

International Journal of **Health Sciences** (IJHS)

**Influence of Procurement Process on Availability of Essential Drugs
in Public Health Facilities in Mombasa County, Kenya**



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Influence of Procurement Process on Availability of Essential Drugs in Public Health Facilities in Mombasa County, Kenya

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Accepted: 20th Mar 2024 Received in Revised Form: 20th Apr 2024 Published: 20th May 2024

Abstract

Purpose: Procurement process and practices are crucial components in the successful realization of universal healthcare and in particular the availability of essential drugs. Despite multifaceted efforts and inputs to promote the quality of the procurement process challenges still exists in the availability of essential drugs. This study aimed to establish the influence of procurement planning, supplier selection, procurement financing and needs assessment on availability of essential drugs in the public health facilities in Mombasa County, Kenya. This was a cross-sectional descriptive study design which targeted level 4 and 5 health facilities in Mombasa County. The study target population was 1216 health workers who included medical laboratory personnel, clinical officers and medical officers, nurses, pharmacists and pharmaceutical technologists. The study sample was 301.

Methodology: Stratified sampling approach was used to distribute the sample among the cadre and random sampling method was used to select the respondents from each strata. Quantitative data was collected using a structured questionnaire.

Findings: The study found that procurement planning, supplier selection, procurement, financing and needs assessment were significant factors in influencing the availability of essential drugs with $P < 0.05$.

Unique Contribution to Theory, Policy and Practice: The study recommended that counties conduct a comprehensive and regular need assessment of essential drugs in public health facilities, that they develop a robust procurement planning strategy that aligns with the identified needs and available financing, that there should be a transparent and competitive supplier selection process, and to establish strategic partnerships with international organizations, non-governmental organizations, or donor agencies that are committed to improving healthcare access.

Keywords: *Procurement Process, Procurement Planning, Supplier Selection, Procurement Financing, Needs Assessment.*

1.0 Introduction

The medical procurement process is closely interconnected with various health system pillars. Governance and leadership establish transparent policies, while health information systems provide essential data (Pham et al., 2019). A knowledgeable health workforce ensures quality procurement without overspending. Adequate financing facilitates a smooth process, and optimized procurement affects the availability of medical products. Efficient procurement positively affects service delivery and health system financing (Robertson et al., 2022). Health system governance ensures adherence to policies and transparency. These pillars collectively form a reliable medical procurement system vital for optimal healthcare delivery.

In recent decades, Kenya's public procurement system has undergone significant development. From lacking regulations in the 1960s to being regulated by Treasury Circulars in the subsequent decades. The introduction of the Public Procurement and Disposal Act (PPDA) in 2005 and the Procurement Regulations of 2006 established new standards for public procurement in the country (Kazungu et al., 2021). As healthcare demands and technological advancements have evolved, Kenya's healthcare system has grown, resulting in an increased demand for medical supplies (Muhia et al., 2017). Consequently, the medical procurement process has become more complex, necessitating effective policies and practices to address the population's healthcare needs.

Kenya has established a robust regulatory framework to govern medical procurement and uphold transparent and accountable practices. This framework includes key policies that guide the procurement process, such as the Public Procurement and Disposal Act, which fosters transparency, fairness, and competition in the public sector, including healthcare (Muiruri et al., 2019). Another crucial policy is the Essential Drugs and Medicines Policy, which prioritizes the accessibility and availability of essential drugs and medicines in healthcare facilities nationwide, emphasizing efficient procurement to prevent shortages and wastage (Mbau et al., 2018). Health Sector Strategic and Investment Plan outlines the strategic direction for the healthcare sector.

Despite having established policies, Kenya encounters challenges in its medical procurement process that affect its efficiency and effectiveness. Currently, the procurement system suffers from fragmentation, with various healthcare facilities and entities conducting individual procurement, resulting in duplication, increased costs, and inconsistencies in the quality of medical supplies (Kazungu et al., 2021). Limited transparency remains a concern, raising issues of corruption and resource mismanagement, highlighting the need to enhance transparency for public trust and fair procurement practices. The medical supply chain in Kenya also faces hurdles in distribution and storage, causing delays and inefficiencies in delivering crucial medical supplies to the facilities in need. Restricted budget allocations for healthcare procurement create a significant barrier to acquiring adequate and high-quality medical supplies, particularly in rural and underserved areas (Njoki, 2018). Addressing these challenges is essential to optimize Kenya's medical procurement process and ensure timely and equitable access to vital healthcare resources.

The medical procurement process in Mombasa County faces challenges like limited resources, complex regulations, supply chain disruptions, transparency, and corruption. Prioritizing transparency and accountability through proper documentation, adherence to guidelines, competitive bidding, and regular audits can optimize the process. Despite being constitutionally mandated to handle health-related matters in Kenya, county governments are not obligated to source medicines and medical supplies exclusively from the country's medical supplies agency, KEMSA (Omoga, 2021). This is noteworthy despite KEMSA's advantage in bulk procurement, which enables cost-saving economies of scale. Most counties lack well-defined procurement plans and procedures for acquiring medicines, resulting in compromising the quality of medicines sourced from other suppliers and interfering with the national government's Ministry of Health's Kenya Essential Medicines List (KEML). Consequently, there are frequent shortages of medicines, procurement at inflated prices, and instances of corruption. Despite these challenges, there is paucity of local studies on the influence of the procurement process on access to essential drugs in the public health facilities (Omoga, 2021; Muhia et al., 2017).

The aim of this study was to evaluate the influence of procurement process on availability of essential drugs in the public health facilities of the Mombasa County, Kenya. Specifically, the study sought to determine the influence of procurement planning, supplier selection, procurement financing and needs assessment on availability of essential drugs in the public health facilities in Mombasa County in Kenya.

2.0 Materials and Methods

This was a cross-sectional descriptive research study design with quantitative data. The study was carried out in public health facilities in Mombasa County. The target population was all 1216 health workers who included the medical laboratory personnel, clinical officers and medical officers, nurses, pharmacists and pharmaceutical technologists. The study was carried out in all level 4 and level 5 public health facilities in Mombasa County. The study sample population of 301 respondents was determined using the Yamane (1967). Stratified sampling procedure was used to proportionately assign the sample among the five health workers cadres. Within each stratum, random sampling approach was used to select the respondent. A structured questionnaire was used to collect quantitative data. Statistical Package for Social Sciences (SPSS) version 26 was used to analyze the data. Descriptive statistics included frequencies, percentiles, means, and standard deviations, while inferential statistics was done using Pearson correlations to determine the magnitude and direction of the association between the study variables. Finally, multiple regressions were run to find out the collective predictive power of the independent factors on the dependent variables.

3.0 Results and Discussion

The study achieved a response rate of 74% which was acceptable for the statistical analysis (Mugenda & Mugenda, 2009). The background information on the respondents revealed that most

130(58%) were female, 118(53%) were diploma holders, and 131(59%) had worked in the facility for 6-10 years. See **Table 1**.

Table 1:

Demographic Information

Characteristics	n	%
Sex		
Male	93	42
Female	130	58
Total	223	100
Age (years)		
<25	15	7
26-35	102	46
36-45	76	34
>46	30	14
Total	223	100
Highest Education Level		
Certificate	15	7
Diploma	118	53
Degree	52	23
Post graduate level	38	17
Total	223	100
Duration of Service in the Facility (in years)		
≤5	14	6
6- 10	131	59
11- 15	27	12
>16	51	23
Total	223	100

i) Procurement planning of essential drugs in public health facilities

Overall, the respondents agreed that procurement planning was well done. The respondents agreed that procurement planning allowed health facilities to strategically source essential drugs from reputable suppliers (Mean=4.96), that there was data-driven decision making within the facilities (Mean=4.23) and that there was prioritizing essential drugs (Mean=4.07). See **Table 2**.

Table 2:***Procurement planning of essential drugs in public health facilities***

Statements		Disagree n(%)	Agree n(%)	Mean	Std. Deviation
i.	Procurement planning allows health facilities to strategically source essential drugs from reputable suppliers.	10(5)	213(95)	4.96	.20742
ii.	There is data-driven decision making within the facilities	25(11)	198(89)	4.23	.63436
iii.	There is prioritizing essential drugs	29(13)	194(87)	4.07	.77358
iv.	There is compliance with the set procurement regulations	56(25)	167(75)	3.90	.81270
v.	Inventory levels are optimized in the facilities	61(27)	162(73)	3.81	.71057
vi.	The procurement for essential drugs meets the set timelines	67(30)	156(70)	3.71	.67801
vii.	Coordinating with suppliers is done throughout the process	79(35)	144(65)	3.65	.69234
viii.	Forecasting the demand for essential drugs based on historical data, disease prevalence, population trends is frequently done	60(27)	163(73)	3.62	1.10812
ix.	Procurement costs are fairly regulated	62(28)	161(72)	3.50	1.04353

These study findings agree with Ogolla *et al.*, (2022) results which concluded that it is important to adhere to procurement procedures in determining availability of medicine. Strict adherence to relevant regulations is stressed to guarantee the quality and safety of essential medicines and supplies. The findings also agree with PAHO (2018) study which found that procurement timelines were essential for timely availability of essential medicines and considering procurement costs ensures optimal resource utilization.

ii) Supplier selection of essential drugs in public health facilities

In determining supplier selection of essential drugs the results revealed that most of the respondents agreed with the following statements: supplier's ability to respond promptly to emergency

situations or disease outbreaks was considered (Mean=4.49), contract compliance was observed in the selection of suppliers (Mean=4.36), product quality was central in the selection of suppliers (Mean=4.28) and that contracts were given to suppliers with steady and consistent flow of essential drugs (Mean=4.26). See Table 3.

Table 3:***Supplier Selection of essential drugs in public health facilities***

Statements	Disagree n(%)	Agree n(%)	Mean	Std. Deviation
i. Supplier's ability to respond promptly to emergency situations or disease outbreaks is considered	2(1)	221(99)	4.49	.50100
ii. Contract compliance is observed in the selection of suppliers	37(17)	186(83)	4.36	.75211
iii. Product quality is central in the selection of suppliers	7(3)	216(97)	4.28	.45123
iv. Contracts are given to suppliers with steady and consistent flow of essential drugs	23(10)	200(90)	4.26	.90153
v. Suppliers offering a diverse range of essential drugs are considered first	35(16)	188(84)	4.25	.70849
vi. There are strong partnerships with suppliers to foster long-term collaborations	2(1)	221(99)	4.19	.38824
vii. Suppliers with competitive prices have upper hand to be selected	38(17)	185(83)	4.09	.91785
viii. Suppliers with extensive and efficient distribution network are given priority	50(22)	173(78)	3.99	.84358
ix. Supplier selection prioritize suppliers that comply with local and international regulations in the facilities	29(13)	194(87)	3.93	.66051

The results imply that the respondents were aware of the various roles of supplier selection in enhancing availability of essential drugs in the public health facilities of the Mombasa County. The results agree with Ogunlana *et al.*, (2019) who emphasized the need for a supplier selection process based on clear and regularly reviewed criteria. Khan *et al.*, (2020) found that there are significant

implications for entities responsible for procuring essential drugs highlighting that these organizations must scrutinize factors such as product quality, pricing, and compliance during supplier selection, while maintaining a regularly updated, clear set of criteria for this process.

iii) Procurement financing of essential drugs in public health facilities

Overall, the respondents did not agree that there was an adequate financing of procurement of essential drugs in public health facilities in Mombasa County. The respondents agreed that procurement expenses were regularly monitored (Mean=4.10) and that the procurement financing was predictable ensuring a continuous supply of essential drugs (Mean=3.85). However, the respondents disagreed that financing mechanisms were flexible to allow public health facilities to adapt to fluctuating demand and changing healthcare needs (Mean=3.45), that adherence to budget allocations was maintained (Mean=3.38), and that budget allocation matched the needs highlighted (Mean=2.98). **See Table 4.**

Table 4:***Procurement financing of essential drugs in public health facilities***

		Disagree n(%)	Agree n(%)	Mean	Std. Deviation
i.	Procurement expenses are regularly monitored	15(7)	208(93)	4.10	.47377
ii.	The procurement financing is predictable ensuring a continuous supply of essential drugs	43(19)	180(81)	3.85	.69786
iii.	Procurement process is cost effective	50(22)	173(78)	3.73	1.00417
iv.	Financing mechanisms are flexible to allow public health facilities to adapt to fluctuating demand and changing healthcare needs	83(37)	140(63)	3.45	.92331
v.	Adherence to budget allocations is maintained	105(47)	118(53)	3.38	1.13177
vi.	Budget execution is transparently done and reported	83(37)	140(63)	3.32	.91226
vii.	Financial sources are sufficient to procure essential drugs	118(53)	105(47)	3.31	1.21927
viii.	There is timely disbursement of funds	112(50)	111(50)	3.11	1.07263
ix.	Budget allocation matches the needs highlighted	121(54)	102(46)	2.98	.96779
x.	Essential drugs are covered and adequately funded by insurance schemes	142(64)	81(36)	2.96	1.01927

The results are in line with Otieno *et al.*, (2020) who found that inadequate funding for medicines was the main reason for stock outs of essential medicines in public health facilities in Bungoma County, Kenya. Dussault *et al.*, (2017) results found that the impact of decentralized purchasing depended on a number of factors, including the way in which decentralized purchasing was implemented, the level of government support, and the availability of data and information.

iv) Needs assessment of essential drugs in public health facilities

In this study, the respondents generally agreed that needs assessment was regularly done. They agreed that medicine dispensing rate was frequently assessed (Mean=4.65), disease burden determined the amount of drugs procured (Mean=4.00) and that analyzing the utilization patterns of essential drugs was used to identify trends and potential issues (Mean=3.90). **See Table 5.**

Table 5:

Need Assessment of essential drugs in public health facilities

		Disagree n(%)	Agree n(%)	Mean	Std. Deviation
i.	Medicine dispensing rate is frequently assessed	12(5)	211(95)	4.65	.57896
ii.	Monitoring stock-out frequency is key in the availability of essential drugs	25(11)	198(89)	4.07	.53689
iii.	Disease burden determines the amount of drugs procured	14(6)	209(94)	4.00	.34871
iv.	The facilities adhere to the official essential drug list or formulary	28(13)	195(87)	3.94	.43621
v.	Drug storage conditions are assessed to maintain their efficacy and safety.	52(23)	171(77)	3.91	.63360
vi.	Analyzing the utilization patterns of essential drugs is used to identify trends and potential issues	25(11)	198(89)	3.90	.57197
vii.	The facilities often determine the average duration of essential drugs stock-outs	41(18)	182(82)	3.81	.61545
viii.	Medicine expiry and wastage rates guides the procurement frequency	63(28)	160(72)	3.78	.54023

The results agree with Teshome *et al.*, (2022) that the frequency of stock-outs was significantly lower in facilities that had conducted needs assessment and Afolabi *et al.*, (2021) found that the duration of stock-outs was significantly shorter in facilities that had conducted needs assessment. Further, the results agreed with Irfan *et al.*, (2020) who found that the prevalence of medicine expiry and wastage was significantly lower in facilities that had conducted needs assessment.

v) Availability of essential drugs in public health facilities

The respondents agreed that there essential drugs were available in public health facilities in Mombasa County. The respondent agreed that the stock-outs of essential drugs in health facilities was reduced (Mean=4.28) and that quantity of essential drugs procured is maintained (Mean=4.25). These results agree with the findings of Li et al. (2020) that gaps in both availability and affordability of essential drugs in Hefei, showed that despite state policies, the high costs associated with these medicines pose an additional hurdle for residents.

vi) Bivariate Analysis

Bivariate analysis using the Pearson correlations revealed that procurement planning, supplier selection, procurement financing and needs assessment had a positive and significant correlation with availability of essential drugs with $r = -.259$, $r = .211$, $r = .273$ and $r = .673$ respectively with a $P < 0.05$. These findings agree with Teklay et al., (2022) that procurement planning was a significant determinant of availability of essential drugs. Smith, Jones, and Brown (2021) found that supplier selection significantly influenced the availability of essential drugs in the United States. Others were Dussault et al., (2017) and Mengistu et al., (2016) found that procurement financing significantly and positively influenced the availability of essential drugs. Similarly, a study by Kumar et al. (2019) also found that needs assessment significantly influenced availability of essential drugs.

A multiple regression analysis revealed that procurement planning, supplier selection, procurement financing, and needs assessment significantly influence the availability of essential drugs in public health facilities ($p < 0.05$). A unit increase in procurement planning, supplier selection, procurement financing, and needs assessment corresponds to a 7.9%, 8.5%, 15.7%, and 60.9% increase in available essential drugs, respectively. This aligns with previous studies: Ishola et al. (2019) noted a substantial positive impact of essential drugs programs, while Teklay et al. (2022), Muiruri et al. (2019), Mengistu et al. (2016), Ndeezi et al. (2015), and De Walque et al. (2018) found significant influences of procurement planning, supplier selection, and procurement financing. Additionally, needs assessment's impact on drug availability was supported by Irfan et al. (2020), Afolabi et al. (2021), and Teshome et al. (2022).

Conclusions

The study concludes that essential drugs were available in public health facilities. All the variables under study (procurement planning, supplier selection, procurement financing and needs assessment) had positive and significant influence on availability of essential drugs in public facilities with $P = < 0.05$. Finally, the study concludes that needs assessment was the most significant factor influencing the availability of essential drugs then procurement financing.

Recommendations

- i. In promoting need assessment there is need to conduct a comprehensive and regular need assessment of essential drugs in public health facilities. The assessment should involve collaboration between healthcare professionals, administrators, and relevant stakeholders.
- ii. In enhancing procurement planning, the study encourages the development of a robust procurement planning strategy that aligns with the identified needs and available financing.
- iii. In boosting supplier selection, there should be a transparent and competitive supplier selection process. Engaging in a thorough evaluation of potential suppliers, considering factors such as product quality, reliability, cost-effectiveness, delivery capabilities, and adherence to regulatory requirements.
- iv. In promoting procurement financing, study recommends for establishment of partnerships with international organizations, non-governmental organizations (NGOs), or donor agencies that are committed to improving healthcare access.

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