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### ORIGINAL ARTICLE

#### EVALUATION OF THE SUSTAINABLE DRUG REVOLVING FUND (SDRF) SCHEME AT THE PRIMARY HEALTH CARE CENTRES (PHCs) IN LAGOS STATE HEALTH DISTRICT 1.

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#### ABSTRACT

**Background:** The Sustainable Drug Revolving Fund (SDRF) scheme was introduced in Lagos State as a revised model of the Drug Revolving Fund (DRF) to ensure continuous availability and affordability of essential medicines in Primary Health Care Centres (PHCs). This study assessed the operational performance of the SDRF and examined factors influencing staff satisfaction with its implementation in Lagos State Health District 1.

**Methods:** A descriptive cross-sectional study was conducted across all 59 functional PHCs in Lagos Health District I between May and July 2024. The primary outcome was the SDRF's operational performance, measured by drug availability, stock-out rates, and procurement frequency. The secondary outcome was staff satisfaction with SDRF operations, assessed alongside patient perspectives on drug availability, pricing, and dispensing time. Data were collected using interviewer-administered questionnaires, prescription review checklists, and facility audits. Descriptive statistics summarized key indicators, while chi-square tests and binary logistic regression identified predictors of staff satisfaction at a 5% significance level.

**Results:** SDRF was operational in 96.6% of facilities, with 76.3% having functional SDRF committees. Essential drug availability was high (90%), though prices varied across facilities. About half of PHCs reported delays in fund disbursement, and about half (50.9%) of the staff were averagely satisfied, and the remaining were very satisfied (49.1%) with the facilities' operational factors. Patient feedback corroborated these findings, with over 50% strongly agreeing that drugs were regularly available, and more than 91% of prescriptions were mainly dispensed. Logistic regression revealed that delays in fund disbursement negatively affected staff satisfaction.

**Conclusion:** The SDRF has improved drug availability and efficiency in PHCs. Sustaining staff satisfaction and long-term performance requires timely disbursement of funds, strengthened governance, standardized procurement cycles, and adequate capitalization.

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## INTRODUCTION

The Drug Revolving Fund (DRF) scheme is a self-sustaining health financing strategy that ensures the continuous availability of essential medicines by selling them at a minimal markup and reinvesting proceeds to replenish supplies.<sup>1</sup> By guaranteeing access to quality lifesaving health commodities regardless of financial status, the DRF contributes to achieving Universal Health Coverage (UHC) and aligns with Sustainable Development Goal (SDG) 3, which calls for access to safe, effective, quality, and affordable essential medicines and vaccines for all.<sup>2,3</sup> Access to essential medicines remains a cornerstone of quality healthcare delivery and a critical determinant of population health outcomes.<sup>4</sup> In many African countries, the inclusion of drugs on the essential medicines list (EML) guided by the World Health Organization (WHO) is the first step toward ensuring their availability based on need, safety, efficacy, and affordability.<sup>3,5</sup> Despite widespread adoption of national EMLs, gaps persist in drug access across low- and middle-income countries.<sup>6</sup> Lack of availability of essential medicines continues to undermine the treatment of common diseases in sub-Saharan Africa, contributing to avoidable morbidity and mortality.<sup>7,8</sup> In Nigeria, weak supply chain systems, limited funding, and poor accountability have historically led to frequent drug stockouts in Primary Health Care Centres (PHCs), which form the backbone of the country's health system.<sup>1</sup> The availability of medicines is also one of the most visible indicators of quality care to patients. When essential drugs are absent, studies show that patient attendance at Nigerian PHCs can decline by as much as 50–75%, eroding trust in the health system.<sup>8–10</sup> To address these shortages, Nigeria introduced the Drug Revolving Fund (DRF) in 1990 as part of the Bamako Initiative.<sup>11,12</sup> While the DRF initially improved access, its effectiveness was limited by operational weaknesses, including poor fund management, weak pricing policies, and inadequate oversight, which ultimately led to stock depletion and unsustainable operations.<sup>13</sup>

To overcome these challenges, Lagos State developed the Sustainable Drug Revolving Fund (SDRF) in December 2012, a refined model emphasizing accountability, pricing transparency, community oversight, and partnerships with private suppliers. Innovations such as the establishment of facility-level SDRF committees, standardized mark-up formulas, and monitoring frameworks were intended to ensure consistent drug supply.<sup>14</sup> However, despite these improvements, bottlenecks such as delays in fund disbursement, non-standardized procurement cycles, inadequate community participation, and variable drug pricing continue to threaten the scheme's long-term success.<sup>15,16</sup> A study on facility users' preferences between free and Bamako Initiative (Drug Revolving Fund-Based) Health Services in Nigeria found that 1882 respondents were surveyed, and 260 (14.0%) had stopped patronizing the health facilities after the commencement of free health services. A major reason, among others, was the lack of drugs reported by 92 (39.4%) respondents. More facility users (1151, 62.6%) preferred the DRF scheme for drug availability, while 660 (36.0%) preferred free health; 375 (81.1%) of those who preferred free health did so because it was cheap.<sup>17</sup> Although the SDRF is now widely implemented across Lagos State PHCs, evidence on its operational performance and the satisfaction of PHC staff responsible for daily implementation remains scarce. Staff satisfaction is critical because it influences procurement efficiency, adherence to SDRF guidelines, and accountability. Moreover, the sustainability of the scheme has direct implications for patient outcomes, particularly access to affordable medicines and continuity of care. Without systematic evaluation, gaps in governance and operations may remain hidden, undermining both staff motivation and patient trust. This study, therefore, assessed the operationalization of the SDRF scheme in Lagos State Health District 1, evaluated the availability and pricing of essential medicines, and identified predictors of staff satisfaction with SDRF scheme

**Table 1: Key Operational Factors of the SDRF Scheme Across PHCs**

| Operational factors/Facility practices                                | Frequency<br>n= 59 | Percent<br>(%) |
|-----------------------------------------------------------------------|--------------------|----------------|
| <b>The facility operates an SDRF scheme</b>                           |                    |                |
| Yes                                                                   | 57                 | 96.6           |
| No                                                                    | 2                  | 3.3            |
| <b>The facility has an SDRF Account</b>                               |                    |                |
| Yes                                                                   | 48                 | 81.3           |
| No                                                                    | 11                 | 18.6           |
| <b>SDRF committee is in place in the facility</b>                     |                    |                |
| Yes                                                                   | 45                 | 76.2           |
| No                                                                    | 14                 | 23.7           |
| <b>The SDRF committee meets</b>                                       |                    |                |
| Monthly                                                               | 18                 | 30.5           |
| Bimonthly                                                             | 25                 | 42.3           |
| Quarterly                                                             | 14                 | 23.7           |
| Not applicable                                                        | 2                  | 3.3            |
| <b>Dates of SDRF capitalization</b>                                   |                    |                |
| 2013                                                                  | 4                  | 6.7            |
| 2015                                                                  | 6                  | 10.1           |
| 2017                                                                  | 1                  | 1.7            |
| 2018                                                                  | 2                  | 3.3            |
| 2019                                                                  | 27                 | 45.7           |
| 2020                                                                  | 15                 | 25.4           |
| 2023                                                                  | 2                  | 3.3            |
| Not applicable                                                        | 2                  | 3.3            |
| <b>Present Fund value</b>                                             |                    |                |
| <N500k                                                                | 17                 | 28.8           |
| N500-N1m                                                              | 16                 | 27.1           |
| N1m-N3m                                                               | 15                 | 25.4           |
| N3m-N5m                                                               | 8                  | 13.5           |
| >N5m                                                                  | 3                  | 5.0            |
| <b>The facility procures medications from the medical store</b>       |                    |                |
| Bimonthly                                                             | 18                 | 30.5           |
| Quarterly                                                             | 37                 | 62.7           |
| Biannually                                                            | 4                  | 6.7            |
| <b>Delays in the release of funds for essential drugs procurement</b> |                    |                |
| Yes                                                                   | 30                 | 50.8           |
| No                                                                    | 29                 | 49.1           |
| <b>The number of days of fund delay (30)</b>                          |                    |                |
| 21-30days                                                             | 15                 | 50.0           |
| >30days                                                               | 15                 | 50.0           |

implementation in Lagos State Health District 1. Findings from this study will provide evidence to strengthen the SDRF model in Lagos State.

## **METHODS**

### **Study Area**

Lagos State Health District 1 (LSHD1) is one of the six health districts established by the Lagos State

Government to improve health service delivery. LSHD1 comprises 68 Primary Health Care Centres (PHCs) and 63 political wards within three Local Government Areas (LGAs): Agege, Alimosho, and Ifako-Ijaiye.

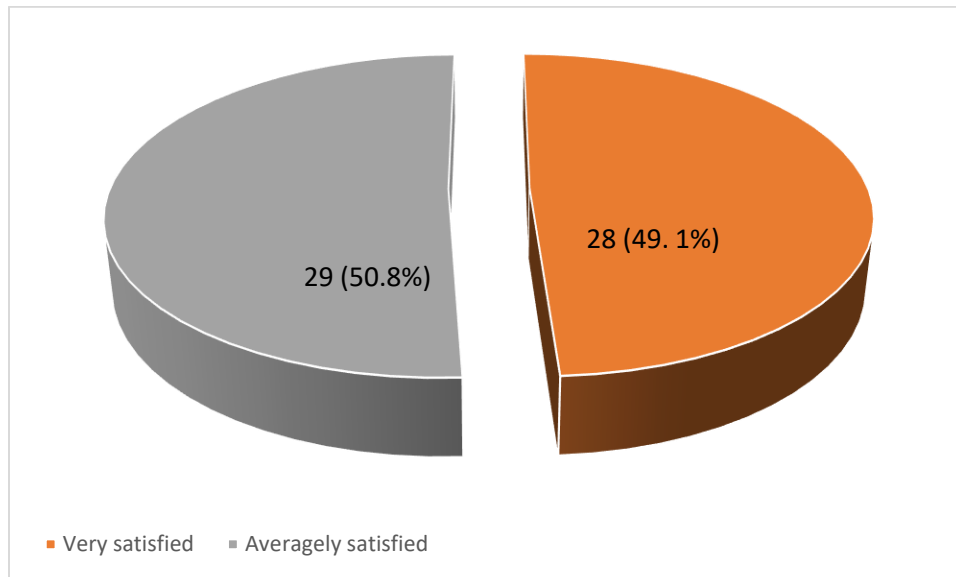


**Fig 1: Staff Satisfaction with SDRF Scheme in PHCs**

According to the Lagos State Local Government Statistics (2016), the district had an estimated population of 6,495,195, making it the most densely populated health district in Lagos State. Of the 68 PHCs, 59 were functional at the time of the study and were included in this assessment.

#### **Study Design**

A descriptive cross-sectional study was conducted between May and July 2024 to evaluate the implementation and performance of the Sustainable Drug Revolving Fund (SDRF) scheme in PHCs within LSHD1. This design was chosen because it allows for the assessment of multiple indicators, such as drug availability, procurement frequency, financial management structures, and staff satisfaction, at a single point in time across all facilities.

#### **Study Population and Sampling**

The study population included:

**Facility-level respondents:** facility managers, pharmacists or pharmacy technicians, and officers directly responsible for SDRF operations

(procurement, stock management, and financial oversight). At each facility, one staff member directly responsible for SDRF operations was interviewed.

**Patients:** consenting adult clients attending outpatient services at participating PHCs during the study period. A total sampling technique was used for facilities; all 59 functional PHCs in the district were included. For patients, 10 consecutive consenting patients who exited the pharmacy at each PHC were interviewed, yielding a total of 590 respondents. The inclusion criteria for patients were: being at least 18 years old, having attended the PHC for at least 6 months prior to the study period, and willingness to provide informed consent. Patients who were attending the health facility for the first time, were critically ill, or were unwilling to participate were excluded from the study.

#### **Sample size determination**

Sample size was determined for the patient sample using Cochran's formula<sup>3</sup> for proportions at a 95%

**Table 2: Average Unit Price Range and Availability of Selected Essential Drugs and Consumables in 59 PHCs, Lagos State Health District 1**

| Therapeutic Category          | Drug/Item                             | Price Range (₦) | Availability (%) |
|-------------------------------|---------------------------------------|-----------------|------------------|
| <b>Analgesics</b>             | Paracetamol 500mg tablets             | 100–200         | 100.0            |
|                               | Ibuprofen 400mg tablets               | 100–200         | 100.0            |
|                               | Paracetamol Syrup 125mg/5ml           | 400–600         | 96.6             |
|                               | Ibuprofen suspension                  | 300–500         | 100.0            |
| <b>Multivitamins</b>          | Ferrous Sulphate tablets              | 100–200         | 96.6             |
|                               | Vitamin B-Complex tablets             | 1–3 per tablet  | 100.0            |
| <b>Antibiotics</b>            | Metronidazole 200mg tablets           | 50–100          | 100.0            |
|                               | Amoxil 500mg Capsules                 | 300–500         | 100.0            |
|                               | Amoxil DT Capsules                    | 50 or Free      | 97.3             |
|                               | Ciprofloxacin 500mg tablets           | 100–500         | 96.6             |
| <b>Antidiabetics</b>          | Metformin 500mg Tablet                | 100–500         | 91.5             |
| <b>Maternal/Newborn Drugs</b> | ORS/Zinc                              | Free            | 100.0            |
|                               | Artemisinin-based Combination Therapy | Free            | 100.0            |
|                               | Oxytocin injection                    | Free            | 100.0            |
|                               | Magnesium Sulphate injection          | Free            | 100.0            |
|                               | Misoprostol tablets                   | Free            | 100.0            |
|                               | Chlorhexidine gel                     | Free            | 100.0            |
| <b>Consumables</b>            | Normal Saline                         | 500–600         | 88.1             |
|                               | Dextrose Saline                       | 500–600         | 88.1             |
|                               | Cotton Wool                           | 50–100          | 96.6             |
|                               | Needle/Syringe                        | 50–100          | 96.6             |
| <b>Antihypertensives</b>      | Nifedipine 20mg tablets               | 50–100          | 96.6             |
|                               | Amlodipine 5mg tablets                | 50–100          | 96.6             |
|                               | Tab Lisinopril 5mg                    | 200–300         | 91.5             |
|                               | Methyldopa tablets                    | 100–200         | 96.6             |

*\*Amoxil DT- Dispersible Tablet*

*\*All prices represent the average retail cost per standard pack (10 tablets or capsules, or equivalent), based on the Sustainable Drug Revolving Fund (SDRF) pricing at the time of survey. Liquid preparations were priced per bottle (100–200 mL).*

*\* Availability (%) refers to the proportion of PHCs where the drug or consumable was in stock on the day of data collection.*

confidence level, assuming a prevalence of 50% and a precision of 4.2%, yielding a minimum of 531 participants. To account for a 10% non-response rate, the sample size was adjusted to 590 participants, which was adopted as the final sample size for the study.

### Study Instruments

Three instruments were used to collect data in this study. Firstly, a facility staff questionnaire was administered to PHC staff directly involved in implementing the SDRF scheme, including facility managers, pharmacists, and pharmacy technicians. This questionnaire gathered information on how the

SDRF operated, fund management systems, procurement frequency, committee effectiveness, and staff satisfaction. Secondly, a patient interview schedule was employed to collect data from consenting adult patients (aged 18 and above) attending outpatient services at the participating PHCs. The instrument assessed patients' satisfaction with key aspects of pharmaceutical services, including the availability and affordability of prescribed medicines and their experiences with the dispensing process. Thirdly, a prescription review checklist was applied to the facility pharmacy or dispensing records.

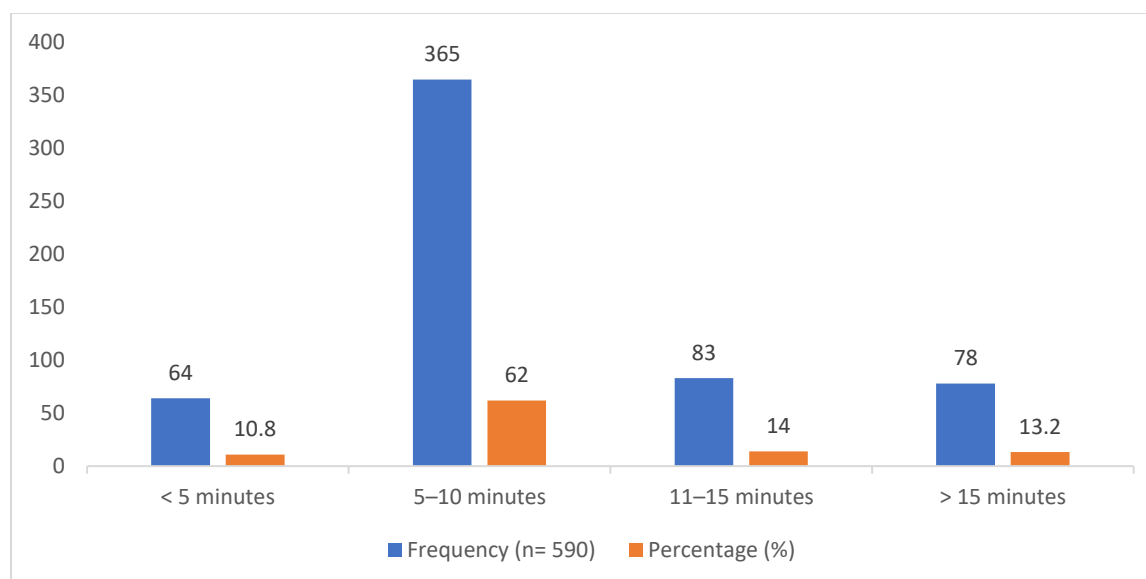


**Fig 2: Prescription Dispensing Time Among Patients in PHCs under the SDRF scheme.**

Adapted from the WHO/INRUD prescribing indicators<sup>13</sup>, it was used to assess prescription completeness, the proportion of prescribed drugs actually dispensed, and the average dispensing time. All instruments were developed based on literature<sup>13,18</sup> and the Lagos State SDRF operational guidelines<sup>8</sup> and were reviewed by experts in health systems and pharmaceutical management to ensure face and content validity. The tools were pretested in two PHCs outside the study area (Ikeja LGA), and necessary revisions were made to enhance clarity, reliability, and contextual relevance.

#### **Data Collection Procedure**

Data collection was conducted over three months (May–July 2024) by 10 trained research assistants. They underwent a two-day training program that covered research ethics, interviewing techniques, administering questionnaires, reviewing prescriptions, and engaging with respondents. Research assistants were fluent in English and Yoruba to ensure effective communication with respondents. Data were collected during routine working hours, and each interview lasted approximately 20–25 minutes. Field supervisors conducted random cross-checks and daily reviews of completed forms to ensure data completeness and reliability.

#### **Variable Outcomes and Measures**

**Independent Variables:** facility functionality, fund disbursement timeliness, training, capitalization, and drug availability.

**Dependent (Outcome) Variables:** staff satisfaction (primary), patient satisfaction, and overall facility performance.

Indicators were assessed: operational performance, availability, and dispensing completeness. Operational performance was defined as the proportion of facilities achieving satisfactory functionality ( $\geq 80\%$ ) across assessed domains. Availability was defined as the proportion of essential drugs or supplies present and functional on the day of data collection. An availability level of 80% or higher was classified as satisfactory. These thresholds align with WHO standards for minimum acceptable facility readiness.<sup>13</sup>

Dispensing completeness refers to the extent to which patients receive the full, correct, and appropriate prescribed medications. A dispensing completeness level of  $\geq 95\%$  is considered ideal.<sup>1</sup>

#### **Data Management and Analysis**

Completed questionnaires were checked for errors, cleaned, coded, and entered into SPSS version 27.0. Data cleaning involved cross-checking entries against the original forms and resolving any inconsistencies.

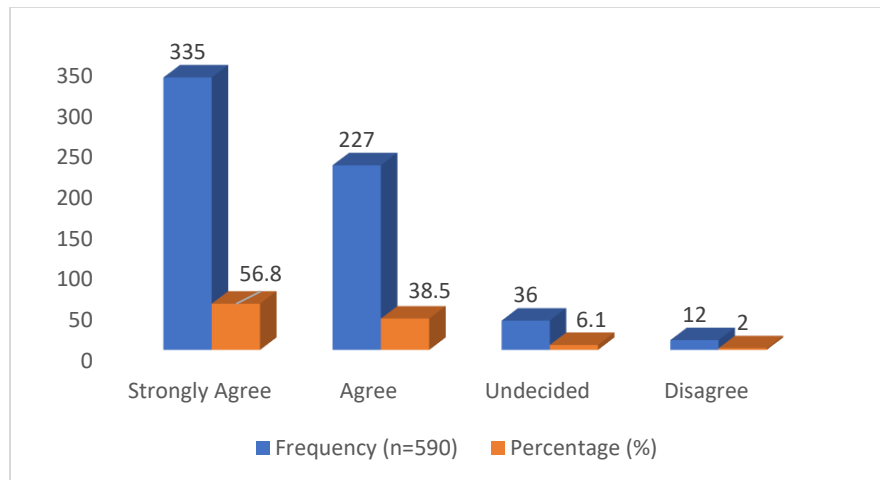


**Figure 3: Patients' Perceptions of Essential Drug Availability Across the PHCs**

Descriptive statistics (frequencies, percentages) summarized key operational factors such as drug availability, procurement frequency, and prescription fill rates. Bivariate analyses using chi-square tests were used to assess associations between staff satisfaction and independent variables (e.g., procurement frequency, committee presence, and fund disbursement delays). Binary logistic regression was used to identify predictors of high staff satisfaction, adjusting for potential confounders. Odds ratios (ORs) with 95% confidence intervals (CIs) were reported. Statistical significance was set at  $p < 0.05$ .

### ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Health Research Ethics Committee of Lagos State University Teaching Hospital, LREC/06/10/3055. Administrative approval was obtained from the Permanent Secretary of the Lagos State Primary Health District 1 and from the Medical Officers of Health in the three LGAs. Written informed consent was obtained from all participants, who were assured of confidentiality, anonymity, and their

right to withdraw at any stage without consequences. No identifiers were recorded during the data collection, and data were stored securely with access restricted to the data.

### RESULTS

Table 1: Shows that about 57 (96.6%) of the facilities operated an SDRF scheme. Most facilities, 37(62.7%), reported procuring medications quarterly, while 18(30.5%) did so bimonthly. Half of the facilities (30, 50.9%) experienced delays in the release of funds for drug procurement. Among those affected, the delays were evenly split between 21–30 days (15, 50.0%) and more than 30 days (15, 50.0%).

Fig 1: With respect to staff perspectives, satisfaction with the SDRF scheme was almost evenly distributed, with 28 (49.1%) very satisfied and 29(50.9%) averagely satisfied, while no staff reported poor satisfaction.

Antidiabetics had a slightly lower availability at 91.5%.

**Table 3: Association Between Facility-Level SDRF Practices and Staff Satisfaction**

| Facility-level Practice                     |            | Very Satisfied<br>n=27<br>(%) | Averagely Satisfied<br>n=30 (%) | $\chi^2$ | P-value |
|---------------------------------------------|------------|-------------------------------|---------------------------------|----------|---------|
| <b>The facility operates an SDRF scheme</b> | Yes        | 27 (48.2)                     | 29 (51.8)                       | 0.916    | 0.339   |
|                                             | No         | 0 (0.0)                       | 1 (100.0)                       |          |         |
| <b>The facility has an SDRF account</b>     | Yes        | 21 (41.9)                     | 26 (58.1)                       | 0.776    | 0.378   |
|                                             | No         | 6 (60.0)                      | 4 (40.0)                        |          |         |
| <b>SDRF Committee in Place</b>              | Yes        | 18 (44.7)                     | 25 (55.3)                       | 2.130    | 0.144   |
|                                             | No         | 9 (64.3)                      | 5 (35.7)                        |          |         |
| <b>Frequency of committee meetings</b>      | Monthly    | 6 (30.0)                      | 14 (70.0)                       | 4.240    | 0.120   |
|                                             | Bi-monthly | 12 (52.2)                     | 11 (47.8)                       |          |         |
|                                             | Quarterly  | 9 (64.3)                      | 5 (35.7)                        |          |         |
| <b>Procurement Frequency</b>                | Monthly    | 9 (52.9)                      | 8 (47.1)                        | 3.110    | 0.211   |
|                                             | Bi-monthly | 14 (40.0)                     | 21 (60.0)                       |          |         |
|                                             | Quarterly  | 4 (80.0)                      | 1 (20.0)                        |          |         |
| <b>Delay in fund release</b>                | Yes        | 4 (14.3)                      | 24 (85.7)                       | 24.160   | <0.001* |
|                                             | No         | 23 (79.3)                     | 6 (20.7)                        |          |         |

\* Significant value

Consumables such as saline, syringes, and cotton wool were available in more than 88% of facilities. Figure 2 shows patients' reported waiting time for prescription dispensing across PHCs under the SDRF scheme (N = 590). Most patients (365, 62.0%) received their prescriptions within 5–10 minutes, and 64 (10.8%) received them within 5 minutes. About 83 (14.0%) waited 11–15 minutes, and 78 (13.2%) waited more than 15 minutes. Overall, 72.8% of patients were attended to within 10 minutes.

Figure 3 shows that 335 patients (56.8%) strongly agreed and 227 (38.5%) agreed that essential medicines were consistently available. Only 36 respondents (6.1%) were undecided, while 12 (2.0%) disagreed, and no patient strongly disagreed. Figure 4 shows that, among the 59 Primary Health Centres (PHCs) evaluated, there was wide variation in the completeness of drug dispensing. A total of 10 facilities (16.9%) were non-functional, with dispensing completeness recorded at 0%. These

facilities did not provide any prescribed medicines to patients during the evaluation period due to ongoing renovation and upgrade of these PHCs. In contrast, 8 facilities (13.6%) had dispensing completeness below 80%. Most facilities (31 PHCs, 52.5%) had dispensing completeness between 80% and 94%. Finally, 10 facilities (16.9%) had dispensing completeness of 95% or higher.

In Table 3, the only facility-level practice significantly associated with staff satisfaction was the delay in releasing funds for drug procurement ( $\chi^2 = 24.160$ ,  $p < 0.001$ ). In facilities experiencing delays, most staff (24, 85.7%) were only averagely satisfied, whereas in facilities without delays, most staff (23, 79.3%) reported being very satisfied.

In Table 4, the only predictor that remained statistically significant was delays in the release of funds, where facilities experiencing delays had significantly lower odds of reporting high staff satisfaction (AOR = 0.02, 95% CI: 0.002–0.18,  $p < 0.001$ ).

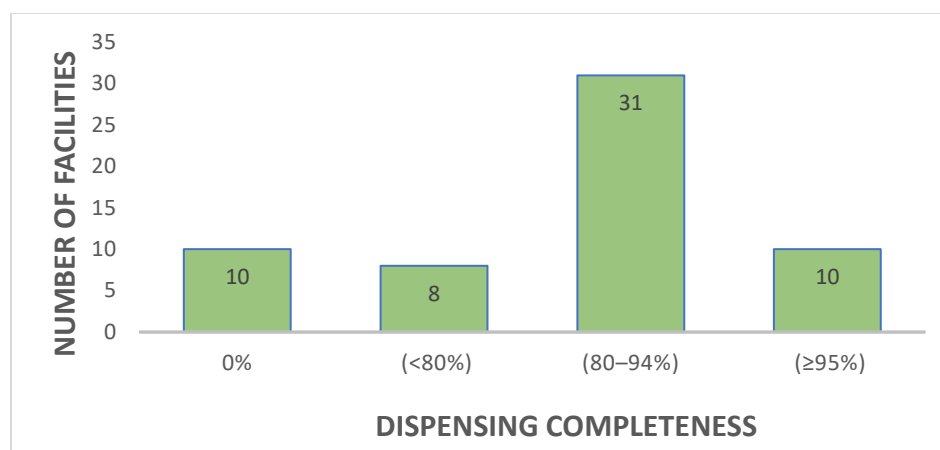


**Fig 4. Facility-level Performance in Drug Dispensing Completeness**

## DISCUSSION

This study found that nearly all facilities operated a Sustainable Drug Revolving Fund (SDRF) scheme, with most maintaining functional accounts and committees, reflecting widespread adoption across the study area. Similar findings were reported in Lagos State, where most PHCs had functional SDRF mechanisms.<sup>8</sup> Nevertheless, approximately one-quarter of facilities lacked functional committees and one-fifth lacked dedicated accounts. These governance gaps raise concerns about oversight, accountability, and timely procurement, mirroring evidence from Nigeria and other African settings where weak governance structures and poor financial management undermine fund sustainability.<sup>8,14</sup> The implication for policy is that, beyond simply establishing SDRF structures, sustained investments in governance training, financial oversight mechanisms, and accountability frameworks are required to ensure long-term sustainability.

Most committee meetings are convened bi-monthly, whereas best practice recommends monthly meetings to enable timely decision-making.<sup>15</sup> Infrequent meetings may delay procurement and compound risks of stock-outs, as reported in a study in Northern Nigeria.<sup>5</sup> Strengthening committee functionality, including enforcing regular meetings and mandating transparent reporting, could improve procurement

efficiency and enhance the resilience of SDRF mechanisms. Marked differences in fund valuation were observed: most facilities had balances below ₦1 million, whereas only a few held balances above ₦5 million showing drug access is attributable to difference in capitalization dates and fund valuation. This finding aligns with other Nigerian studies reporting wide variations in DRF values across PHCs<sup>12,19</sup> and with evidence from Kenya.<sup>18,20</sup>

However, another study in Nigeria showed that facilities with stronger local government support demonstrated uninterrupted medicine supply.<sup>6</sup> The policy implication is that equity-oriented financing reforms, including needs-based allocation and central pooling, are needed to prevent marginalization of under-resourced PHCs and ensure fair access to essential medicine, which is a prerequisite for universal health coverage (UHC). Procurement in most facilities was conducted quarterly. While administratively convenient, this increases the likelihood of stock-outs compared with shorter procurement cycles. In Nigeria, quarterly procurement has repeatedly been linked to shortages of essential drugs.<sup>3,4</sup> Policymakers may therefore consider bi-monthly procurement cycles taking into consideration the average monthly consumption of medicines to enhance supply continuity.

**Table 4: Predictors Influencing Staff Satisfaction Level of PHC facilities with the SDRF scheme in Lagos State Health District 1**

| Variables                               | AOR (95% CI)      | p- value          |
|-----------------------------------------|-------------------|-------------------|
| <b>The facility has an SDRF account</b> |                   |                   |
| Yes                                     | 0.742 (0.10-5.74) | 0.775             |
| No (Reference)                          |                   |                   |
| <b>SDRF Committee in Place</b>          |                   |                   |
| Yes                                     | 0.256 (0.04-1.74) | 0.164             |
| No (Reference)                          |                   |                   |
| <b>Frequency of committee meetings</b>  |                   |                   |
| Monthly                                 | 0.69 (0.06-7.90)  | 0.762             |
| Bi-monthly                              | 4.57(0.37-7.12)   | 0.238             |
| Quarterly (Reference)                   |                   |                   |
| <b>Procurement Frequency</b>            |                   |                   |
| Monthly                                 | 0.46 (0.01-18.48) | 0.679             |
| Bi-monthly                              | 0.05 (0.00-3.78)  | 0.178             |
| Quarterly (Reference)                   |                   |                   |
| <b>Delays in the release of funds</b>   |                   |                   |
| Yes                                     | 0.02 (0.002-0.18) | <b>&lt;0.001*</b> |
| No (Reference)                          |                   |                   |

*AOR = Adjusted Odds Ratio; CI = Confidence Interval; Reference category indicates baseline for comparison.*

*\*Statistically significant at  $p < 0.05$ .*

Half of the facilities reported delays in releasing funds, often lasting more than a month. This represents a critical threat to uninterrupted drug supply which does not align with the core principles of the SDRF scheme demotivate staff. Similar challenges have been observed in Benin and Rivers State, Nigeria, which pointed to procurement delays as a major factor in medicine stock-outs in PHCs.<sup>7,21</sup> Digital disbursement systems, performance-based financing, and pre-approved expenditure ceilings could mitigate delays and enhance responsiveness. Despite governance and financing lapses, nearly half of the staff reported being very satisfied with the SDRF scheme, while the rest were moderately satisfied, with no instances of dissatisfaction recorded. However, the absence of dissatisfaction may reflect social desirability bias, a limitation noted in satisfaction surveys. Multivariate regression revealed that delays in fund release were the only significant predictor of staff satisfaction, whereas other facility-level practices were not significant. This suggests that staff may be more sensitive to tangible outcomes, such as an uninterrupted drug supply, rather than to structural

arrangements. Similar findings have been reported in Enugu, where staff satisfaction correlates more with supply reliability than with procedural compliance.<sup>19</sup> Regarding drug availability, most facilities met the  $\geq 80\%$  benchmark, which demonstrates that SDRF mechanisms can deliver reliable access when adequately capitalized and well-managed. On the other hand, facilities below the benchmark highlight persistent systemic weaknesses, particularly funding disparities, delayed fund releases, and irregular procurement, which undermine equity and sustainability. These gaps reflect similar findings from Nigeria and Ethiopia, where the average availability of essential medicines at PHCs ranges from 50–70%, below the WHO's recommended level.<sup>10,18</sup> Importantly, most medicines were dispensed at affordable prices, consistent with DRF principles of revolving affordability.<sup>6</sup> This affordability reduces out-of-pocket expenditure and protects households from catastrophic health costs, advancing progress toward UHC. Yet, other reports caution that where DRFs are poorly managed, medicine prices can become inflated<sup>22</sup>, underscoring the importance of

regulatory oversight. Patients satisfaction with the SDRF scheme was high, which aligns with findings from Ethiopia and Sudan, where the DRF scheme enhanced availability and trust in PHC systems.<sup>18,23</sup> However, satisfaction was uneven across facilities, with dissatisfaction more likely in those experiencing frequent stock-outs. The implication is that patient satisfaction is a sensitive proxy for system performance and should be routinely monitored. With respect to dispensing practices, about three-quarters of patients received prescriptions within 10 minutes, which may partly reflect the need for longer counselling in some cases, a desirable outcome. WHO recommends at least three minutes of dispensing time to ensure adequate patient counselling on dosage regimens, precautions, and potential adverse effects.<sup>7</sup> Short dispensing times of less than 3 minutes, reported in a study in Lagos PHCs, highlight the persistent tension between efficiency and the quality of patient education.<sup>8</sup> Although most patients were served within a reasonable time, approximately 1 in 10 waited over 15 minutes, reflecting inefficiencies that could be addressed through task-shifting, workflow redesign, or the implementation of electronic dispensing systems. Dispensing completeness varied widely across the facilities. Only 16.9% of PHCs achieved near-optimal completeness ( $\geq 95\%$ ), while nearly one-third performed poorly, including facilities with 0% completeness due to ongoing renovation and upgrade of the PHCs. Although the dispensing completeness value in this study is higher than the 56% completeness reported previously in a study in Ekiti<sup>10</sup>, performance remains below the ideal benchmark of 100%. Incomplete dispensing undermines treatment adherence, increases the risk of treatment failure, and may contribute to antimicrobial resistance (AMR). Global AMR strategies emphasize that incomplete antibiotic courses due to stock-outs accelerate resistance.<sup>13</sup> This finding links a local supply chain weakness to

a pressing global health challenge, underscoring the importance of strengthening forecasting, early warning systems, and stock management practices. Overall, while SDRFs have expanded access to medicine, improved affordability, and enhanced satisfaction, persistent governance, financing, and operational gaps undermine sustainability. Strengthening SDRFs is central to ensuring equitable access to essential medicines in Nigeria and contributes directly to global health goals of UHC and AMR mitigation. The study has some limitations. Firstly, the research provides a cross-sectional snapshot of SDRF, which limits its ability to capture seasonal fluctuations, long-term trends, or temporal changes in medicine availability and fund operations. Additionally, data on staff and client (patient) satisfaction, delays in fund disbursement, and SDRF committee functionality were self-reported by facility staff and clients (patients), which may introduce recall and social desirability bias. Secondly, the study did not explore patients' direct experiences or quantify out-of-pocket expenditure, both of which are essential factors for evaluating affordability, equity, and access to essential medicines. Despite these limitations, the study possesses notable strengths. It involved a substantial number of PHC facilities across Health District 1, thereby capturing a diverse range of SDRF implementation practices. This enhances the generalizability of the findings within the state.

## CONCLUSION

The findings demonstrated that most patients reported timely prescription dispensing and that the majority (three-quarters) of staff and clients were satisfied with the scheme. Essential medicines and key consumables were consistently available at affordable prices. However, delays in the release of funds emerged as the single most critical factor negatively influencing staff satisfaction. Overall, the SDRF scheme appears to be effective in improving drug availability and

service delivery, but sustained efficiency will require addressing systemic bottlenecks.

Disbursement procedures of funds should be streamlined to avoid delays that negatively affect staff satisfaction and facility operations. The capacity of the facility-level committees should be strengthened to ensure timely meetings, effective oversight and transparent fund utilization. Procurement and pricing of essential medicines should be standardized and monitored to prevent drug stock-outs, maintain affordability and equity. Incentivise staff participation in SDRF through recognition and non-financial rewards.

#### **FUTURE DIRECTIONS**

Conduct longitudinal studies to assess the sustained impact of SDRF on drug availability, service

quality, and patient outcomes. Comparative studies between SDRF and non-SDRF facilities to strengthen evidence of effectiveness.

#### **CONFLICT OF INTEREST**

None

#### **AUTHOR'S CONTRIBUTIONS**

OB, SA, NA, and MO conceived the study idea, participated in the study design, drafted data collection tools, and conducted data collection. OO, SA, NA and MO participated in data analysis, interpretation, and manuscript drafting and revision. SA, OO, NA, MO and OB critically reviewed the manuscript. All authors read and approved the final manuscript.

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