



# **Gusau Journal of Accounting and Finance (GUJAF)**

**Vol. 4 Issue 1, April, 2023 ISSN: 2756-665X**

A Publication of  
Department of Accounting and Finance,  
Faculty of Management and Social Sciences,  
Federal University Gusau, Zamfara State -Nigeria

*Gusau Journal of Accounting and Finance, Vol. 4, Issue 1, April, 2023*

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**Vol. 4 Issue 1**  
**April, 2023**  
**ISSN: 2756-665X**

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***Published and Printed by:***

Ahmadu Bello University Press Limited, Zaria  
Kaduna State, Nigeria.

Tel: 08065949711, 069-879121

e-mail: [abupress2013@gmail.com](mailto:abupress2013@gmail.com)

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**SOURCES OF HEALTH CARE FINANCING AMONG SURGICAL PATIENTS SEEN AT THE DALHATU ARAF SPECIALIST HOSPITAL LAFIA NASARAWA STATE NIGERIA**

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**Abstract**

*Sources of healthcare financing especially among surgical patients in Nasarawa state is presently unknown. Sub-Saharan African countries have introduced a number of methods to funding healthcare system. The Nigerian government commenced implementation of a social health insurance scheme (National Health Insurance Scheme; NHIS) so as to improve on healthcare funding for its citizens. This study determined the sources of financing surgical cases, type of surgeries and compared the cost of treatment among patients attending the Dalhatu Araf Specialist Hospital and other Health Centers in Nasarawa State. It was a hospital based cross-sectional descriptive study among 420 adults aged 18 years to 75 years in a study that lasted for two years. The data collected was analyzed using Statistical package for the Social Science (SPSS) version 20.0. Significant  $p$  was  $< 0.05$ . The average age of patient was  $28.6 \pm 11.9$  years. There were more females (75.5%) with most (73.8) of our participants living in rural areas. Majority (60.0%) had Caesarean Section and one-sixth had exploratory laparotomy respectively. Most spending for healthcare needs was Out-Of-Pocket (OOP) with only a handful (6.7%) enjoying insurance coverage. The average cost of surgery was 41,337.73 Naira and 28,426.47 Naira among the low and high socio-economic class respectively. Most of the participants in this study were on Out-Of-Pocket healthcare financing with only one out of fifteen having health insurance coverage of the NHIS. Most of the surgical patients are from the rural areas, are females, do not attend tertiary level of education and are of low socio-economic status. Caesarean section and exploratory laparotomy were the predominant indications for surgeries. Those from the lower socio-economic status pay more for surgeries even though they earn less. We recommended that the state consider State health insurance agency and this should cater for people in both the formal and the non-formal*

*sectors. In addition, rural dwellers and surgeries such as caesarean section and emergency laparatomies should not be left out.*

**Keywords:** Healthcare, Financing, Rural, Sources.  
<https://doi.org/10.57233/gujaf.v4i1.203>

## **1. Introduction**

Government in developing countries including Nigeria has difficulty funding health-care due to budget constraints, population size and competing demands for public expenditure (Anyachie and Nwobodo, 2004). Since independence, Sub-Saharan African countries have introduced a number of methods to fund health care (Shaw and Griffin, 1995). An initial goal to provide free health care for all has never been achieved due to low and unstable tax revenue and subsequent non-sufficiency of public budgets due to rising population (Wiesmann and Jutting, 2000). With the level of poverty in rural areas, individuals who are ill rely on herbal remedies and/ or self-medication with orthodox drugs (Inem, 2003). Where self-treatment is unsuccessful, patients are compelled to seek and pay for expensive outpatient services from traditional healers, private practitioners and pharmacist (Wiesmann and Jutting 2000 & Inem 2003). Although direct payment for out-of-pocket expenses is most common, this has been heavily criticized for its impact on health inequity and access, healthcare uptake or utilization, and the cost-effectiveness of the health care system (Shaw and Griffin, 1995).

To improve health care funding, the Nigerian government commenced implementation of a social health insurance scheme (National Health Insurance Scheme; NHIS) in 1999 (Akande and Ogunrinola, 2000). In contrast to user fees, the NHIS encompasses risk-sharing in an attempt to reduce unforeseeable or unaffordable healthcare costs to calculate, regularly paid premiums (Shaw and Griffin, 1995). Despite the NHIS advantages, most people in Nigeria continue to rely on out of pocket to finance their healthcare needs because only a small segment of the population is covered by the scheme [mainly federal government public servant in urban areas] (Akande and Ogunrinola, 2000). The informal sector and those in rural (approximately 50% of the population), where 80% live below the poverty line, are not covered. Unfortunately, high burden of disease is found in this population, and 11% to 15% is surgical. Existing government hospitals in these rural areas are poorly equipped and sparsely staffed with qualified personnel (Onwujekwe 2009). Profit – oriented private clinics collect fees at the point of service in the form of out-of-pocket payment, as a cost recovery strategy (Creese 1997). In response to these persistent issues in the cost of health care, non-profit,

voluntary insurance schemes for urban and rural self-employed and informal-sector workers have recently emerged. Is it properly established? Is it well utilized?

### **Objectives of the study**

- i. To determine the sources of financing among surgical patients from the masses attending the Dalhatu Araf Specialist Hospital and some selected Health Center in Nasarawa State.
- ii. To determine the socio-demographic characteristics of these surgical patients
- iii. To determine the average cost of surgery among this population
- iv. To describe the pattern of surgical operation in this population

### **2. Literature review**

Healthcare financing can be defined as the pooling together of funds from the haves and have-nots for healthcare service delivery to all. In other word, it is the harnessing of resources from the rich and the poor according to earnings and for the benefit of everyone especially the lower economic statuses individuals (Oyefabi, 2014). This is geared towards avoiding out-of-pockets (OOPs) spending and prevents catastrophic as well as embarrassing situations to the citizenry (Oyefabi, 2014).

Many years post-independence, Nigeria continue to battle with the provision of basic health care services for its teeming population (Orimisan, 2013). This is largely contributed by limited resources in over-hauling and maintaining our primary healthcare services. (Gbadeyan, 2016). The methods adopted by different countries in ensuring financial sustainability of its health care system is a critical determinant for meeting the universal health coverage [UHC], hence the challenges with healthcare delivery in Nigeria (Uzochukwu, 2015). The financing of healthcare by government in Nigeria (just like across the world but worst in most developing countries) is complemented by contributions from the household, donor agencies, and the private sector (Lawanson 2013). The government commitment on healthcare funding will have to increase in other to cater for the low-income earners and the down trodden masses who constituted a large chunk of the population, especially in the Northern part of Nigeria where Nasarawa state belongs (Lawanson, 2013).

The conventional categorizations of financial sources for health care are taxation, social health insurance, private health insurance and out-of-pocket payments (Adaji 2018). The out-of-pocket spending is the most common means of financing medical care in Nigeria, this is worsened by poor resources allocation yearly to the health sector in our budget (Adaji, 2018). There are increasing variations in the finance sources used to fund health care. Differences in social health insurance are: implementation either at the national, state or at the community level (Yu, 2008).

Eligibility can be on a mandatory or voluntary basis, and contributions is either by the individual or the employer. Variations in out-of-pocket payments are in its formality or informality and function either as co-payment, co-insurance or at full cost (Yu, 2008).

The Nigerian National Health Insurance Scheme (NHIS) was established in 1999 but launched officially in 2005, to provide financial risk protection for citizens and reduce the high burden of out-of-pocket expenditures (OOPs) on individuals and families (Onwujekwe, 2012). The all-inclusive programmes of the NHIS includes social health insurance for formal sector employees, community-based health insurance, private health insurance, and voluntary health insurance (Onwujekwe, 2012). The NHIS' objective of ensuring access to quality health services for all Nigerians has also been viewed as a positive step towards achieving universal health coverage [UHC] (Uzochukwu, 2015). There is presently no known published study on this subject in Nasarawa state. This study is therefore timely as it will provide baseline knowledge gaps which can then be built upon. It will also unravel the burden of healthcare funding in the state especially as it concerns surgical cases. Some socioeconomic factors are believed to have influence on the distribution of health resources within the country as well as the health outcome. Such socio-economic factors also vary within communities, states and geopolitical regions within the country (Atobatele, 2022).

The present study will also demonstrate the pattern of surgical operations, the average cost of such procedures and socio-demographic factors related to either the occurrence, timely presentation or the outcome.

### **3. Methodology**

This section discussed the study participant's eligibility criteria, sampling size determination, procedure followed in recruitment, ethical considerations, data analyses et cetera. The study was conducted among adult patients presenting to the Dalhatu Araf Specialist Hospital Lafia with surgical conditions in Nasarawa State from January 2019 to December 2020. Patients were recruited from the casualty, General outpatient Department (GOPD), Surgical Outpatient Department (SOPD) as well as the male and female surgical wards.

Sample size was calculated using the formula:

$$n = \frac{Z^2 pq}{d^2}$$

Where  $n$  = sample size,  $Z$  is standard normal deviation of 1.96,  $p$  is the prevalence which is 45.4%,  $q = 1 - p$  and  $d$  is the degree of accuracy desired usually set at 5%.

Therefore

$$n = \frac{1.96^2 \times 0.45 \times 0.546}{0.05^2}$$

$$n = 380.9$$

$$n = 381$$

$$\text{Non-response} = 10\% \quad = n = \frac{381}{100} \times \frac{10}{1} = 38.1$$

$$\begin{aligned} \text{Final sample size } N &= n + \text{NRR} = 381 + 38.1 \\ &= 419.1 \\ &= 420 \end{aligned}$$

The study was conducted using a sample size of 420.

### **Study design**

It was a hospital based cross-sectional descriptive study among adults aged 18 years to 75 years.

### **Procedure methodology**

Adult participants were approached in surgical out-patient as well as casualty. The patients were informed about the study [Appendix i] and consent form [Appendix ii] was given to them after consenting to the study. Self-administered questionnaire was given to them and those needing assistance or interpretation were assisted by the research assistant.

### **Ethical consideration**

Ethical approval was sought from the research ethics committee of Dalhatu Araf Specialist Hospital Lafia. Nasarawa State, permission was also sought from the head of casualty, General outpatient Department (GOPD), Surgical Outpatient Department (SOPD) as well as the male and female surgical wards.

### **4. Data analysis**

The data collected was entered into a Microsoft excel sheet with the categorical variables are coded (where 1 = male and 2 = female) before transferring into a Statistical package for the Social Science (SPSS) version 20.0. Categorical variables (such as gender, place of residence, religion etc) were presented in tables of frequency distribution. Mean and standard deviation of continuous variables (such as age and cost of surgeries etc) calculated. The association between two

means will be calculated using student T test, while categorical variables will be calculated using chi square. The significant p value was < 0.05.

### **Funding**

The research work was funded by the researchers with technical assistance from the Hospital Research unit.

### **Results**

**Table 1: Socio-demographic characteristics of the study participants**

| <b>Variables</b>          | <b>Frequencies (%)</b> |
|---------------------------|------------------------|
| <b>Age (years)</b>        |                        |
| 0 – 17                    | 41 (9.7%)              |
| 18–25                     | 132 (31.4%)            |
| 26-35                     | 167 (39.8%)            |
| 36-50                     | 60 (14.3%)             |
| 51-60                     | 8 (1.9%)               |
| >60                       | 12 (2.9%)              |
| <b>Sex</b>                |                        |
| Male                      | 103 (24.5%)            |
| Female                    | 317 (75.5%)            |
| <b>Level of education</b> |                        |
| Primary                   | 152 (36.2%)            |
| Secondary                 | 132 (31.4%)            |
| Tertiary                  | 136 (32.4%)            |
| <b>Religion</b>           |                        |
| Christianity              | 149 (35.5%)            |
| Islam                     | 271 (64.5%)            |
| <b>Marital status</b>     |                        |
| Single                    | 71 (16.9%)             |
| Married                   | 336 (80.0%)            |
| Divorce/separated         | 7 (1.7%)               |
| Widowed                   | 6 (1.4%)               |
| <b>Number of wives</b>    |                        |
| 1                         | 47 (45.6%)             |
| 2                         | 33 (32.0%)             |
| 3                         | 14 (13.6%)             |
| 4                         | 7 (6.8%)               |
| >4                        | 2 (2.0%)               |



**Occupation**

|                |             |
|----------------|-------------|
| Business       | 160 (38.1%) |
| Unemployed     | 36 (8.6%)   |
| Civil servant  | 46 (11.0%)  |
| Farmer         | 38 (9.0%)   |
| Housewife      | 52 (12.4%)  |
| Retiree        | 1 (0.2%)    |
| Students       | 11 (2.6%)   |
| Cattle rearing | 3 (0.7%)    |
| Artisans       | 73 (17.4%)  |

**Place of residence**

|       |             |
|-------|-------------|
| Rural | 310 (73.8%) |
| Urban | 110 (26.2%) |

---

**Mean age (SD) = 28.6 (11.9) years**

**Socio-demographic characteristics of the study participants**

The average age of patient was 28.6 ± 11.9 years with majority of patients, 167 (39.8%) from the age group 26 – 35 years. There were more female, 317 (75.5%) in this study when compared to male. Level of education varied as most participants 152 (36.1%) in this study, had primary education only. Islamic religion was the most 271 (64.5%) practiced in this study population. Most 336 (80.6%) participants were married, and of the 103 male participants, 47 (45.6%) had one wife while 9 (8.8%) had four or more wives. Occupation of the participants revealed majority 160(38.1%) were involved in various businesses. Most 310 (73.8) of our study participants lived in rural areas **Table 1**.

**Table 2: Type of surgery and treatment outcome**

| <b>Variables</b>                 | <b>Frequency (%)</b> |
|----------------------------------|----------------------|
| <b>Type of hospital facility</b> |                      |
| Secondary                        | 59 (14.0%)           |
| Tertiary                         | 361 (86.0%)          |
| <b>NHIS user</b>                 |                      |
| Yes                              | 28 (6.7%)            |
| No                               | 392 (93.3%)          |
| <b>Type of surgery</b>           |                      |
| Appendectomy                     | 26 (6.1%)            |
| Amputation                       | 8 (1.9%)             |
| Urethroplasty                    | 2 (0.5%)             |
| Arthrotomy                       | 4 (1.0%)             |

|                            |             |
|----------------------------|-------------|
| Caesarean section          | 252 (60.0%) |
| Cervical cerclage          | 3 (0.7%)    |
| Exploratory laparotomy     | 70 (16.7%)  |
| Excision biopsy            | 5 (1.2%)    |
| Facial repair              | 4 (1.0%)    |
| Herniorraphy               | 9 (2.1%)    |
| Hysterectomy               | 4 (1.0%)    |
| Hydrocelectomy             | 2 (0.5%)    |
| Herniotomy                 | 3 (0.7%)    |
| Intussusception reduction  | 1 (0.2%)    |
| Myomectomy                 | 5 (1.2%)    |
| Nasal packing              | 1 (0.2%)    |
| Prostatectomy              | 3 (0.7%)    |
| Removal of implant         | 4 (1.0%)    |
| Scrotal exploration        | 3 (0.7%)    |
| TAH                        | 6 (1.4%)    |
| Wound debridement with POP | 3 (0.7%)    |
| Osteotomy                  | 2 (0.5%)    |
| <b>Surgical outcome</b>    |             |
| Successful                 | 418 (99.5%) |
| Not successful (Death)     | 2 (0.5%)    |

### **Type of surgery and treatment outcome**

Type of health facility attended by patients before referral to our facility revealed that most patients 361 (88.3%) attended tertiary health facility. Only a handful of the total patients, 28 (6.7%) had health insurance coverage (NHIS).

Type of surgery performed among the patients revealed majority 252 (60.0%) had Caesarean Section and 70 (15.7%) had exploratory laparotomy as evident by the age of most patients being within the reproductive age. Outcome of surgeries showed that 418 (99.5%) had successful outcome while 2 (0.4%) cases were not successful as they resulted in deaths **Table 2**.

**Table3: Sources of financing in this study population**

| Variables                             | Rural (%)          | Urban (%)          | Total (%)          | p-value      |
|---------------------------------------|--------------------|--------------------|--------------------|--------------|
| <b>Source of healthcare financing</b> |                    |                    |                    |              |
| NHIS                                  | 11 (39.3)          | 17 (60.7)          | 28 (6.7)           | <b>0.037</b> |
| Personal                              | 203 (71.5)         | 81 (28.5)          | 284 (67.6)         |              |
| Siblings/parents                      | 36 (92.3)          | 3 (7.7)            | 39 (9.3)           |              |
| Spouse/Children                       | 35 (67.3)          | 17 (32.7)          | 52 (12.4)          |              |
| Other relatives                       | 14 (82.4)          | 3 (17.6)           | 17 (4.0)           |              |
| <b>Total</b>                          | <b>299 (100.0)</b> | <b>121 (100.0)</b> | <b>420 (100.0)</b> |              |

**Sources of financing in this study population**

Majority of the patients spent out of the pocket for healthcare as only 28 (6.7%) had insurance coverage. A breakdown of source of funding reveal 284 (67.6%) depended on personal out of pocket spending for healthcare needs. More rural dwellers 203 (71.5%) spent personal out of pocket/personal while in the urban areas, 81(68.6%) spent personal out of pocket. More siblings, parents and or children are however supportive in the rural area out of pocket spending compared with the urban dwellers and this is significant. Association between source of finance for surgery and location of patients showed statistically significant difference with p-value = **0.037 Table 3.**

**Table 4: Cost of surgery among rural surgical patients**

|                              | Rural                             | Urban                                   | p-value      |
|------------------------------|-----------------------------------|---|--------------|
|                              | Patients with low economic status | Patients with fair/high economic status |              |
| <b>Cost of surgery</b>       | 32,551.10                         | 26,455.56                               | <b>0.006</b> |
| <b>Average annual income</b> | 144,900.66                        | 408,581.25                              | <b>0.000</b> |
| <b>Cost of surgery</b>       | 41337.73                          | 28426.47                                | <b>0.000</b> |

**Cost of surgery among rural surgical patients**

Difference in the average cost of surgery and socio-economic status was assessed using a t-test test and was found to be statistically significant with p-value of **0.001**. The average cost of surgery was 41,337.73 naira and 28,426.47 naira among the low and high socio-economic class. The cost of surgery differed significantly between rural patients and urban patients with p-value of **0.006** implying that the average cost of surgery in the rural area which is 32,551.10 differed from those of urban area which is 26,455.56. Similarly, the average annual income of the patients

and the location of surgical patients were assessed for difference. It was found to be statistically significant with p-value < **0.001** indicating that the average annual income of rural surgical patients (144,990.66) naira differed profoundly from the average annual income of urban surgical patients (408,581.25) naira **Table 4**.

### **Discussion**

The mean age of participants in this study was  $28.6 \pm 11.9$  years with majority being from the age-group 26 – 35 years. This is understandable as this is an active age-group for the work-force as a good number of people who belong to these age-groups are probably earning a living and can afford Hospital services. Most participants are females (three-quarter) as they are vulnerable member of the society and are known to take their healthcare needs more seriously. Most participants were from the rural areas, did not attain tertiary level of education and are either into small businesses, farming or are Housewives without any means of livelihood (Inem 2003 and Akande 2000).

Majority of the surgical patients in this study population spending were out of the pocket for healthcare needs as only a handful of participants (one out of every fifteen) had insurance coverage through the NHIS platform. A further breakdown of sources of funding revealed that two-third depended on personal out of pocket spending for healthcare needs. This is particularly more among the rural dwellers in comparison with the urban dwellers. More siblings, parents and or children are however supportive in the rural area out of pocket spending compared with the urban areas. This is not surprising as communal living with the extended families is predominant at this level unlike the urban areas where the type of housing, the marital types (monogamous as against polygamous), level of education and occupation creates artificial barriers between people as there is higher tendencies to live in isolation from others (Inem 2003). The low NHIS coverage (6.7%) could be attributed to its focus on the formal sector at the Federal level only. The State Health insurance was yet to take off as at the time of this study. If this trend is allowed to continue, it will hinder the attainment of Universal Health Coverage [UHC] (Onwujekwe, 2019). This is a major challenge as it is known that some of the issues confronting the health care financing includes; poor funding by government, high out of pocket payment and inadequate implementation of health care financing policy (Yunusa, 2014). Earlier studies have reported a high Out – Of – Pocket (OOP) financing model in our societies (Uzochukwu 2015 & Onisanwa 2018).

Participants from the lower socio-economic status were found to pay more in the Hospital. This implies that the cost of surgery differed among patients with different

socio-economic status, as patients from lower socio-economic strata paid higher for surgery than those with high or medium socio-economic status. A probable reason may be due to variation of illnesses at these locations as lack of access to clean water, poor hygiene and lack of adequate environmental sanitation which will make some diseases more common are likely to be bedeviling the rural communities, hence the variation in the cost of their surgeries (Inem 2003). Another possible explanation may be due to delayed presentation as they would have patronized the over the counter, traditional medicines etc and will only come to the Hospital when all these fails, thereby presenting with possible complications that will cost more as they stay longer on the ward, may require surgeries, may require more expensive drugs etc. Those at the urban areas also will end up spending less for treatment as they will be required to pay only a meager percentage (10%) for those on NHIS (Eboh 2016).

Type of surgery performed among the patients revealed that majority had Caesarean Section (CS) with exploratory laparotomy being the next most common indication for surgery. The high CS rates are understandable as evident by the age of most patients being within the reproductive age-group. A number of these women may be attending primary healthcare or traditional birth attendants or might not even book their pregnancies at all (Gbadeyan 2016). They will then present to the tertiary facilities like ours when things have gone wrong. Outcome of surgeries was however encouraging as two deaths (0.4%) was recorded within the study period.

The average cost of surgery was 41,337.73 Naira and 28,426.47 Naira among the low and high socio-economic class. The cost of surgery differed significantly between rural and urban patients implying that the average cost of surgery in the rural area differed from those of urban area. Similarly, the average annual income of the patients and the location of surgical patients were found to be statistically significant indicating that the average annual income of rural surgical patients differed profoundly from the average annual income of urban surgical patients (Yu 2008). The probable reason may be attributed to the delay in presentation to the hospital, attempt at cutting corners through an initial patronage of patent chemist or sometimes herbal medications before eventually landing in the hospital when all these fails and with possible complications leading to longer hospital stay and use of expensive medications.

## **5. Conclusions**

- i. Most of the participants in this study populations spends Out-Of-Pocket (OOP) as their source of healthcare financing with only one out of fifteen having health insurance coverage of the NHIS.
- ii. Most of the surgical patients are from the rural areas, are females, do not attend tertiary level of education and are of lower socio-economic status.
- iii. Caesarean section and exploratory laparotomy were the predominant indications for surgeries
- iv. Paradoxically, those from the lower socio-economic status and the rural dwellers pay more for surgeries even though they earn less.

## **Recommendation**

- i. We recommend that the state consider establishing State Health Insurance Agency and this should cater for people in both the formal and non-formal sectors for an improved and all-inclusive coverage.
- ii. The social health insurance should cover those in the rural areas and surgeries such as the Caesarean sections and emergency exploratory laparatomies.

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