Lessons from the Kaduna sustainable drug supply intervention initiative

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ABSTRACT

Background : The Sustainable Drug Supply System (SDSS) is a strategy for ensuring uninterrupted drug supply for sustained and affordable health care delivery in all health care institutions in some States in Nigeria. Drug distribution network in Nigeria is in a state of chaos because it consists of multitude of illegal markets, patent medicine stores, pharmacies, private and public hospitals, wholesalers/importers and pharmaceutical manufacturers operating in an uncoordinated manner.

Objectives : To examine the distribution channels of the Kaduna State SDSS; evaluate it within the framework provided in the Nigerian Drug Distribution Guidelines (NDDG) and assess the challenges militating against the scheme.

Methods : The study was a cross sectional survey of stakeholders managing the scheme and patients patronizing the health care facilities using semi – structured questionnaires. Data obtained were analysed using descriptive and inferential statistics.

Results : The result of the study indicated that the Kaduna State SDSS distribution channels are consistent with the provisions of the NDDG. Drug availability in facilities was widely reported to have improved following the SDSS intervention; however 41.2% of the respondent believed the drugs are expensive.

Conclusion : If the provisions of the Kaduna State SDSS are properly implemented and enforced, the model is capable of addressing the uncoordinated drug distribution system and curbing the supply chain vulnerability to infiltration by unauthorized and corrupt participants in the state.

Key words : Sustainable, drug supply, drug procurement, acute shortage, guideline

Leçons tirées de l'initiative d'intervention sur l'approvisionnement durable en médicaments de Kaduna

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RESUME

Contexte: Le Système d'approvisionnement en médicaments durables (SDSS) est une stratégie visant à assurer l'approvisionnaient ininterrompu en médicaments pour une prestation de soins de santé soutenue et abordable dans tous les établissements de soins de santé de certains États du Nigeria. Le réseau de distribution de médicaments au Nigeria est dans un état de chaos, car il se compose d'une multitude de marchés illégaux, de magasins brevetés dans la vente de médicaments, de pharmacies, des hôpitaux privés et publics, des grossistes/importateurs et des fabricants de produits pharmaceutiques qui fonctionnent de manière non coordonnée.

Objectifs: Examiner les canaux de distribution du SDSS de l'Etat de Kaduna; L'évaluer dans le cadre prévu dans les Directives de distribution de médicaments au Nigeria (NDDG) et évaluer les défis qui militent contre le régime.

Méthodes: L'étude était une enquête transversale auprès des intervenants qui géraient le régime et des patients qui fréquentaient les établissements de soins de santé à l'aide de questionnaires semi - structurés. Les données obtenues ont été analysées à l'aide de statistiques descriptives et inférentielles.

Résultats: Le résultat de l'étude a indiqué que les canaux de distribution SDSS de l'Etat de Kaduna sont conformes aux dispositions du NDDG. La disponibilité des médicaments dans les établissements a été largement signalée comme s'étant améliorée suite à l'intervention du SDSS; cependant, 41,2% des répondants croyaient que les médicaments étaient coûteux.

Conclusion: Si les dispositions du SDSS de l'Etat de Kaduna sont correctement exécutées et appliquées, le modèle est capable de traiter le système de distribution de médicaments non-coordonné et de réduire la vulnérabilité de la chaîne d'approvisionnement à l'infiltration par des participants non-autorisés et corrompus.

Mots-clés: durable, acquisition de médicaments, approvisionnement en médicaments, pénurie aiguë, lignes directrices

INTRODUCTION

One of the major challenges of the pharmaceutical sector and the health care delivery system in Nigeria is the uncoordinated drug procurement and distribution system.[1] The drug distribution network in Nigeria is said to be in a state of chaos.[2, 3] The system consists of multitude of illegal markets, patent medicine stores, community pharmacies, private and public hospitals, wholesalers/importers and pharmaceutical manufacturers operating in an uncoordinated manner with a network of intermediaries scattered across geographies.[3] It is riddled with corrupt wholesalers, with the regulatory environment tilted in the favor of unauthorized organizations, prescription drug diverters, and corrupt supply chain participants.[2, 3] They have survived the efforts of various Nigerian Governments to dismantle them, which never succeeded, rather ended up in a lot of bad blood against government.[3, 4, 5] As the drugs leaves the warehouses, manufacturers have little or no knowledge of how and where their drugs are ultimately supplied or dispensed.[3, 7] This chaotic nature of the distribution channel makes it vulnerable for the drug counterfeiters to infiltrate the distribution channel with counterfeit drugs.[6, 7] Consumers are exposed to elevated health and safety risks as they consume the counterfeit drugs. Public health problems like liver damage, kidney and heart failures, disabilities, injuries and even death, have been closely associated with consumption of counterfeit drugs.[6] The counterfeit drugs obviously find their ways to where unsuspecting members of the public can access them.[8]

Better distribution will provide significant strategic benefits; first, it can reduce cost by shortening lead time and slashing inventory levels across the value chain.

Secondly, it can improve access to medicines, reducing drugs and device shortages in developing markets and delivering affordable healthcare to millions in emerging markets. Thirdly, it can transform safety by making it harder for counterfeits products to enter the supply chain and reducing the human and financial toll of medication errors.[2, 7, 9] Also, as is inherent within the Bamako Initiative; proper medicine management may be a source of revenue, which could be used to cater for the health care needs of disadvantaged populations.[2, 7, 10]

The National Agency for Food, Drug, Administration and Control (NAFDAC) was established by Decree No. 15 of 1993 (as amended) to among other functions, regulate and control the importation, exportation, manufacture, advertisement, distribution, sale, and use of food, drugs, cosmetics, medical devices, packaged water (including all drinks) and chemicals.[11] It is noteworthy that on various occasions, NAFDAC had attempted to clean up these illegal markets without much success due to high level of opposition to the policy by different categories of stakeholders.[5]

In order to address this ugly situation, a Presidential Committee on Pharmaceutical Sector Reform (PCPSR) was constituted in 2003 to develop strategies toward the sanitization of drug distribution among other things. The strategies adopted by the committee include the development of the National Drug Distribution Guideline (NDDG) which will provide guidance to drug distribution in Nigeria. Direction is provided in respect of source of drugs to every level of pharmaceutical practice including primary health care facilities, private health care facilities and the patent and proprietary medicine Vendor.[1]

The channels of drug distribution shall be:
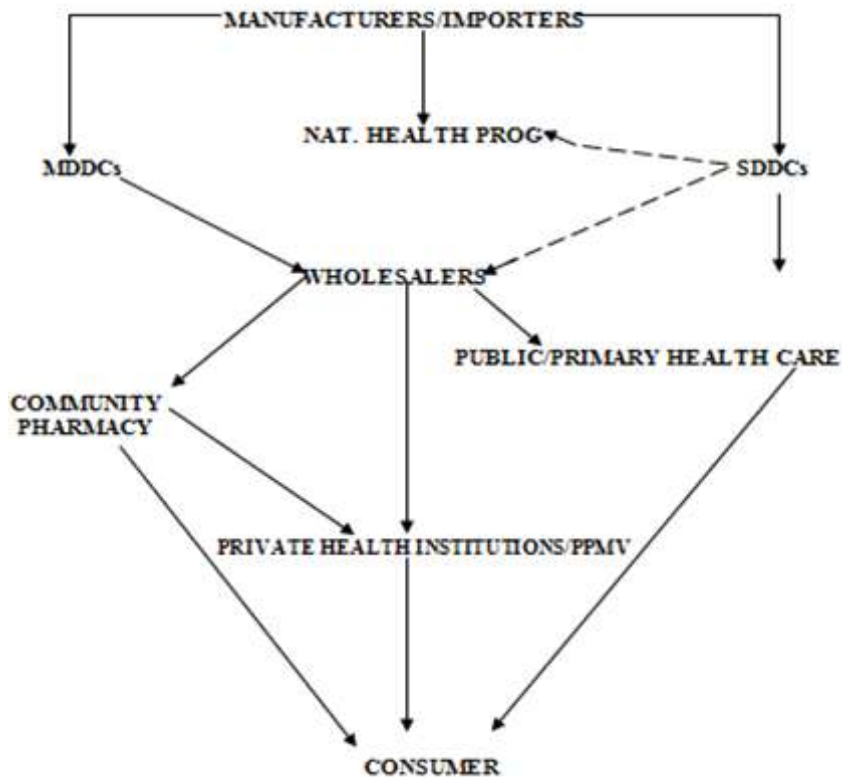
Figure 1: Approved drug distribution channels in Nigeria [1]

Note: States shall establish the State Drug Distribution Centers (SDDCs)
Private Sector shall establish MEGA Drug Distribution Centers (MDDCs)
Private health institutions include corporate organizations e.g. Shell, NNPC, CBN, etc
Public health facility include Tertiary, Secondary and Primary Health Care Facilities.

Perspectives on the role of government in health vary from a social welfare approach (the state should provide all health and other social services except where it is unable to do so) to a self-help or market economy approach (the private market should provide most health services).[12, 13] In the past many governments (in both developing and developed countries) have subscribed to the social welfare approach. [10, 13] In fulfilling the goals of a national drug policy, government has a central role in ensuring drug availability (geographic access) and affordability (economic access) of medicines which are of acceptable quality, safe and effective. [11, 13, 14]

Various strategies have been tried in order to provide access to pharmaceuticals and, in particular, to essential drugs. There are five alternatives for supplying drugs to governmental and nongovernmental health services, these are;

· *Central medical stores (CMS)*
· *Autonomous supply agency*
· *Direct delivery system*
· *Primary distributor system*
· *Fully private supply.* [12, 15, 16]

The choice of a drug supply system in a particular country should be based on careful analysis of the underlying causes for the weaknesses of the existing system. Each country brings unique political, economic and geographical factors to the equation. It will never be possible to state that one particular system is "the best". However some basic factors will point in the direction of certain systems, for example, the existence of an effective private sector is necessary for either direct delivery or prime distributor systems to function. [17, 18]

The sustainable drug supply system is a Partnership for Transforming Health Systems - phase II (PATHS2) initiative. The Kaduna State government with the support of PATHS/PATHS2 established the SDSS scheme in 2004. It is a strategy for ensuring uninterrupted drug supply for sustained health care service delivery in all health care institutions in some states in Nigeria at affordable cost.[19] It is a system which aimed to ensure Quality, Accessibility, Availability, Affordability and

Sustainability (QAAAS).[20] Within the framework of the Kaduna State SDSS, a Drug and Medical Supplies Management Agency to serve the purpose of a **central medical store among other things** was established to ensure an assured source of drug supply to all public health institutions in the State.

This study sought to examine the distribution channels of the Kaduna State SDSS; evaluate it within the framework provided in the Nigerian Drug Distribution Guidelines (NDDG) and assess the challenges militating against the scheme.

METHODS
Study area and setting
The study area includes some randomly selected Local Government Drugs Revolving Funds (DRF) Stores, State owned Secondary health care facilities and the Kaduna State Drugs and Medical Supplies Management Agency (KDSDMSMA).

Study design
The study was a cross sectional survey of stakeholders managing the scheme and patients patronizing the secondary health care facilities in the state. The instrument employed for the study included semi structured questionnaires, oral interviews and review of existing documents mainly obtained from the Federal Ministry of Health, Kaduna State Ministry of Health, Kaduna State Drugs and Medical Supplies Management Agency and Partnership for Transforming Health Systems phase-2 (PATHS2).

Two different sets of questionnaires were designed and pre-tested. The first set of questionnaires was for the stakeholders (Pharmacists, Medical Doctors, Accountants, Nurses, Community Health Officers and Administrative Officers) managing the scheme at the secondary health care facilities, the Local government DRF stores and the Drug Management Agency. The second set of questionnaires was for patients patronizing the State secondary health care facilities.

Inclusion and exclusion criteria
The inclusion criteria are Local Government area DRF stores, State Government secondary health care facilities, and the Drug Management Agency in Kaduna state, whereas the exclusion criteria are all primary health centers, private hospitals and tertiary hospitals.

Data collection and sample size
The state was first divided into three (3) zones (Kaduna South, Kaduna Central and Kaduna North). A total of sixty eight (68) copies of the questionnaire were distributed and collected from the scheme managers at the Kaduna State Drugs and Medical Supplies Management Agency, one LGA DRF-Store and three General Hospitals from each zone. While the patients sample size is four thousand eight hundred (4,800), one thousand six hundred (1600) from each zone, collected over a period of eight weeks. A convenient sampling method was used for this research.

Data analysis and presentation
The data obtained from the instruments were sorted, coded and analysed using the computer-based analytical software Statistical Package for Service Solution (SPSS) windows version 20. The results were presented descriptively in tables and charts and analyzed using chi square and t-test with 0.05 as level of significance ($\rho \leq 0.05$).

RESULTS
The channels with broken lines in Figure 2 indicate unapproved parallel sources of drugs supply, while the unbroken lines indicate the approved sources and channels of drugs distribution under the Kaduna State SDSS, details are as shown in Figure 2. Figure 3 shows Patient's assessment of drugs availability in the health facilities under the SDSS. A few percentages (5.9 %) of the respondents feel the availability of drugs in the health facilities is excellent, 82.4 % rated it as good while 11.8 % consider it to be average. Table 1 show the demographic profiles of the respondent and also highlighted the duration of time the patients and scheme managers have been patronizing and practicing in the health facility respectively. Table 2 *presents patient assessment of drugs affordability and accessibility to the health care facility.* A few respondents (17.6 %) consider the cost of drugs as cheap, 41.2 % consider it expensive and the remaining 41.2 % rate it to be satisfactory (ok). Majority of the respondents (64.7 %) are able to pay for their drugs which was significantly different from those who could not pay ($\rho < 0.001$). Table 3 show the Scheme manager's assessment of the scheme as it concerns monitoring and evaluation, rewards and sanctions for adherence to
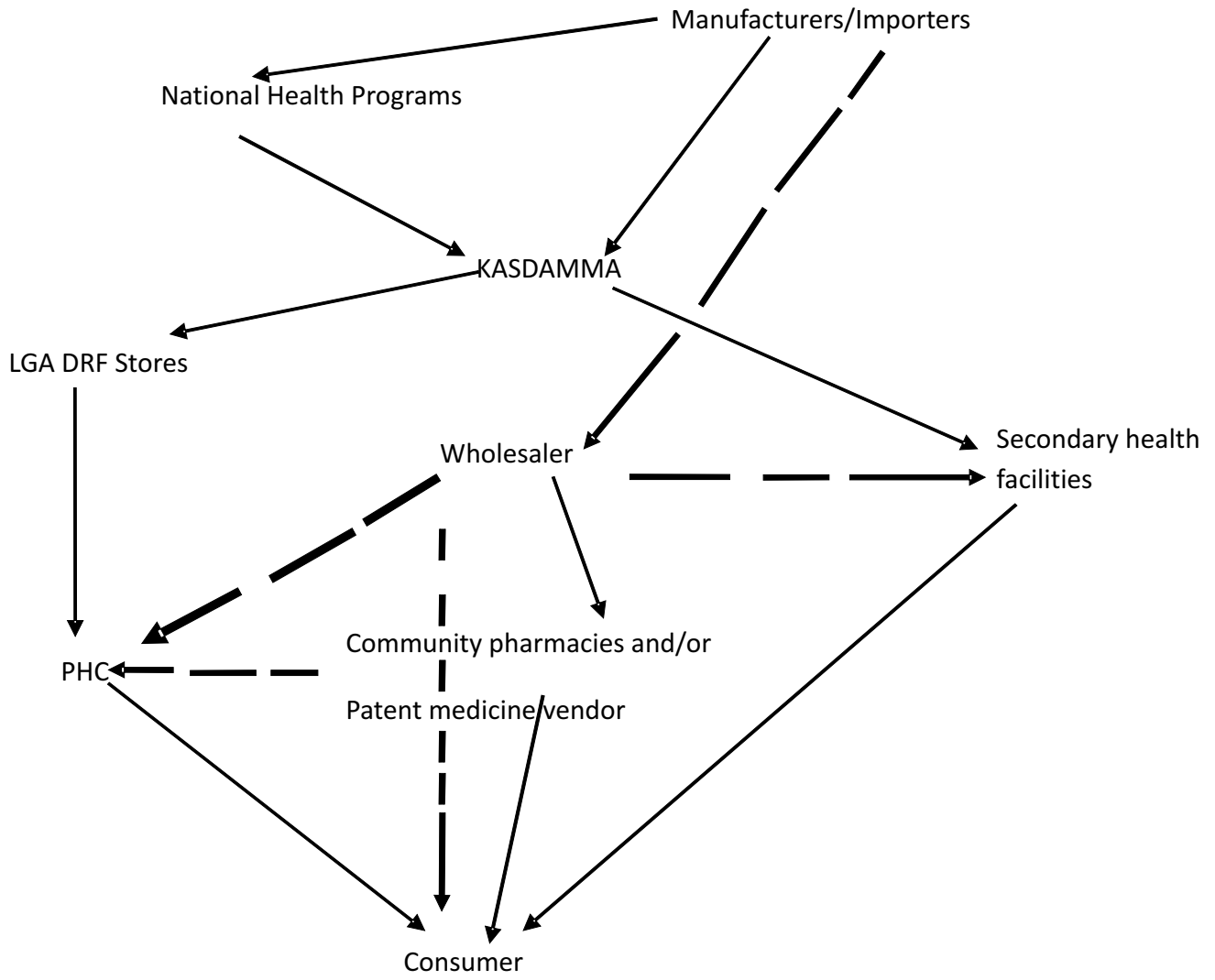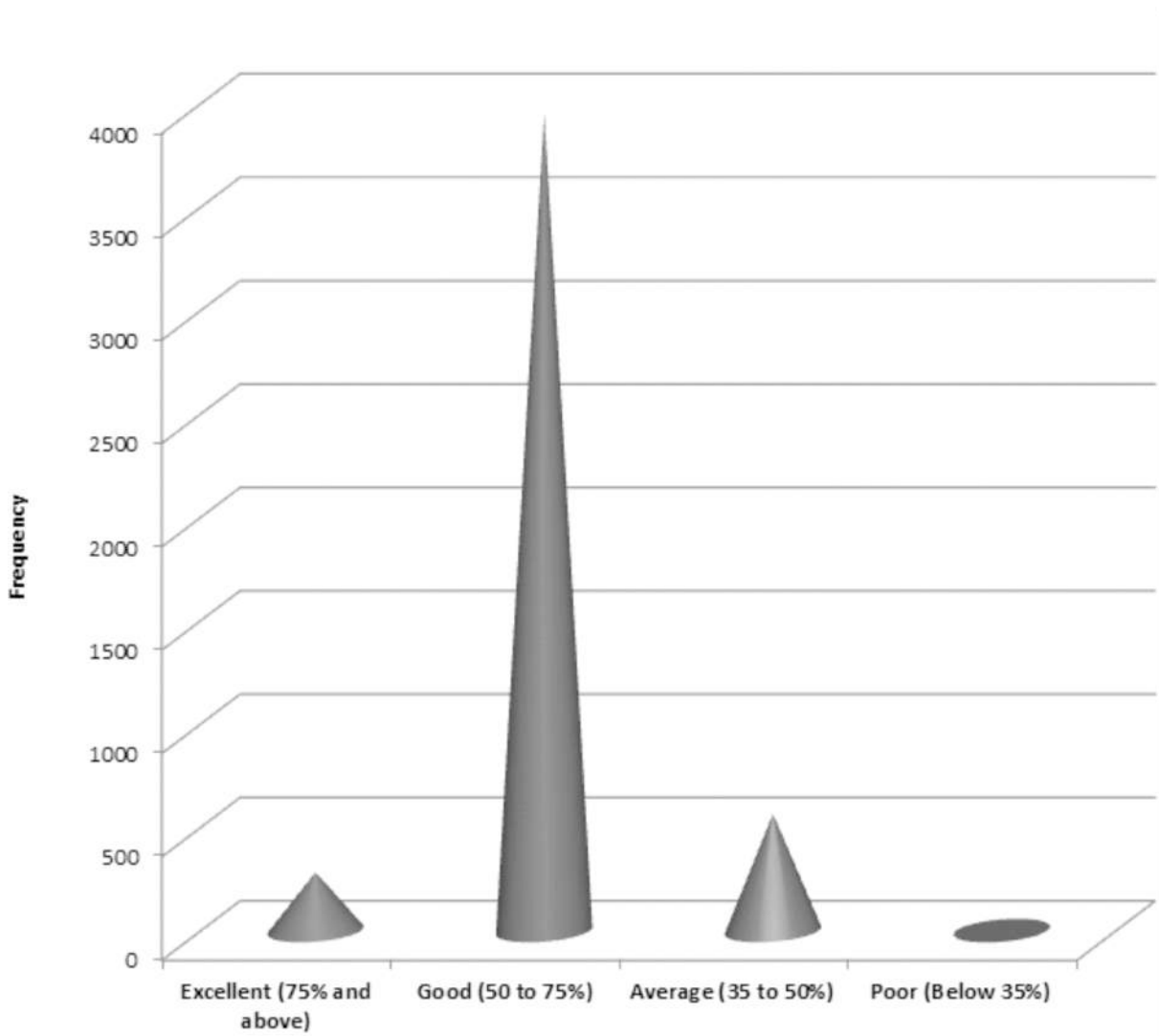
Figure 2: SDSS Channels of drugs distribution

Figure 3: Drugs availability

Table 1: Demographic profile of respondents

Characteristics	Number	Percent (%)
(A) PATIENTS		
Age in years		
≤17	282	5.9
18-52	3,953	82.3
52>	282	5.9
No response	282	5.9
Number of years of patronizing the health facility		
≤1	282	5.9
1-5	2541	52.9
>10	847	17.6
Non-response	1129	23.5
(B) SCHEME MANAGERS		
Sex		
Male	46	68.2
Female	19	27.3
Non-response	3	4.5
Number of years of practicing in the facility		
≤2	3	4.5
>2	65	95.5

Table 2: Item analysis of patient's view of drug affordability and accessibility to health care facility

Item	Percentage (%)
Number of times the facility was visited for monitoring and supervision in the past 10 months	
Not visited	28.3
Once	42.9
Twice	19.2
Thrice	5.0
Four times	4.5
Sanctioned for not adhering to best practices	
Yes	13.6
No	81.8
No response	4.5
Rewarded for observing best practices	
Yes	10.1
No	89.9
Adequate funds for drug procurement in facility	
Yes	27.3
No	68.2
No response	4.5
Major source of drug supply to facilities	
State medical store	59.1
Pharmaceutical companies sale representative	27.3
Wholesalers	4.5
No response	9.1

Table 3: Item analysis of scheme manager's assessment of the scheme

Item	Percent (%)
(A) Cost of drugs	
Patients who said the drugs are expensive	41.2
Patients who said the cost is satisfactory/ok	41.2
Patients who said the drugs are cheap	17.6
Drugs affordability	
Patient who could afford their drugs	64.7
Patient who could not afford their drugs	35.3
(B) Accessibility to health care facility	
i. Length of time patient used in travelling from home to the hospital	
< 30 minutes	17.6
Between 30 minutes – 1 hour	58.8
Between 1 hour - 2 hours	17.6
Over 2 hours	5.9
i. Length of stay in the pharmacy before getting drugs	
Less than 10 minutes	35.3
About 30 minutes	11.8
About 1 hour	41.2
More than 1 hour	11.8

DISCUSSION

Base on the 2010 National Drug Distribution Guidelines, manufacturers and importers are to supply their products to only mega and state distribution centres from whence further distribution will be conducted to institutions (both private and public), wholesalers, community pharmacies and patent and proprietary medicine vendors before it eventually gets to the consumer. Under such a system both public health care facilities and wholesalers are expected to procure their drugs from the same source. Under the SDSS likewise, the KASDAMMA which is the Kaduna State Drugs Distribution Centre, procure their drugs directly from manufacturers and or importers for sale and distribution to public health facilities. All health facilities under this Scheme are expected to make the Agency their sole source of drugs and other medical consumables. Hence, the distribution channels of the SDSS are consistent with the provisions of the National Drug Distribution Guidelines. However, about 40 % of the respondents sourced their drugs from either pharmaceutical sales representative or from wholesalers. This has led to the existence of a parallel distribution channel competing with the KASDAMMA channels of distribution.

The acute shortage of drugs and medical supplies in public health facilities has become endemic in most States of Nigeria this has undermined efforts to improve health care delivery.[16] This became a key entry strategy for the PATHS program, as it was apparent that the supply of essential drugs would be fundamental to the success of other initiatives to strengthen the health care delivery system in Nigeria. The aim of the scheme is to provide the communities with drugs that are: safe, qualitative and effective, affordable, continuously available and accessible.[20]

Findings from affordability assessments indicated that 35.3% of the respondents said they often unable to pay for the cost of their drugs, that is high base on the concept of the Kaduna state SDSS. Also, for a system that is said to be pro-poor, having up to 41.2 % of the patient rating the cost of drugs in the Scheme as expensive does not reflect such an image and therefore may need to be considered for possible review. Quality should however not be compromise.

Accessibility to healthcare facility is the ability of a population to obtain a specified set of health care services. Aday and Andersen [17] argued that in terms of accessibility to health care, two main aspects of accessibility are involved: socio-organizational and geographic. The socio-organizational component includes all attributes of the resources other than

spatial/geographic attributes – that either facilitate or impede the efforts of the client to get to healthcare facilities. They include aspects such as the sex of the healthcare provider, the provider's fee scale and specialization, among others. Geographic accessibility, on the other hand, refers to the "friction of space" that is a function of the time to get to the healthcare facility. Thus, it can be argued that accessibility is more than the existence or availability of resources: it involves a web of complex socio-cultural factors that intrinsically shapes the ultimate healthcare situation of an area. In this study however, individual home location, travel characteristics and time were the main components that were assessed in measuring accessibility. In terms of the time taken to travel to the hospital, only about 18 % required less than 30 minutes to get to the health care facility. This generally denotes great distances between patient's residential areas and the health facility, which can actually impede patient's effort in accessing care from health facilities.

Rewards of adherence to best practices and sanctioning of offenders are good management practice to encourage hard work and healthy competition.[18] Rewarding hard work can go a long way in motivating staff to put in their best while sanctioning of offenders will serve as a deterrent to others. The results of this study showed that there are elements of rewards and sanctions under the SDSS. However, with only about one-tenth of the respondents indicating that they were once rewarded for good practices while a little higher percentage has been punished. It is doubtful whether that is a correct reflection of the true situation. It is therefore necessary to strengthen the monitoring and supervision system to ensure adherence to good practice.

Almost three-quarter of the respondents indicated that their facilities do not have sufficient funds for drug procurement. This is quite disturbing because all facilities under the SDSS were capitalized with seed stock prior to the commencement of the scheme.[20] It is quite worrisome to note this occurrence as provisions were made by adding some percentages to cater for logistics cost and exemptions in order to ensure sustainability of the scheme.[12] This is expected to have revolved into higher amounts after so many years from the date of initial capitalization. This again showed the need to strengthen and empower the SDSS monitoring and supervision unit to be able to trace and impose fairness to this kind of ugly occurrences.

CONCLUSION
This study has shown that the Kaduna State SDSS

Channels are consistent with the provisions of the National Drug Distribution Guidelines which is comprehensive and good enough to rid the State of the challenges of uncoordinated drug procurement and distribution if the provisions of the guideline are implemented. Drugs availability was widely reported to have improved following the SDSS intervention, but a lot still need to be done to enhance affordability and improve access. Additional attention should be given to implementing the guideline provisions on monitoring, evaluation, rewards of good practice and sanctioning of offenders. Also, the guidelines governing exemptions, operational and logistic cost need to be look into for possible review as heavy logistics can hinder sustainability.

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