



Research article

Evaluation of procurement and inventory control practice among public and private health facilities in Bayelsa State

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ABSTRACT

Availability of medicines is a panacea for the operation of health care services. To achieve this, good procurement and inventory management are to ensure the ready availability of commodities to avoid overstocking or understocking. The objective of the study was to evaluate the method of procurement and inventory control practices among public and private health facilities in Bayelsa State, Nigeria. A prospective descriptive correlational study design was employed which involved healthcare professionals in 16 Health Facilities with good procurement and inventory management practices. The census sampling method was used and sample size calculation was done online using the number of healthcare facilities within the population. An instrument for data collection was used and a well-structured validated questionnaire was self-administered. A total of 47 questionnaires were distributed to respondents and 42 were filled and returned successfully. The result showed that 20 respondents (47.6%) received training on supply chain management. On product selection 28 (66.7%) select products based on the essential medicine list. Good inventory control practices were observed especially in conducting physical stock count as reported among 41 respondents (97.6%). The method of storing and issuing commodities was mostly FEFO (83.3%). The average lead time for commodity receipt was two weeks (31.0%). Medicine stockout was a huge problem as observed with (64.1%). One quarter (24) of the respondents indicated having a functional procurement committee (57.1%). The availability of a drug revolving fund committee was identified in 16 respondents (38.1%) of the respondents. Pearson correlation showed a strong statistically significant association/or correlation ($p < 0.003$) between basic Procurement Practices and basic elements of logistics. Regarding, the management of Information Systems a statistically significant difference ($p < 0.05$) was revealed between basic procurement practices and basic elements of logistics management information systems. Efficient inventory management and procurement system are very key to healthcare delivery. Proper inventory management practices are necessary for ensuring uninterrupted medicine availability in health facilities, which helps to prevent frequent stockouts and expiry of medicines.

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INTRODUCTION

The history of medicine supply management in Nigeria could be linked to the history of hospital practice traced as far back as 1887 to the early dispensers who were trained in the dispensing art and worked in hospital dispensaries (Mohammed et al., 2007). The increment in the emergence and complexity of more potent medicinal items recently has spurred the development of improved upgrading of procurement and thus other inventory control systems. However, as nations are encouraged to achieve Universal Health Coverage (UHC), essential medicines access must be prioritized (Arney et al., 2014).

To make available easy access to medicines, the most vital factor to be considered is to ensure that essential medicines are available at all public health facilities, especially at the primary health care (PHC) level which is usually the first point of contact by the patient in the

healthcare system. However, a proper inventory control system is likely to guarantee the shrewd use of limited financial resources. Poor economic settings and the lack of drug-revolving funds have given rise to the hick in medicine costs. The inventory control system within the health facility is a very critical and complex process in the medicine delivery system. Its lack or deficiency has been observed to result in the provision of inappropriate medicines. Furthermore, dispensing practice and choice of drug selection may lead to direct effects in terms of cost of care, thus the patient may find it difficult to purchase. It is on record that the main reason for good inventory in the health care system in modern times is for the sake of patient safety, the possibility of low prices, regulation, reporting, and management (WHO, 2004). The cost of drugs is the main reason for health care expenses, therefore good drug management and procurement systems are necessary for tackling costs and may help in promoting

patient safety and quality of care. To ensure drug procurement activities are set at optimum operation, the management should function to ensure formal procurement procedures accessibility. The availability of cost-effective essential medicines has been seen to be the solution to most causes of death and disabilities in low-income (Adebayo, 2012). Even with this fact, a major proportion of people are unable to get access to essential drugs. A working health commodity management and logistics system must be available to guarantee the accessibility and effective utilization of essential medicines at every level of care (WHO, 2004).

Even though the management of health commodities is advocated to follow evidence-based established principles, such principles should be flexible and responsive to the varied setting and offered services to ensure effective health services. Health service provision will be at its peak if the supply chain for the delivery of medicines and other health-related products is functional (Adzimah et al., 2014). These supply patterns are expected to be seamless and affordable, even at all service delivery points (Foster, 1991). The healthcare system has metamorphosed into a highly complex organizational structure. The growth or increase of health care costs has prompted the necessity to make it simple by a correspondingly high quality of health care. This can only be possible by increasing the efficiency of the supply chain and thus leading to health cost savings (Bateman, 2013). Procurement is when forecasting and supply plans are turned into purchased products that are delivered to a point of entry (Arney et al., 2014). Typically, procurement is divided into several steps. The steps involved in procurement include the management of the tender systems, the bidding process with contractors, and the contracting process itself. The length of the observed procurement process for new goods usually varies, it may take more than a year from start to finish in some instances. To achieve fair, consistent, and reliable means of product procurement, the procurement process must be well-defined and accountable. The absence of a good definition and accountability may result in a disorganized and costly healthcare system characterized by stock mostly in situations of emergency orders (Arney et al., 2014).

MATERIAL AND METHODS

A prospective descriptive correlational study was conducted aiming at exploring the procurement and inventory system in both public and private health facilities in 7 Local Government Areas of Bayelsa State. The census sampling method was used which deals with statistical enumeration where members of a given population are studied. However, based on the population size of healthcare professionals working within the procurement and inventory control unit, a complete enumeration of all encountered and consented subjects was carried out. An instrument for data collection was adapted from USAID (United States Agency for International Development). Delivery project work tools, the logistics Assessment Tool LSAT. The questionnaire consisted of four sections that cut across the concept of procurement and inventory management of health commodities. Ethical consideration and clearance were obtained from the Ethics

and Research Board of the Bayelsa State Ministry of Health.

RESULTS

A total of 42 participants filled and returned their questionnaire from 16 health facilities cutting across Seven Local Governments Areas of the State. Out of which 36 (85.7%) were in public health facilities and 6 (14.3%) were in private health facilities. Results from the study also show that there were more female compared to male respondents and the majority of the respondents were between the ages of 26-30 years (Table 1).

Table 1. Demographic analysis of respondents

Parameter	Response pattern	Frequency (%)
Sex	Male	18 (42.9)
	Female	24 (57.1)
Age	20-25 years	6 (14.3)
	26-30 years	21 (50)
	31-35 years	7 (16.7)
	Above 35 years	8 (19)
Marital status	Single	26 (61.9)
	Married	16 (38.1)
Health institution	Public	36 (85.7)
	Private	6 (14.3)

The study result showed that health personnel trained in logistics and supply chain of public health were less than those of them who had no training on logistics and SCM of public health commodities, however, for those who were trained, it was organized by an international organization which clearly shows that Government needs to train health personnel on the concept of logistics and SCM of public health merchandise. Most of the respondents were reported to carry out quantification exercise 28 (66.7%) and do use the essential medicine list as criteria for product selection 28 (66.7%) on a bimonthly basis 18 (64.2%). Inventory control activities were also carried out 34 (80.9%) with established min., max. and reorder levels 29 (69%), updated weekly 4 (13.8%). Separate records were reportedly kept for each commodity 37 (88.1%) with accompanying FEFO principles and practice 35 (83.3%).

The data based on personnel training on public health commodity management in both practice sectors is shown in Table 2. The study result showed that health personnel that had training on logistics and supply chain management of public health were less than those of them who had no training in logistics and SCM of public health commodity, however, for those who were trained, it was organized by an international organization which clearly shows that Government needs to train health personnel on the concept of logistics and SCM of public health commodity.

Table 2. Information on personnel training in public health commodity management

Question	Response	Frequency (%)
Previous training in public health	Yes	20 (47.6)
	No	21 (52.4)

commodity management		
Duration of previous training if yes to 6 months previous question	Less than 1 year	3 (15)
	1 year	7 (35)
	2 years	5 (25)
	3 years	2 (10)
Organizers of previous training	More than 3 years	3 (15)
	Government	2 (10)
	NGO	12 (60)
	Schools	5 (25)
	Others	1 (5)

The result on the basic element of logistics shows that BIN cards were the modal inventory control tool used 33 (78.6%) as shown in Table 3.

Table 3. Basic knowledge of logistic management information system

Question	Response Pattern	Frequency (%)
Inventory control tool	Inventory control cards	4 (9.5)
	Bin cards	33 (78.6)
	Stock registers	1 (15)
	All the above	4 (9.5)
	Subtotal	42 (100)
Physical stock count of commodity	Yes	41 (97.6)
	No	1 (2.4)
If yes how often?	Daily	3 (7.3)
	Weekly	3 (7.3)
	Others	36 (85.4)

The study equally shows that the past consumption method is the main method for product quantity determination 23 (54.8%). Commodities were reported to be requested daily 19 (45.2%), with an average lead time of 3-4 weeks 13 (31%) with consequent stock outs reported often 39 (92.9%) which were handled by making emergency orders 29 (69%). Pearson Chi-Square significant value (probability value) of 0.003 for both Basic Procurement Practices and Basic Element of Logistics Management Information System respectively which is less than 0.05 which indicates that there is a statistically significant relationship among the respondents on the Basic Procurement Practices and Basic Element of Logistics Management Information System. Thus, there is no correlation between Basic Procurement Practices and Basic Elements of Logistics Management Information Systems.

DISCUSSION

Procurement and inventory management of public health commodities is very important for the healthcare supply system which is characterized by the management of pharmaceutical ordering procedures. In this study majority of the respondent showed no formal training on logistics and supply chain management of public health commodities which is worrisome as it affects certain basic

functions of procurement and inventory management, this was however not in conformity with the study done in Bungoma Kenya. It was suggested that further training be done on inventory management of health commodities to improve inventory management, this was however in line with a study done in Zimbabwe which drastically improved inventory control practices and other supply chain procedures. As regards product selection most respondent, most respondents reported having selected products based on the essential medicine list and other stipulated guidelines as applicable which was in line with the study done in South Africa where all procured medicines were selected using medicine formulary and guidelines (Pharasi and Miot, 2012). However, this differs significantly in the study conducted on inventory management practices for essential drugs in Kenya where 61% of the drugs were selected based on past consumption patterns (Meeme et al., 2015).

In terms of quantification exercise, most respondents reported not being involved in the quantification of the commodity before procurement is done, this could, however, lead to procuring commodities in excess quantity and which can result in expiries, this conforms to a study done in Kenya where 84.4% of expiries were because of low utilization of commodities (Mungu, 2013), this, however, summarizes the importance of quantification exercise, because it takes into consideration the consumption pattern of medicines before procurement can be done. Comparative analysis between the sector of practice on years of practice and research data revealed no statistical advantage since most of the respondents were aged 26-30 years which did not affect the quality of practice as regards procurement and inventory control practice rather responses from both sectors of practice were similar irrespective of the number of years of practice of the respondents.

CONCLUSION

Efficient inventory management and procurement systems are very key to healthcare delivery. Thus, it is vital in ensuring the constant availability of essential medicine especially in the healthcare system. Factors such as inadequate training of healthcare personnel, absence of procurement committee, and drug revolving funds are major determinants for poor performance in managing commodity availability.

RECOMMENDATION

The findings of this study suggest that the management of health facilities conducts training on supply chain management, inventory control practice, and basic procurement practices, this will help to build the capacity of health professionals in the delivery of their services.

CONTRIBUTION TO CURRENT KNOWLEDGE

The research has been able to identify factors that affect procurement inventory control systems among private and public health facilities in the State and the need to build the capacity of personnel managing commodity

availability and the need for government to ensure prompt budgetary release to ensure there is commodity security.

CONFLICTS OF INTEREST

The author(s) declare(s) no conflicts of interest.

DECLARATION

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