DEVOLUTION AND ITS EFFECT ON THE EXPANSION OF MEDICAL INFRASTRUCTURE IN NAKURU COUNTY, KENYA

Edward Otieno Omondi.
Student, Master Policy of Arts (Public and Administration), Kenyatta University Kenya.
Felix Kiruthu.
Lecturer, School of School of Law, Arts and Social Sciences, Kenyatta University, Kenya.

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ABSTRACT

Medical infrastructure is regarded as among key service delivery component in the health care system and it relates to all physical infrastructure (medical heath facilities), medical equipment (inpatient beds), transport system (Ambulance services) and Information, Communication and Technology (ICT) required for effective service delivery. Literature reviews reveal so little about devolution effects on medical infrastructure expansion as a number focus on administration, human resource and funding despite the uneven health care service distribution and coverage hence indicating scholarly gaps that need to be addressed. This study hence sought to examine the effect of devolution on the expansion of medical infrastructure in Nakuru County, the study sought to investigate devolution impact on medical infrastructure expansion in Kenya: case in study of Nakuru county. The investigation was guided by the following specific objectives: to investigate the effect of devolution on the expansion of medical laboratories, expansion of surgical theatres as well as to assess the effect of devolution on the expansion of maternity wards in Nakuru County, Kenya. The investigation adopted a descriptive research design. The population target was 4840 health workers in the purposively selected public hospitals in Nakuru County. The research employed Agency theory. Using purposive sampling technique the hospital heads were included in the sample size while the health workers were selected using a simple random sampling technique. Sampled size was 126. Primary data was obtained using Interview guides and questionnaires. The hospital heads were interviewed while the health workers responded to the questionnaires. Research supervisor was consulted in the review of content and predictive validity. Test- retest coefficient tested the reliability of research instrument; a reliability of 7χ¼ was accepted. SPSS helped analyze data obtained. Interpretation and discussion of the results were guided by the investigation objectives. The research findings revealed that devolved medical laboratories have an inverse and insignificant effect on Medical Infrastructure Expansion in Nakuru county (β1=-0.209, p-value= 0.322). The findings also showed that devolved surgical theatres have an inverse and insignificant effect on medical infrastructure expansion in Nakuru county (β2=-0.376, p-value= 0.063). The research further concludes that devolved maternity wards had a productive and remarkable impact on medical infrastructure expansion in Nakuru county (β3=0.938, p-value=0.000). Study concludes that there were limited maintenance and sustenance mechanism for the laboratory infrastructure leading to dysfunctional medical laboratory equipment and infrastructure. The research also indicated that limited number of reliable sources of power and power back-up plans negatively affected the expansion of surgical theatres. Study also indicates that devolution greatly influenced the establishment of more maternity wards in Nakuru county. The study recommends the Kenyan government and policy implementers to consider equipping surgical theatres and enforce already existing

laws on medical equipment procurement and asset acquisition to help enhance devolved medical theatres in the devolved units and nationally. Devolved units through the Ministry of lands should also consider acquiring and utilizing idle public lands for the expansion of medical infrastructure. The study further recommends the Kenyan government to consider increasing funds and resources on research and innovation program including training for surgical and laboratory equipment operators as well as embark on a recruiting exercise for midwifery and nurses in Nakuru county as well as the country at large.

Keywords: Devolution, Expansion of Medical Laboratories and Expansion of Surgical Theatres.

INTRODUCTION

Effective medical care infrastructure is paramount for patients' well-being and safety and according to Reinartz (2004) ensuring exceptional provision of service that meets the threshold of consumer fulfillment and experience. According to American College of Physicians-ACP (2012), in America; public health infrastructure components include several federal government departments and a network of approximately 3000 resident public health agencies, county and city health departments and public health responsibility lies with a number of federal agents including the Department of Defense, Transport department, Federal Emergency and Management Agency as well as Veteran Affairs among other agencies.

In Africa, unequal distribution of medical care system resources including infrastructure as a result of urbanization in most nations like South Africa is a major cause of poor quality of health service as well as derailed medical infrastructure expansion (Turok 2012:8). As sudden overpopulation of people into the cities continues, this stretches the health service beyond its operations and functions as a result of fewer medical health facilities (Mokoele, 2012). Lodenstein and Dao (2011), in their study, "devolution and human resources in Primary Healthcare in Mali (Rural)", indicate that Rural Mali significantly benefitted from the devolved system in the area of primary healthcare through improved staffing, accountability and effective responsiveness due to the expansive distribution of resources.

Similarly, International Monetary Fund (2016) survey, observes that available external funding and constraints attributed to administrative capacity are the leading stumbling blocks to proportional increment and expansion of public medical infrastructural investment in the most low income countries. These findings are supported by Barber and Scarcelli (2010) who adds that the

physical infrastructural state including design, ambiences as well as social factors are critical indicators of quality service and infrastructural expansion.

Despite the protracted general underfunding of public health system in Africa which continues to negatively influence the capacity of existing health systems, some few countries have devolved public health systems successfully, with a positive effect on infrastructure. Africa is said to be a highly centralized continent with regards to governance yet according to Mwenda (2010), in the recent past, most African countries have started reacting to the centralization impulse and ever since there has been a wave of decentralization in African countries. According to Nuguid, (2011), Rwanda's devolution in the reform of the health-care sector was a major success mainly because of its positive influence in efficiency; offering services and reducing infant death rates. This argument has been echoed by Thuku and Wario (2014), who noted that through accelerated responsiveness of health systems and devolution the locals' needs in Rwanda had been fulfilled.

Since the advent of devolution in Kenya, the devolved units have exercised some level of authority in healthcare service provision through planning scarcely distributed resources, medical infrastructure monitoring, health infrastructure development as well as health servicescoordination (Omolo et al., 2010). Devolution efforts were put to test after the 2010 promulgation of the Kenya constitution and as revealed by Williamson and Mulaki (2015), the Kenyan health system has been critically transformed as devolution significantly changed the health sector procurement, human resource, funding, structure as well as governance.

With the establishment of devolved units in 2013, Kenyan public health care structure waspartially transferred to the devolved units and before this, plans by Ministry of Health were underway to decentralize health-care services to increase grass-root administrative authority in governance, capital dispersion, and medical care administration (Kenya Constitution, 2010). The Transition Authority (TA) had established Functional Assignment Competency Team (FACT) that comprisedof senior health ministry staff and development partners to lead, regulate and supervise transfer of authority to the medical devolved units (Williamson and Mulaki, 2015). Devolution's goal was to increase community participation in leadership, governance, and implementation of essential infrastructure, public well-being and medical services (MOH, 2002).

However, since 2013 after the first Kenyan election was held under a devolved system, despite the negotiated working relationship among the central and devolved units with regards to power and revenue sharing, a handful of fiscal, administrative and political challenges have also ensued touching on service delivery (World Bank, 2019). Kiprono and Nzulwa (2017) studying the deciding factors of medical health provision communal health institutions in Nakuru County, indicates the association between health service delivery in medical facilities, personnel training, management style, and information technology as positive and significant however, makes no mention of devolution and medical infrastructure expansion. Soila et al. (2015) evaluating the

impact of devolved units on healthcare provision Nakuru County, concludes that after devolution, leadership and governance system significantly rated poorly so did human resource management as well as deteriorating health-financing thus focusing so trivially on infrastructure expansion. This research thus investigated devolution impact on the expansion of medical infrastructure in Nakuru County, Kenya.

Statement of the Problem

Devolution of public health services to the devolved units has had a notable impact on medical infrastructure expansion KIPRA (2016). Reviewed literature however, reveals that few researches have been conducted on devolution impact on medical infrastructure expansion in Nakuru County. For instance, Arale and Kiruthu (2019) investigated devolution impact on Human Resource Function performance Garissa's health institution, and noted that human resource performance in healthcare was affected by devolution. Njoroge and Moi (2020) studying the Devolution effect on Healthcare Administration in Murang'a County, revealed that devolution enhanced administration of health care through the expansion of managerial space as well as the overall improvement of service delivery. Ismail (2018) notes a degree of confidence in devolved healthcare services hospital infrastructure by patients in Mandera County. These studies reveal so little about devolution influence on infrastructure as most focus is on administration, human resource and funding despite the uneven health care service distribution and coverage hence revealing scholarly gaps that need to be addressed. This study hence sought to examine the effect of devolution on the expansion of medical infrastructure in Nakuru County,Kenya with the main focus on medical laboratories, surgical theatres as well as maternity wards.

Objectives

- To investigate the effect of devolution on the expansion of medical laboratories in NakuruCounty.
- To examine the effect of devolution on the expansion of surgical theatres in Nakuru County.

LITERATURE REVIEW

This section delves into the theories on which the study was anchored together with the empirical literature. A conceptual framework is also presented.

Theoretical Framework

Theory of Devolution

Ndegwa 2002 indicates that centralization was not a desired as an organizational structure nor was it suggested and decentralization was only seen as cumbersome to implement and preserve. According to Common Wealth Secretariat and Common wealth Local government forum (2001) devolution notion is premised on nonperformance by the central government to provide, such taxation or in provision of service. Bossert and Beauvais (2002) argue that transformation in devolution are inherently political, resulting to authority transformation and control among players, due to the shift of management, constitutional and financial obligation from national to devolved governments and according to Cheema and Randinelli (2007), as a form of "power separation", devolution transmits rule and governance from national to county authority through interchanging association, taking power to the grassroots empowering locals to shape provision of service, increase receptiveness and swift enforcement by breaking concentrated bureaucracy, improving standard, clarity and answerability through electorate policy gate keeping and decision making hence removing bottlenecks causing inequalities. Eaton et. al. (2010), indicate that devolution history in the past have exhibited the intricacy of the system by experience that the findings can be unforeseen and inequalities only continue to increase and not reduce. Conyers (2007, p21) argues that, little has been done through decentralization for improved quality and standard of public services in Africa.

Empirical Literature

Effect of Devolution on Health Care Infrastructural Expansion

According to Simiyu and Mweru (2014) this concerns devolving of functions including the management, finance and how decisions are made at the National government to the devolved semi- autonomous units. Willett and Giovannini (2014) note that in the United Kingdomdevolution of authority involved citizens minimally transforming the stress on leadership as well as decreased financial access by grass-root administration. According to Haughton et. al. (2008) in Africa after most Nations gained their independence, oneparty system was upheld however, this system would later be protested as a result of oppression, corruption and abuse of power by those in authority and the differences in ideologies saw most countries advocate for multi-party democracy. Since devolution and consequently the transfer of substantial functions of medical care service provision from National to the 47 semi-autonomous county governments, medical infrastructural expansion has had some impact. WHO (2010)report indicates that medical infrastructure strengthening is among the critical elements of health service towards attaining health-related SDGs and lists 8 key components of good servicedelivery as; accessibility, coverage, continuity, comprehensiveness, quality, person-centric, coordination, as well as accountability. In the US for instance medical

infrastructure includes about $0.58\chi10^4$ medical facilities, $1.6\chi10^4$ rest homes as well as $1.3\chi10^4$ rehab centres (US Census Bureau, 2012). Kenya medical infrastructure expansion has however been derailed by poor infrastructural development strategies, human resource, poor financial resource distribution an health system governance among other internal and external factors before and even afterdevolution (East et al., 2014).

Secondly, the general service readiness is another summarized indicator monitoring medical infrastructure expansion as it entails health facilities capacity to offer medical care services that is; available components necessary to provide services for instance human resource, infrastructure/amenities, basic equipment and supplies, laboratory tests, medicines and commodities. In the US for instance in 2010, there existed 16.4 million health workers which comprised of approximately 838,000 specialized Medical doctors (MDs), over 70,480 Doctors of osteopathic medicine (DOs) as well as about 2.6 million professional nurses (US department of Health and Human services, 2013) in service provision readiness to the US population. MOH (2016) reports that there exists limited bed capacity with 14 of 1000 beds per population against a global average of 27 of 1000 and medical equipment for diagnostics, treatment and management of patients across the Country as well as limited human resource "technical capacity" for health to operate medical machine and equipment.

Service-specific availability is also another form of medical infrastructure expansion monitoring indicator that looks into whether a specific service is offered or not. Normally this is depicted by the part of service delivery providing unique services and facility capacity to offer medical services per 10000 populations (WHO, 2010). Another medical infrastructure expansion monitoring indicator is service-specific readiness which entails the capacity of health facilities to provide a specific service checked by the number of trained workforce, guidelines (policies), diagnostic capacities, equipment and supplies, medicines and commodities. Health care quality is another medical infrastructure expansion monitoring indicator measured by the effectiveness, safety, timeliness and patient centric dimensions. Kenya still lacks proper coordination of transport for emergency services with poorly and inadequate emergency call centres and poorly trained and inadequate staff involved in the areas of emergencies (WHO, 2016). The analysis of 2013 SARAM and PETS-plus data concludes that there exists a significant variability in the readiness of county health system to provide medical care under devolution, additionally counties that comparatively out did others among the populated indicators may still have delimited medical care inputs as presented by the national and international regulations. The study further notes that the listed counties fell short of the national medical professional population density criterion. A study by Donde et al. (2020) focusing on health workforce enforcement of universal medical care in Nakuru County, concludes that thereis need for adequate recruitment of specially groomed, and highly skilled medical care workforceby devolved government but failed to mention medical infrastructural expansion.

Devolved Medical Laboratories

According to Ibis World (2021) there exists approximately 29,227 diagnostic and medical laboratories in the US and in 2017 the United States healthcare system had over 5500 hospitals with approximately 900000 beds according to AHA (2017a), a number of which are charitable hospitals (Phelps, 2013, p. 214) and from 4862 facilities, a majority are run by the community, and while 401 are nonfederal psychiatric certified hospitals, federal government owns 212 facilities, nonfederal long-term care boasts of 79 and prison has 10. National Health Statistics Reports (2017) indicates that in 2010 over 48.3 million operative and non-operative functions took place during 28.6 million ambulant operation visits to medical and Ambulatory operation facilities in general in the US. This greatly contributed to quality health care service including infrastructural expansion despite the complex American health system (Sezer and Bauer, 2017). Uneven distribution of healthcare system resources as a result of urbanization in most African countries like South Africa is a major cause of poor quality of health service (Turok 2012:8) as sudden overpopulation of people into the cities stretching the health service beyond its operations and functions as a result of fewer medical health facilities including laboratories and surgical theatres (Mokoele, 2012). There has been unequal implementation of standard laboratory policies and infrastructure in most third world countries (in Africa). The variation being brought about by the limited resource capability (Ishengoma et al., 2009, Kenya et al., 2012) as well. IMF (2016) survey reveals foreign aid availability and administrative capacity constraints as the main impediments to upgrading public infrastructure investment in a number of third world nations. However, nomentioning of devolution's impact on medical infrastructure. Barber and Scarcelli (2010) study concludes that the physical infrastructural state (design, ambience, social factors, space) of a facility greatly contributes to quality of health service. Medical.

Koenig and Peterman 2009, indicate that rural medical facilities have over the years struggled with maintenance and sustenance leading to abrupt foreclosure of most of them as the local communities continues to grapple with medical health services, and by 2004 according to Muga et al., 2004 there existed 562 hospitals, 691 health centres and 3515 dispensaries. However, the numbers have since been impacted after devolution hence affecting medical infrastructure expansion. The investigation hence sought to address devolution effect on the expansion of medical laboratories in Nakuru County?

Devolved Surgical Theatres

Minor and major surgical operations remain critical services to both patients and medical practitioners who on regular basis seek out new ways and technology to successfully conduct them (Nordberg et. al., 2002) adding that in first world countries, (US, Canada, Europe, Asia) approximately 5000 to 9000 major surgeries are conducted per 100,000 population annually, in Africa the statistics are however lower courtesy of inadequate surgical theatre infrastructure, poor

funding and limited equipment and personnel; for instance in East Africa, major medical surgeries conducted ranges between 70 and 500 annually. In Kenya for instance Africa Journal Health publication (2002) indicates that between the period of 1990 to 1991, a total of 3, 415 major surgeries were conducted in Meru County hospitals and clinics signifying that only about 7-50% of basic need was available in the rural set up.

According to Okumu (2017) the provision of standardized equipped surgical theatres, wards as well as adequate quality of medical care services coverage remains an uphill task for most African nations in the south of the Sahara attributed to economic constraints and insufficient resources. This has agitated a number of third world nations to champion for decentralization asa critical component to push for medical care transformation in the spirit of making good use of limited resources. Swanson and Davis (2003) in a Services Marketing journal argue that the provision of up-to standard services significantly affects customer satisfaction. Henry (2021) revealed, "Obstetric emergency services decentralization indicated a positive result and should be encouraged. A paltry 0.3 stand-alone generators were however, functional in sub- Saharan Africa" (pp211-214).

In Kenya since devolution; National, County and sub-County medical facilities were furnished with specialized equipment through the medical equipment "leasing project" which included surgical equipment however, the rationale of operation personnel and maintenance of such equipment remained a daunting task for the devolved governments (IEA, 2020), as the project aimed at supplying, installing, training users and offering maintenance and repairs of surgical operation equipment, diagnostic medical equipment this in essence to promote quality, affordable and efficient health services through medical infrastructure expansion. Pepela et al., 2016 notes that there exists limited surgical bed capacity with a staggering 14 beds per 10000 people against the global average of 27 as well as medical equipment for diagnostics, surgical, treatment and management of patients across the Country despite devolution of health services inKenya this in essence affecting medical infrastructure expansion this contradicting Wamai (2004); MoH (2002) and MOH (2016) reports placed Nyanza region at the top with the number of hospital beds and cots per 100000 population while Central, Northeastern and Eastern regions having a devastating ratio of hospital beds and cots per 100000 people.

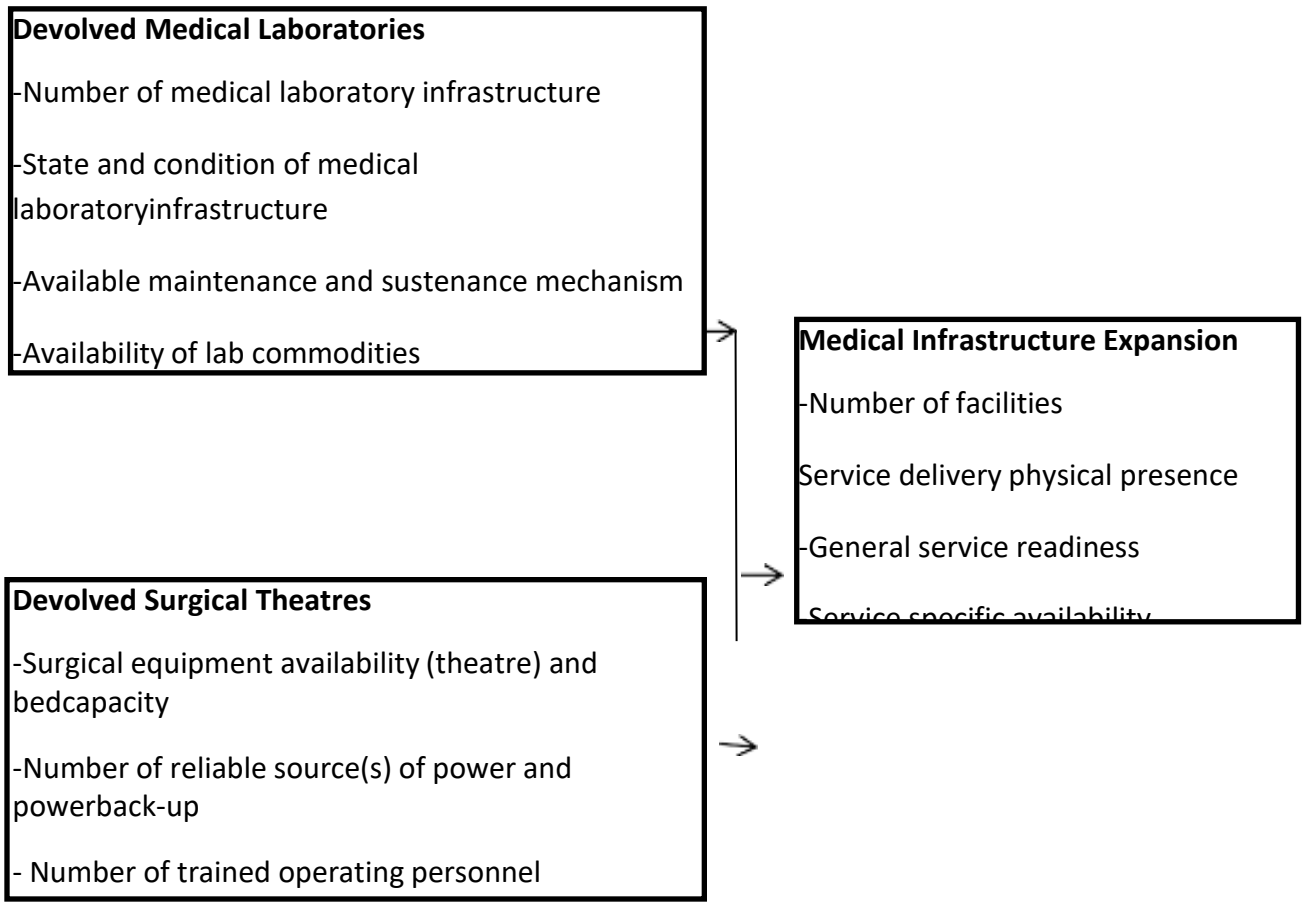
Bashir and Kiruthi (2018) investigating the Healthcare provision effect on infrastructure in Mandera county, indicates a significant impact of transfer of authority from the national government in medical care with a moderate positive effect on physical infrastructure and a strong positive effect on water connectivity. A healthy nation is a wealthy nation, so goes the adage and Countries that prioritize their health-care systems are often believed to enjoy greater economic stability. To ensure standardized and dependable medical care provision and other health benefits for the constituents, county government of Nakuru heavily invested in medical care infrastructure since 2013. The successful upgrade of Naivasha Referral Hospital to level 5 has seen the facility

acquire complete dialysis machine and computerized axial tomography machine, modernized radiogram unit as well as surgical equipment. More patients have been accommodated as a result of a wholesome refurbishment of maternity and general wards in Naivasha. According to NCIDP (2018) report, Molo Sub-County Hospital recently laid a foundation for an ultra-modern out-patient department positively impacting on medical infrastructure. The studies reviewed hence reveal knowledge gapsthat need further investigation regarding devolution effect on medical health infrastructure. This research therefore investigated the effect of devolution on surgical theatres in Nakuru County.

Conceptual Framework

The conceptual framework indicates how different variables are related to each other.

Independent Variables) **(Dependent Variable)**



RESEARCH METHODOLOGY

The study used descriptive (statistical) research design hence quantitative (objective) and qualitative (subjective) methods were applied obtaining meaningful useful facts from the sample

population on devolution impact on medical infrastructure expansion in Nakuru. Nassaji (2015), notes that descriptive survey aim to discuss instances and their innate aspects. It gave an in depth information on the characteristics and relationship of the investigation. This research took place in Nakuru County. It is among fourteen counties found in the one-time province of Rift valley, (KNBS, 2019). Nakuru is county number 32 among the 47 Counties founded after the promulgation of the 2010 Kenya constitution; situated in Rift Valley region (South-eastern part); surrounded by seven counties; Baringo to the north while Laikipia to the north east, east by Nyandarua, Bomet and Kericho to the west, Kajiado to the south and Narok to the south west (KNBS, 2019). The target population was 4840 from the purposively selected 7 county and sub county referral hospitals including Nakuru Level 5 Hospital, Naivasha, Gilgil, Molo, Olenguruone, Subukia and Soin Sub-County hospitals. This investigation applied "stratified random sampling" technique (stratum of 40 in each hospital) to determine the count of respondents from the 7 selected public hospitals to be part of the sample size. Using a purposive sampling technique, 7 hospitals were selected to be in the sample size. Using stratified random sampling technique, 126 respondents were in the sample size and this included 119 health workers and 7 hospital heads from a target population of 4840.

Questionnaire(s) and interview guides were utilized in the study. The questionnaires distributed to the health workers (doctors, clinicians, nurses and laboratory technologists; responded to the questionnaires) had open and close ended questions. The distribution was done randomly from the selected 7 hospitals in Nakuru County. The interview guide(s) on the other hand were administered to the 7 hospital administrators (medical superintendents; were interviewed) from the selected hospitals and both the instruments yielded primary data for the investigation. Investigator conducted a feasibility study for questionnaires' validation before their distribution. A feasibility study group of 20 respondents was chosen from the population target to test research instrument reliability. Data collection tools (questionnaires) were administered during the weekday and collected after the week to allow time for the respondents to fill them in and conducted face-to-face interviews for departmental heads after scheduling for appointments; the researcher also audio recorded and took notes during key informant interview sessions. Descriptive statistics that is mode, frequency, percentages and mean were used in the analysis to give a summary of the gathered information while tables and figures projected inferential statistics. Results were displayed using bar graphs, and frequency tables

RESULTS AND FINDINGS

From the health workers (employing questionnaires), a response rate of 84.87% was obtained. Consequently, 7 "face-to-face" interviews were conducted (interview guides) obtaining 72.61%, moreover, 78.74% was obtained from the total sample size; however 60% rate of response qualifies for data analysis (Fincham, 2010) meaning 75% is over and above in any investigation. Results on health workers' gender revealed that 66.3% (n=7) of the health workers were male while 33.7%

(n=34) were female. The findings reveal that medical field is male dominated however the female counterparts are fast penetrating into the field addressing the question on gender parity (equality). On the respondents' age, 32.7% (n=33) interviewers ages were in the range of 18 to 25years, as well as in the range of 26 to 31, whereas 23.8% (n=24) health workers ranged in the bracket of 32 to 38 and 10.9% (n=11) of the rest clocked 39 and above. This research indicates that most health workers were aged between 18 and 31 years. Results on marital status show that 79.2% (n=80) of health workers, were married as opposed to 20.8% (n=21) who were not married. These findings imply that a number of health workers in Nakuru County were married.

Results on education attained indicated that 0.505 (n=5.1ϰ10) of the health workers attained diploma level, 0.297 (n=3.0ϰ10) indicated that they attained higher diploma, 16.8% obtained their college degree while 3% (n=3) of the respondents attained their post graduate degree. The results imply that most health workers in Nakuru county attained diploma level of education as compared to Ismail (2018) findings in which most interviewees at 0.51(n=6.9ϰ10) graduated with a Bachelor's degree, 0.29 (n=3.9ϰ10) of the health workers attained Master's degree and 0.2 (n=2.8ϰ10) interviewees were diploma graduates; showing an upward trajectory of expertise among medical workforce in the county of Mandera as compared to Nakuru.

Results on the period that the respondents had practiced medicine show that 62.4% (n=63) interviewees worked as health workers not more than 5 years, 29.7% (n=30) showed for between 6 and 10 years while 7.9% (n=8) indicated for more than 10 years.The results imply that a number of health workers had practiced medicine for less than 5 years.

Devolution and Expansion of Medical Laboratories

The study participants responded on devolution impact and expansion of medical laboratories and theoutcome was as below; Table 1.

Table 4.7 Devolution and Expansion of Medical Laboratories

	Mean	**Std Dev**	**SD**	**D**	**NS**	**A**	**SA**
Number of devolved Medical Laboratories has led to expansion of Medical Infrastructure	**4.43**	**1.276**	12.4	12.3	0.0	2.0	73.3
Available number oflaboratory electronicmicroscopes has led to expansion of medical infrastructure	3.53	1.134	80.3	13.0	1.0	1.0	4.7
Number of laboratory incubators has led to expansion of medical infrastructure	4.35	1.247	74.2	11.3	0.0	3.0	11.5

The physical state and condition of devolved medical laboratories has led to medical infrastructure expansion.	2.07	1.557	59.4	14.9	2.0	6.9	16.8
Available structuremaintenance andsustenance mechanism for devolved medicallaboratories has promotedthe expansion of medical infrastructure.	1.74	1.481	77.2	3.0	4.0	15.8	**0.0**

Source: Researcher (2023)

The findings indicate that the interviewees concurred at 73.3%, 4.43 mean and a probable error of 1.276 that; number of devolved medical laboratories led to expansion of medical infrastructure. These results agree with Ibis World (2021) and Sezer and Bauer (2017) that the existence of approximately 29,227 diagnostic and medical laboratories in the US greatly contributed to quality health care service including infrastructural expansion despite the complex American health system. The respondents however, are in disagreement at 2.07 mean and probable error of 1.557 that physical state and condition of devolved medical laboratories has led to medical infrastructure expansion. They further disagreed at 1.74 mean and probable error of 1.481; available structure maintenance andsustenance mechanism for devolved medical laboratories has promoted the expansion of medical infrastructure. These results disagreeing with studies by Barber and Scarcelli (2010) that there exists physical infrastructural state including design, ambience as well as social factors which are critical indicators of quality health service.

Health workers also noted other benefits realized through devolved medical laboratories. From the results, they pointed out that devolved medical laboratories led to efficient laboratory services, expanded laboratory services as well as increased laboratory service accessibility.

> *"Devolution in its totality has led to significant transformation on the medical infrastructure; for instance our laboratory services have been tremendously expanded to offer immunohematology, cholesterol testing, flow cytometry, immunochemistryamong other services. We have however had some challenges regarding the laboratory workforce. Both the National and the County government(s) should focus more on funding tertiary education for medical professionals to enhance medical services now and in future," Nakuru Level 5 Hospital Respondent, Female 40.*

These findings agree with Sezer and Bauer (2017) studies that indicated a great contribution to

quality health care service including infrastructural expansion despite the complex American health system as a result of increased number of laboratories, medical facilities and theatres.

Devolution and Expansion of Surgical Theatres

The study participants (health workers) responded on devolution and expansion of surgical theatresas recorded; Table 2.

Table 2 Devolution and Expansion of Surgical Theatres

Question	Mean	Std Dev	SD	D	NS	A	SA
Reliable source of powerand power back-up planat thecounty medical units has helped medicalinfrastructure expansion.	2.72	1.727	35.6	25.7	2.0	2.0	32.7
Surgical theatreequipment; Neptune 3 availability in devolved medical units have supported medical infrastructure expansion.	2.31	1.832	64.4	2.0	2.0	2.0	29.7
The presence of surgicount surgical equipment has enhancedmedical infrastructure expansion.	4.45	1.274	73.0	11.3	2.0	2.0	11.7
Presence of trained surgical theatre equipment operators in the devolved medical units has led to increased medical infrastructure expansion.	1.80	1.569	77.2	3.0	1.0	0.0	18.8
Availability of repair and maintenance technicians for surgical theatre equipment in the devolved medical units has boosted medical infrastructure expansion	1.68	1.476	81.2	1.0	2.0	0.0	15.8

The results indicate that interviewees differed at 2.72 mean and a probable error of 1.727; reliable source of power and power back-up plan at the county medical units has helped medical infrastructure expansion. These findings are in coherence with Brehovska et al (2017) studies on medical institutes' power outage readiness and learnt that medical institutions' grey areas are represented by limited fuel reserves to attend to the needs of key electricity distribution; employees' ignorance inadequately trained and outdated generators. Consequently the results are incoherent at 2.31 mean and a probable error of 1.832; surgical theatre equipment availability and bed capacity in devolved medical units have supported medical infrastructure expansion.

These results are in agreement with Mutua and Wamalwa (2020) studies on Leasing of medical equipment project in Kenya that this promoted medical infrastructure expansion. The findings further disagreed with at mean 1.80 and a probable error of 1.569 that presence of trained surgical

theatre equipment operators in the devolved medical units has led to increased medical infrastructure expansion. The results also disagreed at mean 1.68 and a probability of error of 1.476 that available repair and maintenance technicians for surgical theatre equipment in the devolved medical units has boosted medical infrastructure expansion.

These results supporting a report by IEA (2020) which shows that in Kenya since devolution, National, County and sub-County medical facilities were equipped with specialized equipment through the medical equipment leasing project which included surgical equipment however, the rationale of operation personnel and maintenance of such equipment remained a daunting task for the devolved governments.

The participants were further requested to mention other benefits associated with devolved surgical theatres. From the findings, they indicated that the benefits included increased job opportunities, expanded theatre and surgical services, efficient and reliable theatre and surgical services, improved quality of health, specialized theatre and surgical services, improved health infrastructure as well as increased devolved units' revenue.

"I have worked in this department for more than 5 years and there has not been enough specialized health workers; only one radiotherapist and a neurosurgeon plus one medical equipment technician. We get funded through revenue allocation by the National government. Through devolution we have had job opportunities for surgeons, anesthetists, surgical support nurses as well as medical equipment technicians. Efficient and reliable theatre and surgical services have been boosted too," Olengureone Sub-County Hospital, Health Worker, Male 34.

These results are in coherence with IEA (2020) report that indicates that in Kenya since devolution, National, County and sub-County medical facilities were furnished with specialized equipment through the medical equipment leasing project which included surgical equipment.

CONCLUSION AND RECOMMENDATIONS

Conclusions

Research concludes that devolved medical laboratories have an inverse and insignificant effect on medical infrastructure expansion in Nakuru county. These findings reveal that devolution had increased the number of medical laboratory infrastructure; however, the state and condition of medical laboratory infrastructure remained poor derailing medical infrastructure expansion. Consequently, the research concluded that there were limited maintenance and sustenance mechanism for the laboratory infrastructure which also led to dysfunctional medical laboratory equipment and infrastructure in Nakuru county.

The research shows that devolved surgical theatres have an inverse and insignificant effect on medical infrastructure expansion in Nakuru county. These results denote that surgical equipment availability had a minimal effect on the expansion of medical infrastructure expansion. The study further indicated that limited number of reliable sources of power and power back-up plans negatively affected the expansion of medical infrastructure in Nakuru county. Consequently, the research revealed that limited number of trained surgical equipment operating personnel hindered the expansion of medical infrastructure in Nakuru county.

Recommendations

Investigation proposes to Kenyan government and policy implementers to consider equipping surgical theatres and enforce already existing laws on medical equipment procurement and asset acquisition to help enhance devolved medical theatres in the devolved units and country at large. Devolved units through Lands ministry should also consider acquiring and utilizing idle public lands for the expansion of medical infrastructure.

The study also recommends the Kenyan government to consider increasing funds and resources on research and innovation programs including training for surgical and laboratory equipment operators as well as embark on a recruiting exercise for midwifery and nurses in Nakuru county as well as the country at large.

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