTION

In Kenya there is a wide range of health facilities distributed in a pyramidal hierarchy organization comprising of five levels. The health sector requires establishment of an effective organizational management system to deliver health services. According to the WHO (2006) it is essential right of every individual to enjoy the highest achievable health standards. Globally, the health systems have increased attention on human resource management practices in improving quality of health care. Kilonzo, Kamaara & Magaki, (2017), referred health infrastructure as medical apparatus, building, transportation, communication and ICT facilities. Human resource management in their practice must ensure availability of quality health facilities in good working conditions to create job satisfaction of the workforce. Globally, the health systems have increased attention on human resource management practices in improving quality of health care. However, according to Raufu (2002) shortage of component health care providers constitute the greatest challenge confronting the health care systems in developing countries including Kenya.

In developing countries including Kenya, the enact of temporary equipment that lies unused due to lack and shortage of qualified technical staff to operate or maintain them

exceeds the sum of those that are functional. Infrastructure performance is thus closely linked with governance issues, a sufficient infrastructure provision that include physical outlook of health structures, staff and supplies does not guarantee that people receive services. However, it is important to note that the management of the infrastructure in health sector, is crucial in improvement of delivery of services. (Kessides 2004; World Bank 1994) indicate there is weak infrastructure and poor performance in many developing countries.

The health services delivery system significantly influences availability and adequacy of financial resources, human resources, health facilities, functional medical equipment and supplies in health sector, that may subsequently influence the quality of service delivery. (Mwangi 2013), opined that for health services to be all inclusive there are important inputs that must be present. First, availability of a network of health care facilities that must be functional with component of motivated staff. Additionally, adequate supplies of essential drugs and other consumable and non-pharmaceuticals must be present and timely when required. The quality of health sector infrastructure is a concept framework, which supports quality services, appropriate working tools and equipment that suit the needed functions (Abdullah, 2006). Investments in the right infrastructure, procurement and maintenance of general equipment, furniture and vehicles at the facility level in the county is important as a measure to facilitate quality service delivery.

Hospital buildings are not designed to enable natural light and ventilation, instead they are structured to be air conditioned despite uncertain local electricity supplies that are not cost effective. In public-funded hospitals, the cost and availability of health care consumables, (drugs, prostheses and disposables required equipment) expenditures can affect the ability to hire and sustain effective health practitioners. The basic infrastructure required to achieve the best out of public hospitals there is need to incorporate implementation of information systems, for record keeping of both health workforce and patients, to aid on online systems utilized to capture diagnosis and treatment of patients that improve the quality of service delivery. Information systems are not used for admission, documentation, management and record keeping of patient and movement of patients in and out of the health facilities in Nyeri County hospitals. The financial services including online, mobile and card payments to achieve its full potential and reduce paperwork to enhance efficient service delivery and timeliness.

A study by Khaunya, Wawire and Chepng'eno (2015), revealed that counties had been faced with a myriad of challenges under devolved governance in Kenya, that stood in the way of the realized achievements. These circumstances are further intensified by practical issues in the course of seeking treatment, physical resource infrastructure facilities, internal process and interactions with health sector workforce, doctors, nurses and paramedical being poor and unresponsive (Boshoff & Gray, 2004; Algılanan & Connor, 2003).

The health service delivery may be defined a long four stages as user engagement service design, development, service and assessment and positive chance of service provision (Dach et al, 2004. A definition by other scholars, Carrilat et al., (2007), service delivery is the physical access or reachability of services that meet quality standard. Patrick (2009), suggested ten determinants of service quality that relate to access of health sector services including, competence, credibility, reliability, responsiveness, courtesy, security, communication and empathy.

The devolution of health sector of 2013 aimed at not only improving the goals and policies, but also to implement governing structure but envisage control of

administrators with adequate knowledge of the local health needs of the communities having been appointed as county health administrators (KPMG 2013).

Problem Statement

The concern of undertaking the study was that Nyeri County remained at the bottom third among other counties in preparedness for devolved system. Nyeri County is densely populated and the need for health care of its citizenry contributed to the choice. The infrastructure in health sector has been a major concern among health practitioners and in health care service delivery system. Health sector has experienced challenges that include, lack of physical facilities at primary, secondary and tertiary levels of the health sector. A proper health delivery system means that, there must be adequate health physical facilities, resource infrastructure including adequate number of human resource for health, supply of essential medicines, drugs, pharmaceutical and non-pharmaceuticals and functional working equipment. These circumstances are further intensified by the impression of practical issues in course of seeking treatment, physical resource infrastructure and facilities, internal process and interactions with health sector workforce, doctors, nurses and paramedical being poor and unresponsive (Boshoff & Gray, 2004; Algılanan & Connor, 2003).

The range of chronic stressors including shortages of drugs, understaffing, inadequate funding, corruption, nepotism including mistrust among stakeholders. There have been cases of stock outs on essential drugs and non-pharmaceuticals creating risks in public hospitals in Nyeri County. This has a negative social effect especially to the poor who depend on subsidized government supplies, they are forced to buy medicine from private chemists resulting to poor patient outcomes and inappropriate use of medicine, such as under- dosage and drug resistance. Treatment for emergencies face challenges of un-serviced equipment, vehicles and facilities necessary for fast and effective delivery of health services in the hospitals in Kenya. The problem of poor control of scarce resources embezzlement and pilferage has significant influence on the above problems in Kenya (KPMG, 2013).

MoH (2015) report indicated that availability and functionality of diagnostic and medical equipment is critical in treatment. However, most of medical equipment in public hospitals is over 20 years old and some double their lifespan. This situation has led to frequent breakdown and lack of access to essential service to patients. It is also noted that there is lack of modern equipment such as dialysis machines, radiology equipment, including laboratory reagents to enable patient examination and diagnosis. The acquired machines lack functionality due to poor maintenance and lack trained technical personnel to operate and repair them. This shows that despite the shortage of human resource for health in the county hospitals, in some cases they fail to deliver services due to lack of necessary equipment needed and this is the gap this study sought to fill.

LITERATURE REVIEW

Theoretical Framework

The two factor theory by Frederick Herzberg (1987)

The theoretical framework of this study is anchored on two factor theory by Fredric Herzberg (1969). Two factor theory as cited in Bassett, Jones and Lloyd (2005). Hertzberg in his two factor theory stated that employees are motivated by internal values, rather than external values related to their work. Motivation is internally

generated and propelled by variables that are intrinsic. These include achievement, recognition, work itself, responsibility, advancement and growth.

However, there are certain factors that cause dissatisfying experience at work place, that largely result from nonjob related variables extrinsic which Herzberg referred to as hygiene factors. The drivers for dissatisfaction are work related conditions such as infrastructure and availability of physical facilities such as adequate equipment, consumables and drugs. This research aimed at finding out if this is true of human resource for health, who may have been deployed to rural areas in Nyeri County. The workers taken from familiar working environment those are highly equipped with facilities necessary for health care service delivery.

Herzberg two factor theory has satisfiers and dissatisfies, also known as Herzberg motivational hygiene theory. This can be derived from employee work settings with facilities that contribute to job satisfaction. The two factors can be divided into two groups. The motivators applied to the factors that when present increase motivation and when absent does not lead to dissatisfaction. Human resource for health need good conditions of work with good working environment that facilitates workflow twenty-four hours a day, seven days a week. The working area require working tools and necessary equipment that are functional that enables fulfilment and job satisfaction.

The other group regarded as hygiene factors were found to relate to extrinsic environment issues such as organization policy, salary, job relationship and supervisory styles status and security (Bassett, Jones and Lloyd, 2005), Armstrong, 2009). These factors do not necessarily motivate employees, but must be present in the work place to make employees happy. In addition, health workforce can be motivated by proper incentives such conditions of work with infrastructure that are necessary for their job performance. Working environment that is secure such as being offered good housing. (Njuguna, et al., 2014) opined those incentives such as good housing security and hardship allowance is essential in ensuring the workers are retained in hardship areas. Their absence cause increase dissatisfaction and lower levels of motivation. The occupation origin of this theory has already been applied to health care as pointed out by Shortell and Kuluzny (2006).

The lack of satisfaction, in the work environment contributes to dissatisfaction of the employees in health sector. Following research conducted by Fredrick Herzberg in answer to the question “what do people want from their jobs?” (Robins & Judge, 2007). According to the theory, when the work environment in which health work force has to perform their duties is psychologically unhealthy, it creates negative feelings to the individual. Human resource management practices are essential in ensuring that human resource for health is motivated using hygiene factors. Through HRM practices infrastructure and technology policy issues become more visible aspect of health systems. The health sector workforce, achievement contribute to job satisfaction leading to improved service delivery

EMPERICAL REVIEW

Physical Resource and infrastructure

The quality of health sector infrastructure is a concept framework, which supports quality services, appropriate working tools and equipment that suit the needed functions (Abdullah, 2006). Physical resource in working environment include equipment and supplies, infrastructure, physical facilities, with several levels of hospitals, include national referral and teaching hospitals at the apex, level five down

to health centres and support services, regulations at work and lines of authority a long decision making. Health infrastructure relates to all the physical infrastructure, inpatient bed capacities, equipment, transport, and technology (including ICT) required for effective health care service delivery. These resources are important determinants for employee job satisfaction. These definitions suggest that human resource practices must consider the workforce satisfaction, as well as the necessary resources used in service delivery. (Gatero 2011) opined that in Kenya, evidence that public health sector professionals have adequate access and reliable knowledge in ICT is little. The importance of ICT cannot be over emphasized with reduced waiting time of patients for services and records maintenance of both patients and workforce schedules.

Human resource practices must be applied in management of physical resources to ensure appropriate balance of workforce with necessary knowledge, skills, and abilities to handle the technical part of health equipment. Workforce infrastructure and health facilities such as medical equipment must be physically available to carry out necessary diagnosis on patients. The physical facilities and human resource for health must work hand in hand; adequate tools without workforce are as inefficient as workforce without tools. The quality of health sector infrastructure is a concept framework, which supports quality services, appropriate working tools and equipment that suit the needed functions (Abdullah, 2006). A proper health delivery system means that, there must be enough health physical facilities, resource infrastructure, adequate supply of essential medicines, drugs, pharmaceutical and non-pharmaceuticals and functional working equipment. Investments in the right physical resources supplies management, procurement and maintenance of general equipment, furniture and vehicles at the facility level in the county is important as a measure to facilitate quality service delivery.

Construction of new facilities; rehabilitation and operation of existing equipment and continuous training of workforce who operate them is essential in public hospitals. Under devolved system, county governments are expected to plan the delivery of services in each county, utilize revenue-based resources for the administration of the county and development programs. In effect, counties will perform functions that have, hitherto, been managed under a central government-controlled system. Physical facilities including offices, furniture, ventilation, as well as psychological factors such as work relationships were explored. According to George and Jones (2008), work environment is one of the factors that influence employee decision on whether to stay with an organization or not. Physical resources contribute in health care delivery, the public health sector having a high population of patients face challenges lack enough facilities to create privacy for patients when they visit the medical officers.

The government of Kenya, through various legislations policy statement has highlighted a framework of action to support counties access to sustainable health care in the country. This includes the enactment of acts to establish for example, Transitional Authority (GoK 2013) The highly centralized government system also led to the weak, unresponsive, inefficient, and inequitable distribution of health services in the country (Ndavi et al., 2009). It is expected that a devolved health system will improve efficiency and stimulate innovation, improve access to and equity of services, and promote accountability and transparency in service delivery (Bossert, 1998). However, the complexity of Kenya's devolution framework may generate concern that services could be disrupted if the transition is poorly managed.

Patrick (2009) asserts that there are ten determinants of service quality that relate to the health sector service delivery, they include, competence; credibility; access, reliability,

responsiveness; courtesy; security; communication an empathy. Highly skilled physicians, nurses, administrators and auxiliary staff are critical in producing high quality outcomes and effective quality improvement hence hospital growth (Argote, 2000).

Independent variables

Dependent Variable

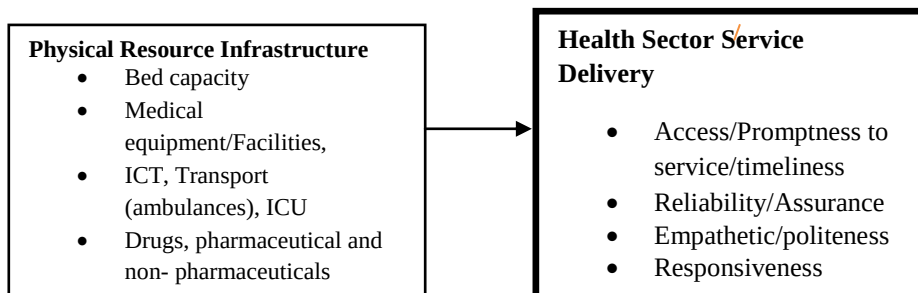


Figure 1: Conceptual Framework

Source: Author (2018)

Conceptual framework is a tool that assists the researcher to develop awareness and understanding of the situation under scrutiny. It explains the relationship among inter linked concepts and explains the possible connection between variables (Kombo & Tromp, 2000). In health sector service delivery is only accessible through available and adequate physical resources for health. Physical resources as well as human resource for health are important part of health systems capital, (WHO 2000) defines them as productive assets. The physical resource encompasses three broad categories, buildings; structures with auxiliary facilities. Physical resources provide the material platform on which delivery of resources of health care results. These resources must be reliable and functional. However, quality workforce with knowledge, skills, and abilities are of little use without the former.

Accessibility, efficiency and quality together constitute for an optimal hospital infrastructure from a societal perspective. Health system infrastructure improves effectiveness, safety, timeliness, patient-centeredness, access and efficiency. Inadequacies in health system infrastructure, limit access and contribute to poor quality of care and outcomes, particularly among vulnerable population groups.

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METHODOLOGY

The study used a strand of mixed research design. This research was carried out in three sub-county hospitals and one referral hospital. The target population of 916 health workers and a sample size of 266 were used in the study. Census was used to select the public county level four (4) hospitals in Nyeri County because of their limited number. Purposive sampling was used in picking the one (1) referral county hospital for the study. The researcher then used purposive sampling and selected the

top level management employees, because of the nature of their job responsibility being in charge of human resource policy implementation in Nyeri County.

The study used mixed method research, the choice of pragmatism as a paradigm point to an inquiry process build around combining both strength of qualitative and quantitative methods. The study used convergent design a clear link between both methods to combine their strength. The study used questionnaires interview schedule for data collection. The study used face to face interviews as method of qualitative data collection.

Structured interviews were conducted with an interview schedule consisting of closed questions. Interviews also eliminated the common bias in other instruments. The interviews were conducted for senior management members of staff, in charge of hospitals in the County including hospital directors, superintendents, section heads. Data collected was analysed thematically.

Quantitative data was analysed descriptively (percentages, frequencies and means) and use of inferential statistics (regression). The results of both qualitative and quantitative methods were integrated by use of convergent design.

RESULTS AND DISCUSSION

Demographic Findings

The study sought information of the age of respondents to establish the staff mixes in in Nyeri County health institutions. This study settled on four age groups, from which, respondents were asked to identify their relevant groups. The results of the age groups of the respondents those who were between 25-30 years, were (21.5) %. Those between 31-40 years were (50.8) %, 41-50 years of age were (12.5%) and respondents that were 50 years and above were (13.8) %. The study findings revealed that the majority of the respondents were middle aged between 40 and 50 years. This implied that the county had health workers who were young and active ready to provide services.

The findings established that the majority (55.2%) were in Nyeri level 5 hospital, while (26.7%) were in Karatina hospital, (6.8 %) were in Othaya and (9.7%) were in Mukurwe-ini respectively. Nyeri referral level five hospital, had the highest number of respondents, this is because it handles all referral cases in Nyeri County.

The study deemed it important to establish the education level of the workforce in Nyeri County. Education level go along with skills and abilities needed for health care service delivery. The finding on the level of education established that 5 (2.7) % had attained secondary level only, 114 (62.3) % respondents had acquired diploma level and 62 (33.9) respondents had acquired degree level and above, 2 (1.1) % did not respond.

Physical Resource Infrastructure

Technology plays a critical role in health care services, but lack of adequate developed functional structures hamper ICT support to health care. Health infrastructure includes all the physical infrastructure inpatient beds, medical equipment, transport as well as technology ICT. It is important for effective delivery of services in both National Government and County Government level in Kenya for optimal functional and operating required standards.

Descriptive Statistics and Factor Analysis

Physical infrastructure is a concept framework that supports quality services, appropriate working tools and equipment that suit the needed functions. Table 5 illustrates the results. The research findings indicated that majority of the respondents 121 (64.4) % denied that there were adequate bed capacity for all the admitted patients all the time, (mean = 2.13; SD=1.379). The population of patients determined the work load in hospitals. The researcher observed patients sharing beds in maternity wards. The low capacity of bed space resulted with patients sharing beds, that made service delivery to be difficult and uncomfortable for health workforce.

The findings of the study revealed that majority of respondents 70(64.4) % were inadequately trained on use and maintenance of available equipment, (Mean = 2.79; SD=1.219). The findings of the study showed that there has been acquisition of medical equipment in Nyeri County since the onset of devolution. The maintenance of the equipment was poor as a result of lack of trained personnel to repair or maintain them. The lack of matching facility investments with other investments including HRH, commodities, was reported. This has affected functionality after completion of investment (GOK, 2015).

The research study findings on whether the health care employees were facilitated with necessary non pharmaceuticals, consumables to facilitate them to offer their services to the patients, showed that availability of surgical equipment and facilities/rooms/theatre /mortuary were not adequate and majority of respondents 100 (54.7) % disagreed that they were available (Mean = 2.50; SD =1.278). The respondents revealed that not all hospitals had intensive care unit (ICU). The study findings further revealed that availability of surgical equipment and facilities/rooms/theatre /mortuary were not adequate or were completely not available in Nyeri County. The health sector employees had to refer critical cases to Nyeri County referral hospital.

Majority of respondents disagreed 97(49.7) %, that there were functional ICU facilities in all level four hospitals in Nyeri County, (Mean= 2.73; SD=1.571). This study is in agreement with WHO (2000), report, Geneva, that health systems efficiency requires the combination of properly balanced physical and technical resource. The resources are both human and pharmaceutical products, devices and equipment.

The research study findings on whether the employees had adequate facilities to use in the wards, majority of respondents 86(47) % denied that they were available with (Mean=2.73; SD=1.57). The findings of the study on whether the furniture in the wards was adequate, majority of the respondent, 111 (60.6) % indicated there were no enough cabinets for inpatients (Mean =2.29; SD=1.293)

The study results on whether the hospitals washrooms toilet facilities were in good working conditions to serve the patients and staff working in the hospitals, revealed that majority of respondents disagreed with (Mean =2.40; SD=1.293).

The study results on whether the hospital services are faster with modern equipped laboratories. Majority of the respondents 51(27) % were not sure, while 40(21.9) % agreed with (mean = 2.75; SD =1.200).

The research study sought to find out whether human resource demand and supply data was well recorded by use of ICT. Majority of the respondents 101(60.6) % revealed that there were no records in place. (Mean =2.20; SD=1.180). The research further

sought to find out whether all employee use ICT, majority of respondents denied that they used ICT.

Table 5: Physical Infrastructure on Health Sector Delivery

ITEM	N	S.D	D	N	A	SA	No Resp.	Mean	SD
The bed capacity for this hospital is always adequate for all inpatients	183	85 (46.4%)	33 (18.0%)	16 (8.7%)	23 (12.6%)	15 (8.2%)	11 (6.0%)	2.13	1.379
I am adequately trained on how to operate and maintain the new equipment in this hospital	183	32 (17.5%)	38 (20.8%)	44 (24.0%)	42 (23.0%)	12 (6.6%)	15 (8.2%)	2.79	1.219
The drugs and consumables facilities in this hospital are available to me in my hospital	183	51 (27.9%)	49 (26.8%)	39 (21.3%)	26 (14.2%)	3 (1.6%)	15 (8.2%)	2.29	1.113
This hospital is well equipped with surgical/facilities/rooms/heatre/mortuary etc.	183	50 (27.3%)	41 (22.4%)	30 (16.4%)	39 (21.3%)	9 (4.9%)	14 (7.7%)	2.50	1.278
My hospital is well equipped with an intensive care unit (ICU)	183	62 (33.9%)	24 (13.1%)	12 (6.6%)	44 (24.0%)	29 (15.8%)	12 (6.6%)	2.73	1.571
There are enough cabinets for inpatients to use in this hospital	183	54 (29.5%)	57 (31.1%)	27 (14.8%)	25 (13.7%)	9 (4.9%)	11 (6.0%)	2.29	1.203
In this hospital toilet facilities within the wards are in poor condition	183	27 (14.8%)	43 (23.5%)	43 (23.5%)	30 (16.4%)	25 (13.7%)	15 (8.2%)	2.90	1.293
In this hospital services are faster with modern equipped laboratories, ICT	183	35 (19.1%)	33 (18.0%)	51 (27.9%)	40 (21.9%)	10 (5.5%)	14 (7.7%)	2.75	1.200

Source: Research 2019

Qualitative Findings

The Key Interviewee revealed that...

“Some equipment and other facilities for quality service Delivery, are functional, but lacks adequate personnel trained on their operation and maintenance” (RSP 8)

The key interviewee in Nyeri Referral hospital said

“We face challenges in our services because of lack of drugs, they are purchased centrally by the County Board and we are not consulted to make decisions on what is most urgently required. They stock the pharmacy sometimes with items that are not the most important in accordance to the common diseases around”.(RSP 12)

Majority of the key respondents interviewed, said that,

“Patients share beds from time to time due to shortage of bed capacity including in the maternity wards”(RSP 9)

Interviewed nurse said;

“Due to lack of physical facilities sometimes we are forced to watch as patients suffer and we can help this makes us look like we do not have any empathy to the eyes of public” (RSP 4)

Nursing is a caring occupation, nurses alongside other medical staff get overwhelmed with work and get demotivated when they are not able to complete the treatment due to lack of medical facilities. The basic facilities such as gloves or even wheel chairs are not available to help the sick patients to be moved from one area to another. The scenario is stressful and sometime cause health work force seem to lack of empathy to the patients. Lack of essential diagnostic machines and other facilities including laboratory reagents and drugs cause patients dissatisfaction when visiting a health facility and lack expected services.

Hypothesis Testing

H01: *There is no statistically significant relationship of physical infrastructure to health care employees on service delivery has a positive significance in devolved health care service delivery.*

Table 6: Model Summary Coefficients of the Relationship between Physical Resource Infrastructure and Health Sector Service Delivery

R	R Squared	Adjusted Squared	RStd. Error of the Estimate	Change Statistics				
				R Squired Change	F Change	df1	df2	Sig. Change
.563 ^a	.317	.313	.15650	.317	83.942	1	181	.000
a. Predictors: (Constant), Physical resource infrastructure								
b. Dependent Variable: Employee service delivery								

Source: Field Research 2019

The model summary in Table 6 revealed that physical resource infrastructure when existing as the only variable, explain 31.3% variation on employee service delivery ($R^2 = 0.313$). This implies that there are other factors that explain the rest of the variation.

Table 7: Physical Resource Infrastructure on Service Delivery

	Sum of Squires	Df	Mean Squire	F	Sig.
Regression	2.056	1	2.056	83.942	.000 ^b
Residual	4.433	181	.024		
Total	6.489	182			

a. Dependent Variable: Employee service delivery

b. Predictors: (Constant), Physical resource facilities

Source: Field Research 2019

The output in Table 7 indicates that the regression model of physical resource infrastructure and employee service delivery; is significantly better prediction of the level of employee service delivery ($F_{(1,181)} = 83.942, p = 0.001 < \alpha = 0.05$).

Table 8: Physical Resource Infrastructure and Employee Service Delivery

	Unstandardized Coefficients		Standardized T Coefficients		Sig.
	B	Std. Error	Beta		
(Constant)	.290	.034		8.456	.000
Physical resource infrastructure	.707	.077	.563	9.162	.000

Source: Field Research 2019

The outcome in Table 8 revealed that physical resource infrastructure significantly positively predicts the employee service delivery ($t = 9.162, p = 0.001 < \alpha = 0.05$). The study therefore rejects the null hypothesis and concludes that physical resource infrastructure is a key component in determining the level of employee service delivery as indicated in the predictor model in Equation:

$$\text{Health sector service delivery} = 0.290 + 0.563 * \text{terms \& conditions of service}$$

Eq. 3

The third hypothesis of the study stated that physical resource infrastructure, has no significant effect on service delivery. However, the study findings revealed that physical resource infrastructure had coefficients of estimate which were significant basing on ($\beta_3 = 0.289, P < 0.05$) implying that the researcher rejected the null hypothesis. The results suggested that physical resource infrastructure contributes to improved service delivery. The study findings concur with suggestions of Artikison et al (2011) that infrastructure must integrate the hospital, as the centre of acute patient care into broader health.

Table 9: KMO and Barlett's Test

KMO and Bartlett's Test

Kaiser-Meyer- Olkin Measure of Sampling Adequacy.		.738
	Approx. Chi-Square	305.195
Bartlett's Test of Sphericity	Df	10
	Sig.	.000

Source Field Research 2019

According to Table 9 Bartlett's Test value is highly significant $p = 0.001 > \alpha = 0.05$ which leads to a conclusion that the variables are related to each other. This leads to conclusion that the variables are related to each other.

Sampling adequacy was tested using Kaiser Meyer-Olkin (KMO measure) of sampling adequacy as evidenced in table 4.18; KMO had a value of 0.78. Coronbach's Alpha physical resource had a value of 0.705.

To achieve quality health care service delivery, facilities such as equipment must be present for effectiveness, efficiency, timeliness and sustainability. Infrastructure includes the built environment and supporting elements; equipment; that enable access of information technology systems and their management.

Service Delivery

This section of the analysis highlights the results on service delivery. Service delivery was looked at in terms of access; reliability; responsiveness; empathy; and assurance as evidenced by Table 10.

Service delivery was looked at in terms of access on availability of physical facilities, equipment for service delivery majority of respondents 48 (26.2) % disagreed that functional facilities were available all the time with Mean= 2.53 SD =1.197

Service delivery was looked at in terms of access to all types of medical treatment 70(38.3) % respondents strongly disagreed that all types of serves are accessible with Mean= 2.04 SD = 1.20.

On promptness of service delivery results showed that majority of respondents 49 (26.8) % agreed that services were prompt with Mean=2.81 and SD =1.238
Access to service delivery was looked at on the availability of facilities such as drugs and personal protective equipment majority of respondents 46 (25.1) % Mean=2.60 and SD =1.231.

Service delivery results on empathy support of patients by health workforce majority of respondents 49 (26.8) % agreed with Mean=3.03 and SD =1.172

Service delivery results on use of technology (ICT) to reduce waiting time, majority of respondents 40 (2.19) agreed with Mean=2.75 and SD 1.230

Table 10: Health Sector Service Delivery

ITEM	N	S.D	D	N	A	SA	No response	Mean	SD
In my hospital physical facilities are available, with equipment to facilitate service delivery to patients	183	48 (26.2%)	31 (16.9%)	54 (29.5%)	32 (17.5%)	7 (3.8%)	11 (6.0%)	2.53	1.197
In my hospital there is access to all types of medical services for all kinds of patients	183	70 (38.3%)	50 (27.3%)	25 (13.7%)	20 (10.9%)	4 (2.2%)	14 (7.7%)	2.04	1.120
There is prompt service in my hospital and patients reduced waiting time	183	33 (18.0%)	39 (21.3%)	39 (21.3%)	49 (26.8%)	12 (6.6%)	11 (6.0%)	2.81	1.238
There are adequate facilities to serve patients e.g. drugs, personal protective device all the time	183	41 (22.4%)	46 (25.1%)	35 (19.1%)	41 (22.4%)	9 (4.9%)	11 (6.0%)	2.60	1.231
In this hospital there is enough facilitation for referral cases, and adequate transport	183	30 (16.4%)	31 (16.9%)	34 (18.6%)	63 (34.4%)	12 (6.6%)	13 (7.1%)	2.98	1.245
Staff in this hospital are empathetic, great care and assurance is given to patients	183	56 (30.6%)	47 (25.7%)	38 (20.8%)	23 (12.6%)	6 (3.3%)	13 (7.1%)	2.27	1.160
The employee advanced technology skills in this hospital facilitates fast flow of work, with	183	18 (9.8%)	28 (15.3%)	58 (31.7%)	54 (29.5%)	9 (4.9%)	16 (8.7%)	3.05	1.069
In this hospital there is no empathy to patients on service delivery	183	16 (8.7%)	29 (15.8%)	49 (26.8%)	52 (28.4%)	24 (13.1%)	13 (7.1%)	3.23	1.172
In this hospital periodic survey of the hospital by administrators has improved quality of service	183	22 (12.0%)	28 (15.3%)	57 (31.1%)	49 (26.8%)	14 (7.7%)	13 (7.1%)	3.03	1.143

CONCLUSION

The study concluded that lack of physical facilities in health sector was a major challenge on effectiveness of health care service delivery. Further concluded that the workforce in health sector lacked job satisfaction as result of poor facilitation of functional equipment, required physical facilities, technology and essential consumables for their job performance.

RECOMMENDATION

This study recommends that for health sector service delivery to be effective and accessible to patients the workforce for health and physical resource infrastructure, be

adequate and available. The human practices must be affected to motivate the workforce and proper management of physical resources carried out.

The research study further recommends that health sector workforce be facilitated with necessary non pharmaceuticals consumables to motivate them to offer quality services to the patients.

It was concluded that as result of devolution, there has been acquisition of medical equipment in Nyeri County. The study findings revealed that most of the equipment available were not being utilized because of lack of technical trained staff to operate, maintain and repair them.

The findings of the study further revealed that health infrastructure facilities were in adequate and patients shared the available facilities including beds even in maternity wards. It was concluded that the health policy (2014-2030), be enacted, as a guide to help to plan health care services management at all levels for improvement of health sector service delivery. Further concluded that there is need for the county to allocate funds for procurement of more equipment to replace those in poor state that are non-functional.

On geographical aspect, this study was limited to three sub county and one referral hospitals in Nyeri County. It would therefore, not be appropriate to generalize the finding to the whole health sector population. For this reason, further empirical studies in different regions are needed.

REFERENCES

- Bassett; J. N. & Lloyd, G.C. (2005). Does Herzberg Motivation Theory have Staying Power? *Journal of Management Development*, 24(10), 929_943)?
- Bossert, T. J., & Beauvais, J. C. (2003), Decentralization of health systems in Ghana, Zambia, Uganda and the Philippines: a comparative analysis of decision space. *Health policy and planning* 17(1), 14-31
- Boshoff, C., & Gray, B. (2004). The relationship between service qualities, Customer Satisfaction and Buying Intentions in the Private Hospital Industry. *South African Journal of Business Management*, 35(4), 27-37.
- Carrillat, F.A., Jaramillor, F., & Mulki, J.P. (2007). The Validity of the SERVQUAL and SERVPERF Scales. A Meta-Analytic View of 17 Years of Research across Five Continents. *International Journal of Service Industry Management*, 18(5), 472-490.
- Gatero, G.M. (2011). Utilization of ICTs for accessing health information by Medical professionals in Kenya. *A case study of Kenyatta National Hospital*; *Journal of Health Information in Developing Countries*. Jersey: Prentice Hall
- Herzberg F., (1969). *Work and nature of man* (3rd Edition). Cleveland; Ohio: World Publishing Co.
- Kilonzo, S., Kamaara, E. & Magak, K. (2017). *Improving Access to Maternal Health Care through Devolution in Western Kenya: Interrogating Decentralization in Africa*. IDS Bulletin, 48(2), 91-108
- Kombo D.K. & Tromp L.A. (2006), *Proposal and Thesis Writing: An Introduction* Nairobi: Paulines Publications
- KPMG (2015), *Devolution of Healthcare Services in Kenya*.
- KPMG Africa, (2014), *Devolution of Healthcare Services in Kenya*, <https://www.kpmg.com/Africa/en/IssuesAndInsights/ArticlesPublications/Documents/Devolution%20of%20HC%20Services%20in%20Kenya.pdf>, accessed 8 September 2015.
- MoH (2014) *Kenya Health Sector Reforms and Roadmap Towards Universal Health Coverage*
- MoH (2015). *Kenya Demographic and Health Survey (KDHS)*, Key Health Indicators Ministry of Health, 2014, *Kenya Health Policy 2012–2030*, Nairobi: Ministry of Health.
- Muoko, B. and Baker C., (2014). *Decentralization and Rural Service Delivery in Uganda*, Kampala: International Food Policy Research Institute.
- Mwai, D., Barker, C., Mulaki, A. & Dutta, A. (2014). *Assessing county health system readiness in Kenya: A review of selected health inputs*. Retrieved from www.healthpolicyproject.com 26/11/2016
- Mwangi, C., (2013). *Accessibility to the Kenyan Healthcare System: Barriers to Accessing Proper Healthcare*, unpublished PhD thesis, Arcada University.

- Ndavi, P. M., *et al* (2009). Decentralizing Kenya's Health Management System: An Evaluation. Kenya Working Papers No. 1. Calverton, MD: Macro International Inc.
- Njuguna, J., Mwangi, P., & Kamau, N. (2014). Incentives among health workers in a remote Kenyan district: implications for proposed county health system. *J Health Care Poor Underserved*, 25(1), 204-214.
- Robbins, S.P., (2001). *Organizational Behaviour in South Africa*, 9th Edn. New
- World Bank (2014). *Laying the Foundation for a Robust Health Care System in Kenya. Kenya Public Expenditure Review*. World Bank Group
- World Health Organization (2010). *Countdown to 2015-decade report (2000–2010): Taking Stock of Maternal, Newborn and Child Survival*. Geneva: WHO and UNICEF