A COMPARATIVE STUDY OF FUNDING PATTERN AND QUALITY OF CARE BEFORE AND AFTER INTRODUCTION OF NATIONAL HEALTH INSURANCE SCHEME IN HEALTH FACILITIES IN ZARIA KADUNA STATE.

BY

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MARCH, 2014

DECLARATION

I hereby declare that this project was written solely by me as a record of my research work carried out under the able supervision of Dr C.L. Ejembi of the Department of Community Medicine, Ahmadu Bello University, Zaria. This work was never presented previously in any application for the award of a degree either within or outside the country. The works of other researchers have been duly acknowledged.

_____ _____

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CERTIFICATION

This thesis, titled "A COMPARATIVE STUDY OF THE FUNDING PATTERN AND QUALITY OF CARE BEFORE AND AFTER INTRODUCTION OF NATIONAL HEALTH INSURANCE SCHEME IN HEALTH FACILITIES IN ZARIA KADUNA STATE, by Muhammad Bello GARBA meets the regulations governing the award of the degree of Master in Public Health of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

To al-Karrar (as)…..

To the gentle souls of my first guides and teachers; my father Mallam Garba Arabi, my mother Hajia Fatima Abdullahi and my aunt and second mother Hajia Aisha Abdullahi (Ayi), may Allah (SWT) shower His infinite mercy on them, reward them abundantly and join them with His chosen servants in Divine communion, amin …

To all those pure ones who dedicated their lives to the guidance of humanity, exposition of the Divine paradigm and realization of the cause of universal justice.

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"Praise be to Allah Who lies inside all hidden things, and towards Whom all open things guide. He cannot be seen by the eye of an onlooker, but the eye which does not see Him cannot deny Him while the mind that proves His existence cannot perceive Him. He is so high in sublimity that nothing can be more sublime than He, while in nearness, He is so near that no one can be nearer than He. But his sublimity does not put Him at a distance from anything of His creation, nor does His nearness bring them on equal level to Him. He has not informed (human) wit about the limits of His qualities. Nevertheless, He has not prevented it from securing essential knowledge of Him. So he is such that all signs of existence stand witness for Him till the denying mind also believes in Him. Allah is sublime beyond what is described by those who liken Him to things or those who deny Him. May the distinction of Allah, the Glorified, reach Muhammad - peace and blessing of Allah be upon him and his descendants. Allah brought him out from the most distinguished sources of origin and the most honourable places of planting, namely from the same (lineal) tree from which He brought forth other Prophets and from which He selected His trustees. Muhammad's descendants are the best descendants, his kinsmen the best of kin and his lineal tree the best of trees. It grew in esteem and rose in distinction. It has tall branches and unapproachable fruits. He is the leader (*Imam*) of all who exercise fear (of Allah) and a light for those who seek guidance. He is a lamp whose flame is burning, a meteor whose light is shining and a flint whose spark is bright. His conduct is upright, his behaviour is guiding, his speech is decisive and his decision is just. Allah sent him after an interval from the previous Prophets when people had fallen into errors of action and ignorance."

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ACRONYMS

AMA	-	American Medical Association
ACS	-	American College of Surgeons
AVASC	-	Association of Voluntary Surgical Contraception
CBHI	-	Community Based Health Insurance
COPE	-	Client Oriented Provider Efficiency
CQI	-	Community Quality Index
DRF	-	Drug Revolving Fund
DRG	-	Debt Relief Gain
EOC	-	Emergency Obstetric Care
FMOH	-	Federal Ministry of Health
FMCH	-	Free Maternal and Child Health
GDP	-	Gross Domestic Product
GTR	-	General Tax Revenue
HCP	-	Health Care Provider
HCF	-	Health Care Financing
HMO	-	Health Maintenance Organization
HSR	-	Health Sector Reform
HGSGH	-	Hajia Gambo Sawaba General Hospital
IOM	-	Institute of Medicine
ISQUA	-	International Society for Quality Assurance
ILO	-	International Labour Organization
JCAH	-	Joint Commission for Accreditation of Hospitals

JCAHO	-	Joint Commission for Accreditation of Health Organizations
LGA	-	Local Government Area
MCHIP	-	Maternal and Child Health Integrated Project
MDG	-	Millellium Development Goal
MDCN	-	Medical and Dental Council of Nigeria
NBS	-	National Bureau of Statistics
NHA	-	National Health Account
NHB	-	National Health Bill
NHIS	-	National Health Insurance Scheme
NHP	-	National Health Policy
NHS	-	National Health System
NMCN	-	Nursing and Midwifery Council of Nigeria
NPC	-	National Population Commission
NUC	-	National Universities Commission
OR	-	Odd's Ratio
PCN	-	Pharmaceutical Council of Nigeria
PHC	-	Primary Health Care
PHI	-	Private Health Insurance
QA	-	Quality Assurance
QoC	-	Quality of Care
QUOTE	-	Quality care through the patient Eyes
RAND	-	Research and Development Agency
SCHIP	-	State Children Health Insurance Program

SID	-	Supplier Induced Demand
SPSS	-	Statistical Program for Social sciences
TQM	-	Total Quality Management
WHO	-	World Health Organization
WHR	-	World Health Report

ABSTRACT

Introduction: The National Health Insurance Scheme was introduced as part of the government responses to the deplorable conditions of the country's health system. Since introduction there have not been documented studies to assess whether there has been any improvement in quality of care in the participating health facilities. This study was undertaken to assess the trends in funding and the effects of introduction of NHIS on quality of care in health facilities in Zaria, Kaduna State.

Methodology: The study was cross sectional descriptive and comparative in design. Using stratified sampling one public and two private health facilities were selected from a total of 9 (7 private and 2 public) secondary facilities accredited by NHIS in Zaria. Information was collected from records on the pattern of funding before and after introduction of NHIS in these facilities. Retrospective analysis of 320 case notes of female patients that were managed in these facilities for maternal complications, 160 case notes a year before (2005) and 160 case notes five years after (2011) introduction of NHIS, was undertaken to compare level of adherence to FMOH Performance Standards for EONC in Nigerian Hospitals as proxy of quality of care.

Results: Results of the study demonstrated an almost a 3 -fold increase in financial resource availability in the health facilities reviewed following enrolment into NHIS, with the private facilities having a higher increase(300%) than the publicly owned facility (261%). Funds from the scheme, now constituting up to 36% of the total revenue, accounted for almost half (47%) of the increase. There was also a consequent improvement in physical infrastructure, staff strength and diagnostic capability, though analyses of the aggregate data showed that the differences so observed were not statistically significant. The results showed that quality

of care, represented by levels of adherence to standard treatment guidelines, was generally poor (42.12%), but a significant improvement in facilities' level of adherence (p= 0.001) was observed following introduction of NHIS, with the public facility performing better (59%) than the private- for- profit facilities (30%), p= 0.005.

Conclusion: The study demonstrated improvement in financial resource availability and quality of care following introduction of NHIS in the facilities. Performance based fund imbursement mechanism, cutting administrative cost and specific measures to promote adherence to standard treatment protocols, as a potent quality assurance tool, are recommended.

CHAPTER ONE

1.0 INTRODUCTION

Issues of quality have been identified, together with advances in health sciences, as the leading determinants of health care outcome in modern Medical Practice.[1] In fact, a definition of quality in health care by the Institute of Medicine (IOM) goes to stress this relationship. It defines quality care as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge. The care should be based on the strongest clinical evidence and provided in a technically and culturally competent manner with good communication and shared decision making".[2] The word "quality" almost always connotes an act of comparison of a set of inherent characteristics of a good or service with a set of requirements, specifications or purposes.[3,4,5,6] The Quality of a form of goods or services is the totality of features and characteristics of the goods or services that bear on its ability to satisfy stated or implied needs.[7]

There are thus a number of key intrinsic dimensions of health care delivery which, the concept of quality seeks to promote. These include: "accuracy of diagnosis and the appropriateness and efficiency of treatment rendered",[8] "health improvement and responsiveness to legitimate expectations of the population, as well as proper performance of the interventions, that are known to be safe and affordable to the society in question".[9]

1.1 PROBLEM STATEMENT

Despite this overbearing significance of quality in health care performance, the health systems in various countries do not have provisions for verifiable means of quality assessment and

improvement. In a few countries where the health systems provide for that, quality of care is not consistently measured, reported, understood or used in decision making.[10]

Although, United States health system is widely acclaimed as of high quality, its health care delivery system does not provide a consistently high quality of care to all people.[11,12,13,14] A nationwide appraisal of quality of care conducted by the IOM in 1998 reported a staggering impact of quality problems on the health care system.[15] In Canada, the public health system is adjudged to have failed in providing timely and reliable medical care.[16] A systemic review of studies of quality of clinical care in general practice in the UK, Australia and New Zealand, concludes that in almost all studies the processes of care did not attain the standards set out in national guidelines or those set by the researchers themselves.[17]

There is scant data on health care performance on quality from the developing countries of Africa, Asia and Latin America, however the few available works consistently report a wide range of poor quality practices, especially absence of, and poor adherence to clinical guidelines. Similarly, studies in South Africa,[18] Mexico,[19] Indonesia,[20] and Mali[21] document a level of quality that is described as dismally low.

In Nigeria, the most serious quality assessment effort was undertaken by Olumide et al in 1998. The study concluded that the quality of the country's primary health care was poor.[22] A comprehensive assessment of Nigeria's health system conducted in the year 2000, showed that other tiers of the healthcare delivery system fare no better.[22] The report also indicated that there was absence of comprehensive and equitable health care financing strategy. There was also poor consumer health knowledge and level of awareness of clients to quality was low.[23] Health service delivery system and quality of care was at its lowest ebb; primary health care system,

for example, serves only 5-10% of its potential load, secondary health care facilities were in prostrate conditions, equipment and infrastructure in tertiary facilities were obsolete.[22] These facts were corroborated by findings of a study in rural Osun (South Western Nigeria), conducted by Oyekale and Eluwa in 2009, that general ratings of the conditions of health facilities were very poor.[24]

1.2 CONSEQUENCES OF POOR QUALITY OF CARE

Empirical data confirm the relationship between quality of care and demand for health care services. Where services are of poor quality, demands are limited and households discouraged to seek for care.[25] Consequently, health indicators plummet as populace become disenfranchised and recourse to the much less regulated un-orthodox alternative care surges.[25]

On the other facets, low quality of health care claims thousands of lives annually worldwide and leaves lives of much more scarred and dysfunctional. Specifically, a report in 1999, dubbed *To Err is Human: Building a Safer Health Service*, highlighted that tens of thousands of Americans die each year from medical errors.[13] Additionally, studies show that close to a half of Americans (45.1%), did not receive recommended care, which is a measure of desirable quality of care.[14,15]

Similarly, up to half of deaths among severely ill in South Africa, are attributed to failure in adherence to guidelines.[18] Low quality of care has one of its highest toll in Nigeria.[23] The country has about the worst national health status indices in sub Saharan Africa, in terms of, for instance, maternal, infant and under 5 mortality rates. Disease control programs like malaria, TB, HIV/AIDS were being implemented within a weak health system, epitomized by erratic supplies and availability of drugs, fake, sub standard, adulterated and unregistered drugs[23]. These problems have also eroded customer confidence in the health care delivery system leading to a

chaotic scenario of rampant proliferation of un-orthodox care, with its attendant untoward effects. The resultant loss in human capital and decline in productivity as well as a rapidly rising phenomenon of 'medical tourism' may have a devastating effects on the country's economic well being.

1.3 DETERMINANTS OF QUALITY OF CARE

Most problems of quality assurance in health are due to, among other things, the multiplicity of players involved and plurality of dimensions from which issues of quality can be viewed and approached, in health care delivery system.[8,9,10] This is because, to be able to consistently produce the desired outcome, almost all the aspects of the health care system have to be in proper shape.[26] Therefore all those factors responsible for optimum performance of the health system as a whole and the health care delivery facilities in particular, are needed for a quality health care.

The human and material resources for health are very important determinants of quality of care.[27] These range from the proper infrastructural structure, appropriate tools and equipment, adequate number of well trained staff to a well coordinated and realistic organization and timely deployment of the resources.

Of particular significance in this regard are the characteristics of the practitioners; including their knowledge, competence, number and attitude to work.[28] The attributes of health facilities and organization of the health system, including equipment, materials, financial incentives for performance and professional development, guidelines (such as Standard Operational Protocols) and regulations, as well as supervision, are all important as the immediate determinants of quality.[10,26,27,28] Evidences are accumulating showing the increasing effect of the presence of and adherence to, standard treatment guidelines on quality of care.[29] Patient factors are also

important determinants of quality of care provided. A well informed and empowered patient is more likely to seek and get better quality of care.[30,31]

But neither the structural and organizational aspects of care, nor the human resources needed for its implementation can be provided or managed without the presence of an enabling political environment availing, among other things, timely and necessary financial resources for optimum health care delivery.[32] Health financing is one of the core functions of health systems. Health financing refers to the collection of funds from various sources (e.g. government, households, businesses, donors), pooling them to share financial risks across larger population groups, and using them to pay for services from public and private health-care providers.[33] The objectives of health financing are to make funding available, ensure choice and purchase of cost-effective interventions, give appropriate financial incentives to providers, and ensure that all individuals have access to effective health services.[33]

However, in most resource restricted countries the perennial problems of resource generation and allocation as well as that of health financing managements constitute the greatest threat to their health systems.[34] An assessment of the pattern of health care financing in sub Saharan Africa in 2002 indicated that out of 46 countries in the region, 15 countries spent less than 4.5% of their gross domestic product on health; in 29 countries, government expenditure per person per year was less than US$ 10 and 43 countries spent less than 15% of their national annual budget on health.[34,35] In Nigeria, government general expenditure on health (GGEH) as percentage of the total health expenditure has dropped from 33.5% in 2000 to 29.4% and 24.7% in 2005 and 2008.[35,36,37] This means a rise in out of pocket expenditure on health from 66.5% in 2000, to 70.6% and 75.3% in 2005 and 2008 respectively, as did its attendant consequences of catastrophic expenditure, deepening vicious circle of poverty and ill-health and further

weakening the health system.[39,40,41,42] A 2- months long cross-sectional household survey on house hold expenditure diary by Consortium for Research on Equitable Health Systems (CREHS) found that nearly 25% of households in the poorest one-fifth of Nigeria's population spent more than 40% of their total non food expenditure on health care, exposing them to potentially serious financial hardship.[43]

1.4 HEALTH INSURANCE AND QUALITY OF CARE

As the traditional source of funds for health, that is the public option of health care financing (HCF) through the general tax revenue (GTR), has proved largely insufficient in meeting the funding challenges, efforts aimed at expanding the fiscal base of the healthcare delivery system are employed as part of responses to the deplorable conditions of the health system. Dwindling government funding of the health sector, due largely to the sensitivity of GTR, which remains the major HCF option in most parts of the world, to political changes and economic fluctuations, is responsible for moves aimed at diversifying sources of health funding.[38,41]

A system of resource pooling that allows for a prepaid health care financing, is a veritable tool that ensures equitable access to care and make more resources available to the system to ensure provision of quality care. This system is referred to as health insurance.[44]

Health insurance is a social security system that fosters group solidarity through the triad of the systems of risk pooling, resource pooling and risk sharing based on the principle of probability. It guarantees the provision of needed health services to persons on the payment of token contributions at regular intervals.[44] The most important appealing features of this noble form of health care financing option include the principles of risk pooling, resource pooling and risk

sharing, that makes health care services affordable and accessible to all, in the spirit of social solidarity for health and sustainable development.[44,45]

Resource pooling improves financial resource availability to health care providers usually in the form of capitation fee, an amount of money pegged per enrollee, given by the scheme to the registered providers at fixed internal, whether care is sought by the enrollees or not. Properly utilized, these funds can be used in infrastructural and staff development, factors which influence quality of care through corollary effect.[44] This can take the form of expansion of basic physical infrastructural structures to accommodate an increased and improved range of services. It may also be utilized in procurement of equipments, diagnostic kits and other consumables, in addition to those that can ordinarily be supplied using the traditional sources of funds. Recruitment of staff, their training and re-training can as well receive a boost with additional resources at facility's disposal, accorded by the scheme. Most importantly, the flow of this additional financial resources, will bring about a heightened concern for, and recourse to quality assessment and improvement, in response to both NHIS quest for accountability and the internal desire for efficiency and maximization of profit, as the case may be.[40] In fact, the resources will almost certainly give an administrative leverage to undertake quality assurance measures, which hitherto they don't enjoy the 'luxury' of carry out with the paltry sum voted for overhead running costs.

The sense of collective ownership of the health system, created by employees regular contribution to the central fund as in Social Health Insurance Scheme, encourages clients to demand nothing less than a high quality of care.[31] The provision that a client selects a provider of his/her choice and that the same can switch between providers, has the potential of encouraging

healthy competition in the health care industry, thus introducing effectiveness and efficiency in patient care.[31,46]

The National Health Insurance scheme was officially launched on 6th June 2005. Provision of services to enrollees started in September 2005, with two fold thrusts as its main focus: Ensuring universal access to healthcare by the year 2015 and Promoting quality of health care delivery through maintaining high standards and ensuring efficiency.[47] These are to be achieved by offering financial risk protection to families against huge medical bills; Strengthening the health system by equitable patronage of all levels of health care, improving and harnessing private sector participation in the provision of health care services, ensuring adequate distribution of health facilities within the Federation and ensuring the availability of funds to the health sector for improved services.[47]

So far, over 4 million Nigerians have fully enrolled in the scheme, the beneficiaries are civil servants in Federal employment, and in Bauchi and Cross River states, 300,000 pregnant women and children under the Maternal and Child Health Project (MCHP).[45] Some states of the federation have so far shown their interests e.g.; Rivers, FCT, Benue, Ekiti, Akwa Ibom while Cross River State has fully rolled in.[47]

1.5 RELEVANCE AND JUSTIFICATION OF THE STUDY

Established under Act 35 of 1999 by the Federal Government of Nigeria, National Health Insurance Scheme (NHIS) was introduced in response to the challenges posed by the deplorable conditions of the country's health system, as part of the health sector reform program package.[45,47]

Implementation of this intervention came at a period witnessing a growing concern about the quality of health care in Nigeria epitomized by eroding public confidence in the healthcare system, hence the growth of the medical tourism phenomenon in recent times. This tendency was given an official boost recently with the Presidential outburst during the 51st Independence Anniversary Lecture, during which health care was among the few examples he cited to drive home a point about imminent system collapse in the polity.[48] Earlier works by scholars that looked at various aspects of the nation's health sector have reported a varying degree of low quality of care [22,49].

The main objectives of the scheme were to remove financial barriers to access and to improve quality of care.[46] However, no baseline data on quality of care in the participating health facilities was taken before launching the scheme and there has not been any documented study to assess whether there has been any improvement in participating facilities' resource availability and quality of care as a result of its introduction. This study was conducted to determine and compare the funding pattern and quality of care in NHIS accredited facilities before and after introduction of NHIS.

1.6 AIM AND OBJECTIVES

1.6.1 Aim/General Objective

To determine and compare quality of care before and after introduction of NHIS in health facilities in Zaria, Kaduna State.

1.6.2 Specific Objectives

1. To determine and compare funding patterns in the facilities, before and after their enrolment into NHIS.

2. To determine the relationship between financial resource availability and facilities' physical infrastructure, staffing and laboratory diagnostic capabilities following introduction of NHIS.
3. To determine and compare level of adherence to standard treatment protocols in the facilities before and after their enrolment into NHIS.

CHAPTER TWO

LITERATURE REVIEW

2.1 EVOLUTION OF ISSUES OF QUALITY IN HEALTH CARE

The concept of quality is a universal one with applications in our daily life. While choosing any item of goods or a form of services, consumers use available information to assess its degree of excellence that meet their individual requirements. However, quality assurance is not a new concept in Medicine.

The ethics of Medical practice have been guided by a set of professional levels of standards and popular expectations, from the time immemorial. The code of Hammurabi in ancient Mesopotamia, is perhaps the earliest effort by the state in regulating the medical practice, as it were. Enacted during the reign of Hammurabi (1792–1750 BC) of the 1st dynasty of Babylon, the code focused on outcome of care by the practitioner. It contained generous rewards for a favorable outcome and harsh punishment for the unfavorable one.[50] Hippocrates oath, an ethical code intended to be internalized by all practitioners, is adopted as a guide to professional conducts of physicians throughout the ages. It popularized the twin principles of 'beneficence' and 'non malficience' as the major elements in bench marking standards of medical practice, as early as 400BC.[50]

What the modernists add to the concept of quality in health sector is the introduction of verifiable methods of measuring and improving quality practices. The observation by an English nurse, Florence Nightingale that the high deaths among the casualties of the Crimean war of 1860 was not due to the severity of injuries but rather resulted from management failure in the hospital, marked the beginning of modern quality assurance movement in a health care setting[51]. She later

developed a uniform format for collecting and presenting statistics, comparing death rates and bed use by diagnostic criteria.

Another outstanding landmark in the quality assurance movement was the work of a Boston surgeon, Ernest Codman in 1900. Codman introduced the act of end result analysis' by encouraging collection and analysis of systemic information on the end result of patient care activities. He instituted a one year follow up of all surgical patients.[51] Each patient was recalled after one year of discharge and his health status assessed in relation to the objectives of the surgical care activities. He set out to determine whether the diagnosis was correct, whether the intervention was correct and whether the patient had benefitted from the contact with the health care team. This noble idea failed to receive widespread acceptance then.[51]

The quality assurance movement, however received a boost from the works of Edwards Martins in 1917. Martins called for revisiting Codman's idea and proposed the establishment of American College of Surgeons, as a watch dog of quality practices in surgical care.[51] The College was established and it published minimum standards for hospitals. This formed the first formal requirement for the review and evaluation of quality of patient care. Around the same time, the Royal Colleges, Nursing Regulatory bodies and their equivalents were established in the United Kingdom for accreditation of health care personnel training activities. These bodies regularly inspect training institutions and other major health care delivery facilities with the view to ensuring conformity to laid down standards.[51]

A nationwide effort at quality assessment in the form of the Confidential Inquiry was introduced in the U.K in 1930. This consisted of confidential reports on maternal deaths from local Obstetricians through regional to National assessors. The assessors commented on the causes of

deaths, identifying those that were in their view avoidable.[52] The control measures instituted sequel to the inquiry contributed to the progressive decline in maternal deaths in the U.K and its relative good performance in maternal health, on the international standard scales.

Active international collaboration in the field of quality control came to fore in 1957 when the American College of Surgeons joined hands with the American College of Physicians, American Hospital Association and the Canadian Medical Association in drawing out a uniform standard requirements for establishing and running hospitals in North America. This saw the formation of the Joint Commission for Accreditation Of Hospitals (JCAH) to oversee adherence of minimum standards of quality of care [53]. In recognition of the growing diversity of health care provider setting, JCAH broaden its scope of activities to involve other allied sectors in health care delivery industry. JCAH was re-organized in 1980 to achieve that and was thus re- named as Joint Commission for Accreditation of Health Care Organizations (JCAHO).[54]

Several countries now have the professional regulatory bodies as statutory agencies that set standards and ensure adherence to the same. In Nigeria, the Medical and Dental council of Nigeria (MDCN), Nursing and Midwifery Council of Nigeria (NMCN), Pharmacy Council of Nigeria (PCN) and other relevant bodies perform such functions by accrediting training institutions and registering individual professionals as well as monitor their capacity building.[61] Relevant units in the state ministry of health accredit and regulate the functions of hospital, public and private, in their area of jurisdiction.[55]

Dubbed as the era of 'total quality management', the 1980s witnessed a growing interest in issues of quality in health care. The Royal College of General practitioners in 1980 set out to develop a framework for defining and auditing standards of care. By 1991 the National Health Service

adopted a formal quality assurance policy. The document identifies Continuous Quality Improvement (CQI) as the most cost effective means of achieving the level of quality bench marked by the policy.[54]

Today, the quality assurance movement in health sector has not only taken a bilateral dimension epitomized with JCAHO initiative, but has taken regional and international perspective as well. The European Foundation for Quality Management, for instance, was formed in the European Union to coordinate efforts of quality assurance in member countries. At the international arena, the International Society for Quality Assurance (ISQUA) provides a forum where experts from around the globe gather to share experience and knowledge on issues bordering on quality, during its annual conferences. It also releases publications and awards fellowship to scholars[53].

2.2 THE CONCEPT OF QUALITY ASSURANCE

Quality Assurance (QA) is defined as a systemic and planned approach to assessing, monitoring and improving quality of services. It is a system of activities for ensuring the production of a defined service to agreed standards within a given resources.[56]

In essence, QA is a set of activities that are carried out to set standards and monitor and improve standards. It is a program that; sets quality standards, assesses performance of professionals and/or institutions with respect to these standards, and attempts corrective actions when divergence from the standards is shown to have exceeded the acceptable limits. QA promotes confidence and allows clearer understanding of community needs and expectations[54].

According to Wyszewianki, QA can be mathematically expressed as:

QA = Quality assessment + quality improvement and control[54].

2.3 TOTAL QUALITY MANAGEMENT

There is now a paradigm shift from management based on error detection and correction to management based on error prevention, hence the development of a new notion of Total Quality Management.[3] Total Quality Management (TQM) is defined as a cost effective method of integrating continuous improving effort of people at all levels of an organization to deliver labour and services which ensure customers satisfaction.

There are three major elements of TQM depicted in the 'Joiner Triangle'. It consists of team work and scientific approach as the base and customer needs and satisfaction at the apex[54].

According to this notion, quality management process involves ten steps grouped into three groups of activities;[54]

1. Designing
    - Planning
    - Setting standards
    - Communicating the standards
2. Problem solving
    - Identifying problems
    - Defining problems
    - Choosing a problem solving team
    - Analyzing the problems
    - Choosing solutions
    - Implementation
3. Monitoring

2.4 DIMENSIONS OF QUALITY ASSESSMENT

Just as definitions of quality vary with the context in which it is viewed, so also the dimensions employed in its assessment. Deff Haran however identified three major schools in quality assessment proposed by Avedes Donabedian, Robert J Maxwell and John Ovrettveitt.[56] In 2001, the Institute of Medicine defined six core dimensions of quality health care: efficiency, effectiveness, safety, timeliness, equity and patient-centeredness.[2]

2.4.1 Donabedian Model

Donabedian argued that to facilitate the assessment of quality it is pertinent to classify the aspects of care in structure, process and outcome[54].

1. Structure is defined as "a relatively stable characteristic of the providers of care, of tools and resources at their disposal, and of physical and organizational setting in which they work". It can be but also as "the attributes of the setting in which care occurs". These include materials (facilities, equipments), human resources (number and qualification of personnel), organizational structure and financial resources. Structure is an indirect measure of quality, it is useful to the degree that structure can be expected to influence the direct provision of care.
2. Process focuses on what is done in giving and receiving care. It includes patients activities in seeking care and carrying it out as well as practitioners activities in making diagnosis and recommending or implementing treatment. Process may be seen as the object of assessment of quality.
3. Outcome is the effect of care on the health status of patients/populations, including satisfaction, decrease in predicament, decrease morbidity and mortality. It can include

improvement in social and psychological well being as well as change in patient knowledge, attitude and practices relating to health.

2.4.2 MAXWELLIAN MODEL

Maxwell looked at quality at six levels, each assessed by answering a number of questions [54].

1. Effectiveness is gauged after giving answers to the following questions; "is the treatment given the best available in the technical sense according to those best equipped to judge?, what is their evidence? And what is the overall result?".
2. Efficiency is assessed in the following questions; "is the output maximized for a given input?, is the input minimized for a given output? How does the unit cost of treatment or service compare with the unit cost elsewhere?".
3. Acceptability is discerned after determining; "how humanly and considerable is the treatment delivered?, what does the patient think of it?, what an observer(third party) think of it?, are privacy and confidentiality safeguarded?".
4. Accessibility is determined by the following enquiries; "can people afford to get the services when they need it?, are there identifiable barriers e.g. distance, cost, waiting list, or straight forward break down in supplies?".
5. Equity can be established by posing the following questions;" is this patient treated fairly relative to others?, are there identifiable feelings of inequity e.g. are some people being dealt with less appropriately or less favorably than others in their own eyes?".
6. Relevance is gathered in answering this question; "is the overall pattern and balance of services the best that can be achieved taking account of the needs and wants of the population as a whole?".[54]

2.4.3 OVRETTVEITTIAN MODEL

He looked at quality from the client, the providers and the managers' perspectives.[56].

1. Issues of relevance to the clients include privacy, confidentiality, continuity, safety, efficiency, effectiveness and information, e.t.c.
2. Providers give more attention to safety, amenities, cleanliness, supervision, training, personal development, e.t.c.
3. Managers consider all issues with respect to both clients and providers.

2.5 TOOLS FOR MEASURING QUALITY IN HEALTH CARE

(a) Client Oriented Provider Efficiency (COPE)

Developed by the Association of Voluntary Surgical Contraception (AVSC) to monitor quality of contraceptives, it was later adopted by UNICEF to assess quality of care in IMCI setting. The tool consists of five components; self assessment guide to discern client and provider roles, client interview, client flow analysis, record review checklist and action plan containing activities time schedule, required resources, personnel requirement to tackle identified problems.[57]

(b) Quality care through the patient Eye (QUOTE)

This tool was developed in the Netherlands and consists basically of two parts. Part one of the questionnaire contains background information about the respondent. Part two is modeled to fit into various disciplines.[58]

(c) Research and Development (RAND) Cooperation tools

RAND developed a comprehensive, clinically based system for assessing quality of care for children and adults. The QA Tools indicators encompass screening, diagnosis, treatment, and follow-up in 46 clinical areas and cover a variety of modes of providing care, including history,

physical examination, laboratory study, medication, and other interventions and contacts. Development of each indicator was based on the ratings of a panel of experts in the relevant fields and on a focused review of the scientific literature, which is clearly documented for each clinical condition.[59]

2.5.1 Modes of Assessing Quality

The World Health Organization (WHO) developed a guideline for assessing quality in health care. It enumerated four basic ways of generating information for the purpose of quality assessment.[60]

1. Assessment through routine recording/reporting systems. Utilizes records in the various tiers of health care. Each hospital can be assessed on its procedures using 26 items based on supervision format, used in Haiti, to generate information, each focusing on quality.
2. Assessment through special evaluation. Involves evaluation of health care either as one time or periodic activity.
3. Assessment through patient survey. Questionnaire administered to patient with a view to assessing human and inter-personal aspects of quality. Assessment through community survey. Household or community based studies can be used to assess quality of care.

2.6 QUALITY IMPROVEMENT AND CONTROL

Quality improvement and control is part of action that seeks to protect or raise quality of care by undertaking corrective measures addressing problems found during quality assessment. For quality to be improved and controlled, there need to be standards providing yardsticks based on which it can be judged.

Williamson argued that there is no point in discussing quality unless it can be quantified and thus able to identify the extent to which it measures up to the stated standards.[54]

Standard provides an operationalized definition of quality of care. Standard can be either implicit or explicit.

- An implicit standard is derived when a practitioner is given freedom to use his/her judgment to provide an expert opinion about an issue or a case.
- Explicit standard is one set by either National regulatory bodies or Professional groups.

Three popular ways of improving quality are often described, consisting of audit, accreditation and consumer satisfaction [27].

1) Audit: Donebenian proposed a framework which encompasses both quality assessment and quality improvement. He separated quality assessment into system design and performance monitoring. System design has to do with the structures, while performance monitoring has to do with process and outcome. Heg regarded formal performance monitoring to mean audit which he classified into internal and external.
    - Internal audit is performed by colleagues within the institution.
    - External audit performed by external experts.

    Alternatively, he further classified audit into:

    - Medical; an evaluation of services provided to patients in relation to their condition which depends on the exercise of judgements.
    - Professional; is equivalent to medical audit except that it applies to other professionals other than doctors.

- Clinical; evaluation of that element of services provided to patients in relation to their condition which does not rely on exercise of professionals other than doctors,
- Service; an evaluation of services provided so far to the patients that does not relate to their condition.

2) Accreditation: One of the processes of quality assurance used systematically in a number of countries to monitor services and quality. The process involves setting standards, assessing organizations against such standards and conducting necessary remedial actions if the standards are not met.
3) Consumer satisfaction: This is the main thrust of any quality assurance program and it entails putting in place mechanism to find out the level of consumer satisfaction including aggregating consumer complaints and generating other information from clients through questionnaire and other methods and eventually using the information systematically to improve patient satisfaction. For this mechanism to be used as a quality assurance tool, it must be institutionalized in the organization and must be carried out continuously.[27]

2.7 QUALITY AND COST OF CARE

Advances in science and technology have not only influenced the rapid growth of quality in health care, but have also led to soaring cost of care. The relationship between quality and cost thus, remains a subject of enormous importance, in modern health care delivery industry[61]. To underscore the significance of this interdependence between scientific advancement, cost of care and quality assurance, Relman A.S, asserted that we are at the threshold of the third era of revolution in healthcare i.e. that of assessment and accountability or quality assurance.[61] This period is characterized by increasing concerns about quality issues in the health sector. The three

important epoch making revolutions which, according to Relman, constitute the most important developmental milestones of public health importance in modern medical practice include;

- Rapid expansion of scientific medicine and technology,
- Cost containment (health insurance programs)
- Assessment and accountability (quality assessment and control).[62]

A definition of quality by the Canadian Institute for Health Improvement focuses on dimensions that allow for linkage between quality and costs of care. It defines quality treatment process as one where every step is: valuable (creates value for the patient), capable (produces a good result every time), available (accessible when needed), adequate (neither under nor over servicing the patient), flexible (adaptable to individual need), and linked by logical flow of events and information.[63] The American Medical Association ((AMA) is leading a movement of reducing costs of health care delivery by improving quality. Characterization of the most suitable methods of achieving that continue to pose a daunting challenge to all stakeholders.

At a time when per capita health expenditure continues to escalate, interest on the relationship between quality of care and cost of services, grow accordingly.

Notably, a simple comparative analysis between industrialized nations, USA and Canada for instance, reveals that the organization of the country's health care system has a greater effect on the per capita health expenditure, due to difference in administrative cost incurred per contact with a care provider. Total health expenditure per capita in the United States adjusted for differences in purchasing power for instance, is 87% more than in Canada ($7,290 compared to $3,895 Per year).[64] This is due to the multiplicity of players in the complex multi payer system in the US on the one hand, and the simplicity of the single payer Canadian system, on the other.

Steffie Woolhandler and colleagues estimated, through aggregating various data sources, that the total administrative costs in the US health care systems were $294.3 billion[64]. The total savings that could accrue if the US physicians had similar costs with Ontario physicians would approximate to $27.6 billion per year.[64] In recognition of this fact, Workers like Donald, Thomas and John recommend reducing per capita costs of health care as central measure in a three point approach for improving the US health care system.[65]

A cost benefit analysis of a single versus multi payer systems focusing on administrative costs and quality of care, can be instructive. Administrative were considered to be wasteful if their costs exceed the benefits they add to the contact of care, or if same benefits could be achieved be achieved at a lower cost.[65]

The impact of costs on quality of care is receiving an increasing interest due to the figures quoted above, in addition to other issues like limitation to access to care imposed by inhibitive cost. Traditionally, most higher quality products and services across economic sectors cost more than those of lesser quality, irrespective of the efficiency or effectiveness of the production processes. But is this also true of health care delivery industry? The natural tendency is to assume it to be linear, i.e. higher quality services will cost more. Accepting this notion has a far reaching implication in a time where health organizations try to reduce cost per unit by for example trimming the resources allocated to various aspects of care. In line with this logic, lesser quality of care results from limited funding. Another direct corollary is continuous push for more funding from governments and scaling up involvement of the allegedly more efficient private sector, in order to improve quality. However, two unique characteristics of health care system make the relationship between quality and cost counter -intuitive, i.e. higher quality treatment does not necessarily cost more. It may end up costing less for both the health system and the

individual patients[61] These characteristics include first, timeliness (health care services usually do not provide a benefit unless there is disease or injury present or the possibility that a disease is imminent and preventable), secondly exposure to any part of a treatment process imposes cost on patients, ranging from discomfort to potential worsening of the original condition. Thus, any health care other than what is essential reduces the net benefits and thus the quality, because it adds to total costs while the total benefits remain unchanged. A simple example of this would include a situation where low quality care requires repetition of some action (e.g. more diagnostic tests), delay in diagnosis and increase hospital stay. Conversely quicker access and effectiveness may result in decreased lost productivity. This is in contrast to other products or services though additional features increase the total cost, the add- ons provide extra utility and hence total benefits.[61]

A number of other works buttress these facts. Baicker and Chandra examined Medicare spending and its relationship with quality across US. They concluded that states with higher spending have lower quality care.[66] Quaglini et al investigated the impact of compliance with evidence based guidelines in the treatment of stroke patients on health care costs during hospitalization[67]. Another study by Balkrihnan and colleagues found a clear association between decreased medication adherence and increased service utilization.[68] Dickey and Normand observed that compared to care that did not meet the evidence based standards, evidenced based care were found to be less expensive.[69] Weech- Maaldonado and co-workers indicated that nursing homes that produce high quality care are able to achieve lower resident costs.[70] Similarly, Mukamel and Spector suggested that there are quality regimens in which higher quality is associated with lower costs.[71] Jacobs and Dawson looked at cost efficiency targets set by UK National Health Service to encourage downward pressure on hospital unit costs. They

concluded that trying to increase quality indirectly by focusing on budget targets did not produce an improvement in quality of care or cost containment.[72]

A quite promising experience in this regard is that of a growing prominence of retail clinics in the US that began in 2000. These operate in a less formal setting like pharmacy shops, discount, or grocery chains, these clinics require no appointments, are open on weekends and evenings, and report little waiting time.[73] Ateev and co-workers compared physician offices and urgent care clinics in 2009, they concluded that retail clinics provide less costly treatment for three common illnesses, with no apparent adverse impact on quality of care or delivery of preventive care.[74]

2.8 ORIGINS AND EARLY DEVELOPMENT OF MODERN SOCIAL HEALTH INSURANCE

The reciprocal relationship that exists between condition of good health in human societies and its development and productivity of individual citizen has continued to influence the politics of health care financing. The ever increasing health demands and rising cost of care over years spilled beyond the scope of the traditional financing options, out of pocket and general tax revenue, can handle. Veritable options like community financing, individual saving, philanthropic donations and social health insurances, developed by individuals, families, communities and governments, are borne out of that stern realization.

Modern social health insurance system has its origins in the activities of Franklin Health Assurance Company in Massachusetts, USA and to the initiatives of German's chancellor Otto von Bismarck. Franklin Health Assurance first offered accident insurance in the 1850's.[75,76] Bismarck's Health Insurance Bill of 1883, Accident Insurance Bill of 1884 and Old Age and Disability Insurance of 1889 providing mandatory coverage to low income earners and certain

government employees in Germany formed the basis of modern social health insurance system.[76] Effective sickness coverage in America started in 1890 and employer sponsored group policy was issued in 1911. Currently 85% of Germans is covered by the public basic health insurance plan which provides a standard level of coverage. The remaining 15% opt for private insurance because of the additional benefits they offer.[76]

The American healthcare system continues to be predominantly driven by private health insurance, covering approximately 58% of Americans. Public programs provide primary source of coverage for military, most senior citizens and for low income children and families that meet certain eligibility requirements. Some states have additional programs for low income individuals. The complexity and expensive nature of American health care, however, leaves about 40% of Americans uncovered by any form of health insurance. A study conducted in 2007 showed that 62% of persons declaring bankruptcy had unpaid medical expenses of over $1000 or more and in 92% of these cases the medical debts responsibility exceeded 80%[75]. This level of inequity was a central issue in the last Presidential campaign trail and the Patient Protection and Affordable Care Act, signed by Obama administration in 2010 aimed at extending the insurance coverage to additional millions of poor Americans.[75]

In the UK, the National Health Service (NHS) provides universal coverage to everyone normally resident in the UK. It is not strictly an insurance program but it does achieve the main goal of any health insurance, which is spreading financial risk arising from ill-health. The costs of running NHS are met directly from general tax revenue. About 8% of the population however uses private health care run by private insurance[76]. Limited insurance for GP services and drugs supply to income workers manual workers existed in 1911. This was expanded to cover all out patient care in 1946, with the birth of NHS. Australia's Medicare is also funded by 1.5% tax levy

on all tax payers and an extra 1% on high income earners, as well as the general revenue.[77] It ensures free universal access to hospital treatment and a subsidized out of hospital care. A number of for -profit and non -for- profit private insurance firms also operate in the country.

Public health insurance in Canada is tax-funded out of government's general tax revenues, although some states like British Columbia and Ontario levy a form of surtax, a mandatory premium with flat rates for individuals and families to generate additional revenue. Some 65% of Canadians have some form of supplementary private health insurance, receiving it through their employers. Thirty percent (30%) of total health care spending in Canada are channeled through private sector services[44]. The nationwide coverage of the program that started in Saskatchewan province in 1947, took about 10 years to achieve.

All people working in France are required to pay a portion of their income to a not-for –profit health insurance fund, which mutualises risk of illness and re-imburses medical expenses at varying rates. Children and spouses of insured persons are eligible for benefits, as well. All citizens and legal foreign residents in France are covered by the mandatory programmes of national system of health insurance instituted in 1945.[78]

Japan's National Health Insurance is designed for people who are not eligible to enroll in any of the employment based health insurance programs[74]. An insurance equalization pool in the new health insurance system of the Netherlands in 2006 attempts to avoid the pitfalls of adverse selection and moral hazards associated with traditional forms of health insurance. Fifty percent (50%) of health funding is from salary based contributions of employers, 5% from government to cover for people who cannot afford and the remaining 45% comes from insurance premiums paid by public to private companies.[74]

South Korea established a national health insurance (NHI) system in 1989, Taiwan in 1995. In China, only about 10% of rural residents and 50% of urban residents have health insurance [79].

Formal health insurance emerged only recently in low income countries, with Latin American countries having the most extensive experience with social health insurance schemes. Health insurance is introduced lately in African countries as part of the solutions to the crises in the health systems of the region, where out of pocket expenditure, once an exception in early post independence Africa, has become the rule. Social health insurance scheme has taken a national dimensions in a number of African countries like Kenya, Tanzania, Rwanda, Senegal and Nigeria with varying levels of coverage.[80] The Rwandan experiment is by far the most successful, where its community based health insurance scheme has helped reach 90% of the country's poor population. Three years into Ghanian National Health Insurance Scheme, the coverage attained was 38% by 2006, compared to Nigeria's 4-5% coverage 7 years into the scheme since 2005. Others include Senegal 13% and 11% in Kenya[81].

There are 4 types of Risk Pooling:

1. State-based Systems.
2. Social Health Insurance.
3. Community-Based Health Insurance.
4. Voluntary Health Insurance.

Public or state-based system is funded by government through general tax revenue or special employment taxes and operated through ministries of health or national health services. It provides medical coverage to the whole population and delivers health care through a network of public providers. However this system is liable to unstable funding being a function of budgetary

provision and political instability as well as the disadvantage of 'inverse care' rule. Potential inefficiency in health care delivery- anything associated with public sector, is also possible.[82]

Social Health Insurance on the other hand is employer sponsored plan based on compulsorily earmarked payroll contributions, managed by non-profit insurance funds. Health care provision can be either by on-site health facilities, outside providers or health maintenance organization. This system potentially does away with budgetary fluctuation and political instability and subsidizes low income employees. It operates in more than 60 countries and 27 of these have achieved universal coverage[6]. In practice, however, social health insurance has only limited edge in our societies where up to 65% of the populace earn their living in the in formal sector.[39]

Community based health insurance (CBHI) is based on community membership and the community is strongly involved in managing the system. Members of CBHI can be linked by geographic proximity or same profession, religion, ethnicity, or any other affiliation that can facilitate their cooperation for financial protection. It covers poor people who are excluded from other forms of financing because they work in the informal sector or lack of access to health care because they can't pay. The scheme is owned by either the community, local government, NGOs, or hospitals.[81] This scheme has helped, to varying levels, in increasing coverage to the Africa's over 900million population. Its implementation is more elaborate in eastern and southern Africa, where up to 48 CBHI such schemes are operational with a coverage level ranging from 6% to >50%.[83] Despite these efforts, disparities in coverage still exist as the poorest quintiles remain under-represented because of lack of specific strategies to facilitate participation of the poor. Only 8% of households in the poorest quintile in Senegal are insured for example compared to 31% in the wealthiest quintile, similarly, only 11% of the insured in Burkina Faso were in the poorest quintile owing to difficulties in paying premium.[36]

In high income countries that at the same time still maintain some form of Keynesian model of welfare state, voluntary/private health insurance is widely used as a supplement to publicly financed coverage. It is means of earmarking family savings to self- financed health care by selected group. Its major contribution to health care financing are in increasing service capacity and promoting innovation, enhancing access to quality health and helping to finance health care services not covered in the public packages. Whereas the drawbacks lie in affordability and price volatility, increased differential access and total expenditure on health [83].

Private insurance programs take any of the following forms;[83]

- Primary-main source of health coverage.
- Duplicate- coverage of same services as in public system.
- Complementary-coverage of cost sharing under the public system.
- Supplementary- coverage of services uncovered by the public system.

Generally, health insurance cover takes the following common forms;[81]

1. Coinsurance - Under this plan the client pays some fixed percentage (20%) of the cost of health care and the insurance carrier picks up the other portion when the need for medical care arise.
2. Indemnity - the insurance carrier pays a fixed amount for various types of medical service purchased and when the bill exceeds the amount in the cover the client picks up the difference in form of out of pocket expenditure.
3. Deductibles - This require that the client must pay out of pocket a fixed amount of health care costs per calendar year before coverage begins. It may state that the initial N500 be paid of care expenses before the insurance carrier pays all or some of portion of the remaining medical bills, depending on the plan.

The major drawbacks of health insurance identified are those of moral hazard and adverse selection. Moral hazard arises when people with long standing illness suddenly rush to seek care with removal of user-fee after enrolling in a health insurance scheme. This brings with it the disadvantage of rapid exhaustion of the capitation fee received by the providers and thus the providers avoid this effect by introducing the concept of 'window period'. Adverse selection on the other hand come to fore when insurance companies tend to deliberately limit registration of elderly and chronically ill persons by logistics e.g. locating the registration office in distant stairs. This is because the more a company has high risk clients, the less is its profit margin. This fact is important in the discussion about the equity versus efficiency debate in health insurance while comparing public based with private driven health insurance programs. It is in fact most significant in low income countries, like Nigeria, where more than 70% eke out a life of abject poverty, in a setting where 70% of the healthcare expenditure is from 'out of pocket', if the ignoble reality of 'catastrophic payment' is to be eliminated in our societies.[38,39,41]

2.8.1 Social Health Insurance in Nigeria

The NHIS can be said to be the longest it has taken any program to reach maturation, even in the Nigerian context. It has taken more than four decades between when the idea was first mooted among the decision making circles and the real implementation of the scheme. The first move to establish a health insurance scheme was made in 1962 under a bill introduced to the parliament by then Federal Minister, Dr. M.A Majekodunmi. The enabling law, Decree 35 of 1999 (now Act 35 of 1999), for NHIS implementation was however, not signed until in May 1999.[44] The scheme as implemented differed from the original draft by Emez –Eronin Committee which proposed a public driven scheme, with the introduction of private fund managers, or the HMOs and service

provision dominated by the private sector. The objectives of the scheme as stated in the Act include;[46]

- To ensure that every Nigerian has access to good health care services.
- To protect families from the financial hardship of huge medical bills.
- To limit the rise in the cost of health care services.
- To ensure equitable distribution of health care costs among different income groups.
- To maintain high standards of health care delivery services within the Scheme.
- To ensure efficiency in health care services.
- To improve and harness private sector participation in the provision of health care services.
- To ensure equitable distribution of health facilities within the Federation.
- To ensure appropriate patronage of all levels of health care.
- To ensure the availability of funds to the health sector for improved services.

The Formal Sector Social Health Insurance Programme, operated by NHIS is a social security system, where the health care of employees in the Formal Sector is paid for from funds created by pooling contributions of the employees and employers. Employees of public and organized private sector organizations employing ten (10) or more persons are required to participate in the programme.[84]

Contributions to be paid by participants are earning related. This currently equates to 15% of the employees' basic salary with the employer paying 10% while the employee pays 5%. The contributions paid by an employee under the programme cover health benefits for the employee

and five (5) dependents consisting of a spouse, four (4) children below the age of 18 years. Additional dependants will attract a surcharge.[84]

Contributors are entitled to the following benefit packages:[84]

i. Outpatient care including necessary consumables.
ii. Prescribed drugs, pharmaceutical care and diagnostic tests as contained in the NHIS Essential Drug List and Diagnostic Tests Lists.
iii. Maternity care for up to four live births for every insured person under the Formal Sector Programme.
iv. Preventive care, including immunization as applies in the National Programme on Immunisation, health education, family planning, antenatal and postnatal care.
v. Consultation with specialists such as Physicians, Paediatricians, Obstetricians, Gynaecologists, General Surgeons, Orthopaedic Surgeons, ENT Surgeons, Dental Surgeons, Radiologists, Psychiatrists, Ophthalmologists etc.
vi. Hospital care in a standard ward for a stay limited to cumulative 28 days per year after the cumulative 21 days per year covered by capitation, for physical or mental disorders.
vii. Eye examination and care, excluding provision of spectacles and contact lenses.
viii. A range of prostheses (artificial limbs produced in Nigeria).
ix. Dental care for pain relief (including Consultation, Investigation and Preventive Care).
x. Counseling is an integral part of quality care and all Providers are expected to provide counseling at all stages of health care delivery.

Stakeholders in the scheme include the Federal Government through NHIS, employees, employers, health maintenance organizations (HMOs), health care providers (HCPs) and others

like developmental partners, nongovernmental organizations (NGOs), banks, community leaders and media.[85]

The mode of operation is such that the NHIS plays regulatory and stewardship role. It accredits and registers both the HMOs and HCPs, sets standards and guidelines, while protecting the rights and enforcing the obligations of all stakeholders.

A Health Maintenance Organization (HMO) is a private or public incorporated company registered by the Scheme solely to manage the provision of health care services through Health Care Providers accredited by the Scheme.

The Health Care Providers are classified into primary, secondary and tertiary, in accordance with the three tier model of the country's health care system. A Primary Health Care Provider is a health care facility offering health care services at primary level. This forms the first point of entry for participants into the programme of NHIS. (e.g. Comprehensive Health Care centers, Nursing and Maternity homes supervised by a registered Medical Doctor, Non-Specialist private hospitals and clinics, Out- patient departments of General Hospitals). A Secondary Health Care Provider, on the other hand, is a health care facility offering specialized health care services (e.g. General Hospitals, Specialist Hospitals, Dental Clinics, Pharmacies, Laboratories, Physiotherapy, Radiography etc.). While a Tertiary Health Care Provider is health care facility offering highly specialized health care services at the Tertiary level for referred cases from the lower levels (e.g. Teaching hospitals, Federal Medical Centers, Specialized hospitals -Orthopaedic, Psychiatric, Ophthalmology etc.).

For each of these tiers of providers, NHIS has a litany of mostly infrastructural and manpower requirements for accreditation of providers at different levels. These include possession of

appropriate facilities for standard practice as determined by the scheme, as well as possession of the required malpractice insurance also determined from time to time by the scheme.[86]

Every employer registers itself, its employees and their dependants with the Scheme. Such employer then appoints NHIS accredited HMO(s) of its choice. Registered employers remit the approved contribution for every Employee under his payroll to the HMO, and notify the Scheme accordingly. The HMO pays capitation fees to primary HCPs and fee for services to referral HCPs. Capitation is a form of payment made by HMOs on behalf of employees to the primary provider whether services are utilized or not. It is specific amount per head determined actuarially. Every employee then register with an accredited Health Care Provider of his/her choice from the list under the HMO appointed by his/her employer, and may begin to access care after a stated window period.[84]

An Employer with less than ten Employees in its service, or any self-employed person(s), who are not subject to the Act, may apply and register with the Scheme as Voluntary Participant. The relationship between voluntary participants and the HMOs shall be governed by the contractual agreements between HMOs, Voluntary Participants and the Scheme.

A patient may be referred from a Primary Health Care provider to a Specialist at the Secondary or Tertiary Level, or to other disciplines – diagnostics, physiotherapy etc. Referral means sending a patient for a range of specialized investigations or care. Establishing a good referral system under the NHIS is essential for cost efficiency and effective management of patients under the Scheme. This is because the levels of care under NHIS are not considered as exclusive but complimentary. The management of a patient under NHIS could be at one or more of the three levels.[84]

Other programmes under the NHIS include the following;[87]

i. Urban Self-employed Social Health Insurance Programme.
ii. Rural Community Social Health Insurance Programme.
iii. Children Under-Five Social Health Insurance Programme.
iv. Permanently Disabled Persons Social Health Insurance Programme.
v. Prison Inmates Social Health Insurance Programme.
vi. Tertiary Institutions and Voluntary Participants Social Health Insurance Programme.
vii. Armed Forces, Police and other Uniformed Services.

There are now Sixty two (62) HMOs accredited and registered, 5,949 Healthcare Providers, 24 Banks, 5 Insurance Companies and 3 Insurance Brokers also been accredited and registered.[47]

So far, over 4 million Nigerians have fully enrolled in the scheme, the beneficiaries are civil servants in Federal employment, and in Bauchi and Cross River states, 300,000 pregnant women and children under the Maternal and Child Health Project (MCHP).[43,45] Some states of the federation have so far shown their interests e.g; Rivers, FCT, Benue, Ekiti, Akwa Ibom while Cross River State has fully rolled in.[45]

In its bid to achieving the health related MDGs and help increase insurance coverage, MDG Nigeria office voted funds to NHIS to put 600,000 pregnant women and children under five in six states on health insurance by the end of 2010 as well as start in six other states with funds from the Debt Relief Gain (DRG)[45] The pilot project, which has enlisted over 300,000 vulnerable women and children, is ongoing in Gombe for the North East, Sokoto for North West, Niger (North Central), Oyo (South West), Bayelsa (South South), and Imo (South East).[44,45]

There are also private health insurance firms offering services to Nigerians in the organized private sector. Unverified reports put beneficiaries under this platform at about seven million.[45]

2.9 EFFECTS OF HEALTH INSURANCE ON QUALITY OF CARE

2.9.1 Insurance and Structural Aspect of Quality

The structural characteristics of health facilities, the setting in which care occurs, is one of the major determinants of performance of any health care delivery system. These are the attributes of the providers of care, of tools and resources at their disposal, and of physical and organizational setting in which they work. It includes materials (facilities, equipments), human resources (number and qualification of personnel), organizational structure and financial resources.[56]

Poor condition of the physical environment of health care is associated with compromised safety of patients and staff, decrease in productivity of health personnel, rise in nosocomial infections and generally undesirable outcome of care.[88,89] This is in addition to the effects of sub optimal infrastructure for health on access of care and utilization of services.[90] These result directly through placing functional limitation to access and indirectly by dampening patients/clients confidence in the system leading to rising prominence of alternative care or medical tourism, as the case may be, thus decreasing demand.[91]

The performance of Nigerian health system is seriously undermined by weak health infrastructure, dearth of skills and number of health personnel as well as organizational failures.[92] Care is often sought in a setting of decaying physical facilities and given by an overstretched workforce with obsolete equipments. A survey of primary health care facilities, for instance, shows that only a quarter of health facilities had more than 50% of the minimum equipment package and up to 40% of the facilities had less than a quarter.[93] These facts were

corroborated by findings of a study in rural Osun (south western Nigeria), conducted by Oyekale and Eluwa in 2009, that general ratings of the conditions of health facilities were very poor.[24]

2.9.2 Quality of Care, Mode of Insurance and Ownership of Health Care Facility

The structural indicators of quality in the Donabedian model include data on the characteristics of the facility e.g. ownership of the hospital as well as the organisation of the health delivery system that governs inter-personal and trans disciplinary relationships.[10]

Meta-analyses of studies using data on patient outcomes from 1984 to 1994, to compare Hospital Quality at For-Profit and Not-for-profit Hospitals observe that, on average, for-profit hospitals have higher mortality among elderly patients with heart disease, and that this difference has grown over the past decade[94]. Not-for-profit hospitals perform better with elderly patients with heart disease, even after adjustments are made for differences in hospital size, teaching status, whether the hospital is in a city, and patient demographics.[94]

Much of this difference is attributed to the location of the for-profit hospitals, though. For-profits tend to be located in areas with higher costs and worse outcomes. Not controlling for these area effects, it would look like they tend to have somewhat higher costs and worse outcomes, an error commonly made in the literature. Within the areas where they locate, they tend to do a little better than average on both. The authors examined three market areas with varying for-profit/not-for-profit hospitals within them, resulting in a sample of 3,718 hospitals. Overall, the authors' analysis suggests that factors other than profit status may be the main determinants of quality care in hospitals.[94]

Many factors may, however, influence this relation in the case of individual institutions. However, a large proportion of studies showed no significant difference in quality of care by ownership. In the for-profit context, however, shareholders expect 10-15% returns on their investments, 32 taxes may account for 5-6% of expenses, and facilities tend to have higher executive salaries and bonuses, so for profit facilities have a strong incentive to minimize expenditures. Minimizing expenditures may lead to lower quality staffing and higher rates of adverse events (such as pressure ulcers).[94]

Other studies, though not up to the number of those covered in the meta analyses, show that for-profit care providers fare better. Roetzheim *et al.* for example examined the relationship between insurance status and the diagnosis of four types of cancer in adults. When cancer is first diagnosed in its later stages, it often reflects poor access to primary care and routine health screening. The researchers found that the uninsured and those with Medicaid had greater odds of a late-stage diagnosis, that is, more severe cancer, at the time of diagnosis, than the privately insured.[95]

This is comparable with a finding that women without health insurance and those covered by Medicaid had more advanced breast cancer than women with private health insurance when the disease was initially diagnosed. The survival of those women was also worse than that of privately insured women with local and regional disease, and the association of insurance coverage with survival persisted in a multivariate analysis in which adjustment was made for numerous potential confounders.[96] Uninsured patients and those covered by Medicaid presented with more advanced disease than did privately insured patients ($P<0.001$ and $P = 0.01$, respectively). Survival was worse for uninsured patients and those with Medicaid coverage than for privately insured patients with local disease ($P<0.001$ for both comparisons) and regional

disease (P<0.001 for both comparisons), but not distant metastases. The adjusted risk of death was 49 percent higher (95 percent confidence interval, 20 to 84 percent) for uninsured patients and 40 percent higher (95 percent confidence interval, 4 to 89 percent) for Medicaid patients than for privately insured patients during the 54 to 89 months after diagnosis.[96]

Evidence further suggests that private schemes can improve access to health care and offer financial protection even to marginalized groups despite the growing importance of Private Health Insurance (PHI), however, surprisingly little is known about its role in national health systems in the developing world.[83]

2.9.3 Health Insurance and Process Aspect of Quality

The difficulty of measuring quality inherent in health care has prompted scholars of quality assurance to propose models of quality assessment less amenable to the complex matrix of compounding variables in the processes of care delivery. Although there is no consensual opinion on the issue yet, a number of leading experts hold that process data are more sensitive measures of quality than both structural and outcome data.[97] This, to them, is because a poor outcome does not occur every time there is an error in the provision of care. More so, most differences in outcome among patients receiving the same treatment are the result of factors outside the sphere of what the health care providers can control, such as differences in individual patient characteristics. The major criticism against this position is the likelihood of increasing cost of care if resources were directed at improving processes of care.[97] But for practical purposes, experts in quality assurance posit that when used appropriately, both outcome and process measures can together give a valid information about quality of care. This is because, if quality of care based on structural or process data are to be credible, it must be shown that change their characteristics lead to change in outcome. Similarly, if outcome measures are to be

credible, it must be demonstrated that variation in outcome will result if the processes of care under the control of health providers are altered. The two measures are often described as complimentary. The process method is characterized as explicit and more strict, compared with an implicit outcome method which is less strict[97]. However, to allow process data to be used separately, due to restrictions of using the two methods together because of limited resources, its potential disadvantage mentioned above is done away with, usually by developing standard treatment guidelines.

Process aspect of quality in Donabedian model deals with what is done in receiving and giving care, in a patient –physician contact. A number of studies document differences in what actually is done to patients based on their insurance status.

Rising cost pressure of health care delivery is among the major stimuli for the renewed efforts of quality assessment and improvement as an integrated process of cost containment and quality control. The American Medical Association is leading the movement for cost containment through promoting adherence to standard treatment protocols. These guidelines take economic considerations into account, thus serving the purpose of cost containment by reducing the number of unnecessary tests and treatments. A number of studies have demonstrated that the implementation of evidenced-based, guideline-driven care results in improved clinical and economic outcomes.[68,69]

Ayanian *et al.* found that uninsured working-age adults were less likely than insured adults to have received basic preventive services, such as breast cancer screening (64% versus 89%) and hypertension screening (80% versus 94%). They also found that more than 40% of adults who were uninsured for a year or more had not had a routine checkup in the past 2 years, compared

with 18% of insured adults. Even in specified higher-risk groups who had clear needs for more regular clinical management, the uninsured lagged far behind the insured on checkups.[96]

Insurance-related disparities in the nature and type of care received are often accentuated among low-income adults. An analysis of data from American national survey shows that among low-income women, the uninsured are also less likely than the insured to receive cancer screening. The mammography rate for the uninsured was about half that of the insured (32% versus 62%), and 43% of the uninsured received Pap tests, compared with 64% of the insured.[98]

Using adherence to standard treatment guidelines as proxy to quality of care, Jürges in 2008 concluded that German patients receive average to high quality of care.[99] This is in contradistinction to what Wennberg et al. reported in the United States in 2002, where they found a general low compliance with evidence-based practice guidelines[100]. Results of the Community Quality Index (CQI) study, also conducted in the US, corroborated this finding. It shows a significant under treatment of chronic illnesses, evaluated against the national treatment guide lines. In fact, the study reveals that adult patients received only about half of recommended processes involved in basic care (54.9% of preventive care, 53.5% of acute care, 56.1% of chronic care).[101]

In Nigeria there has not been a nationwide coordinated quality assurance program in the health sector, in fact most of the recent QA efforts are driven by developmental partners. In recognition of this fact, the Health Sector Reform agenda pursued since 2004 has as one of its key priority areas, the drive for institutionalizing a system for quality assurance in the health care delivery system.

A facility based assessment of adherence to standard treatment guidelines in University of Benin Teaching Hospital, one of the country's tertiary facilities found adherence level of 49% (n=501). With this outing at the apex of the country's health care delivery system, one expects a much lower performance in the lower tiers.[102]

One of the donour driven initiatives at promoting the culture of quality assessment and improvement, Standard Based Management and Recognition (SBM-R) approach to quality improvement by MCHIP/USAID employed MOH Performance Standards for EONC Kano, Katsina and Zamfara States and Performance Standards for Malaria in Pregnancy(MIP) in Akwa Ibom States a two pronged intervention. Compared with a baseline adherence of 5% for EONC and 15% for MIP, the program recorded a remarkable improvement in adherences of 65-91% and 60-75% respectively [103].

2.9.4 Quality of Care and Efficiency

The concept of cost containment that is represented in health insurance relates the latter with the concept of quality according to Maxwell's model. In fact, the discussion above, which suggests that quality care tends to cost less make the relationship more cogent. In other words, cost effective service delivery yields a more effective care.[63,65,66,68,72]

Many public and private health facilities providers do not operate a full technical capacity, not because of inadequacy of resources, but rather due to a resource management that is no efficient. In this regards public facilities, tend not to use cost-minimizing combinations of high and low-level health workers, in particular, too many low-level staff are being used to support high-level workers. Findings of a survey by the FMOH on cost and efficiency of public and private health facilities in Ogun State, Nigeria suggest that there is potential to increase service delivery within

existing budgets by more cost-effective allocation of inputs[104]. The cost analysis indicates that there are short-run increasing returns to scale for inpatient and nearly constant returns to scale for outpatient services. The study further reveals that economies of scope for joint production of inpatient and outpatient services are not being realized. A major implication of such analysis is that improved resource allocation decisions heavily depend on the existence of information systems at the health facility level which carefully integrate financial information with other appropriate and adequate measures of service inputs, health care quality, facility utilization and ultimately health status.[104] Putting quality of care and demand of services in context, vis-à-vis the cost, Akin, Guilkey and Hazel, in a multi nominal probit estimation of quality of services and demand of health services in Nigeria, indicate that there is no difference in price responsiveness of different income groups in their study population. But they also showed that higher prices at either type of facility will tend to reduce usage of that type, and that usage will tend to increase for each type of care as the quality of the care is increased.[105]

CHAPTER THREE

METHODOLOGY

3.1 BACKGROUND TO THE STUDY AREA

Zaria, located within $11^0$04'N $7^0$42'E, is the second major city in Kaduna State. The old city was the capital of the Hausa kingdom of Zazzau. The old part of the city, known as *Birnin Zaria* or Zaria-City together with the surrounding neighborhoods serve as headquarters to two of the of the 23 Local Government Areas of Kaduna State; Zaria and Sabon Gari, with projected populations of 480,638 and 350,000 respectively (2006 census).[106] It is an urban, cosmopolitan city consisting predominantly Hausa-Fulani population and a cultural mix of various ethnic groups, especially in Sabon Gari, including Southern Kaduna tribes, Igbo and Yoruba, among others. The local indigenes are mostly farmers, while the settlers are traders, civil servants and students. The majority of the inhabitants are Muslims, followed by Christians, then followers of other religions. The city enjoys a good road network with major towns, within and outside the state.

There is a total of 102 health facilities in Zaria, 41 in Zaria LGA and 61 in Sabon Gari LGA. These include, for Sabon Gari, 22 PHC facilities (consisting of 11 family health units, 6 Health clinics and 5 health posts), one general hospital, 18 registered private clinics/hospitals and 12 institutional clinics belonging to training institutions and industries. In Zaria LGA, there are 18 PHCs, 16 health centres, one general hospital, 4 private hospital as well as two federally owned facilities; Institute of Child Health Ban Zazzau (ABUTH) and National Tuberculosis and Leprosy Training Centre, Saye.[107]

Nine secondary health facilities are accredited by NHIS in Zaria, constituting 2 public and 7 privately owned. Five of these are in Sabon Gari LGA, (1 public, 4 private) and 4 in Zaria LGA (1 public, 3 private).[108]

3.2 STUDY DESIGN

This was a facility based comparative study that retrospectively assessed quality of care from records in NHIS accredited facilities in Zaria, based on Donabedian model. The scope of the study was limited to the Donabedian structure and process dimensions of quality, using adherence to FMOH Performance Standards for Emergency Obstetric Care as a proxy of process aspect of quality of care.

3.3 SAMPLING

3.3.1 Study Population

The study population consisted of:

- NHIS accredited health facilities in Zaria.
- Patient case notes in the selected facilities.
- Facilities' personnel registers, laboratory report books and financial record books.

3.3.2 Eligibility Criteria

- **Inclusion Criteria**

a. Secondary health facilities accredited by NHIS in Zaria.

b. Case notes of patients managed in the facilities for the following maternal complications; severe malaria and severe anemia in pregnancy, incomplete abortion, sever pre-eclampsia/eclampsia and post partum hemorrhage, a year before (2005) and 5 years after (2011) introduction of NHIS .

- **Exclusion Criteria**

a. Facilities not accredited by NHIS as secondary care providers.

b. Case notes of patients treated for other conditions other the five stated above, or those managed outside the stated period.

3.3.4 Sample Size Determination

The minimum sample size for the study was determined using comparative study formula as follows;[109,110]

$$n = \frac{(Z_{1-a}+Z_{1-B})^2 \times 2\,(p_1q_1+p_2q_2)}{(p_1-p_2)^2}$$

where n= minimum sample size for each group

Z_{1-a}, Z_{1-B}= are standard normal deviates

$(Z_{1-a}+Z_{1-B})^2 = (1.96 + 1.282)^2 = 10.51$ at 95% confidence interval and power of 90%

P_1= The proportion of respondents who were satisfied with quality of maternal health services in Sabon Gari LGA in a study conducted before commencement of NHIS[111] = 41%;

Thus, $P_1 = 0.41$

$q_1 = (1-p_1) = (1-0.41) = 0.59$

P_2 = The proportion of respondents who were satisfied with the quality of Emergency Obstetric Care services in study conducted in Kano Municipal LGA, Kano State after introduction of NHIS=76%[112],

Thus, $P_2 = 0.76$

$q_2 = (1-p_2) = (1-0.76) = 0.24$

$$\text{Thus } n = \frac{(Z_{1-a}+Z_{1-B})^2\ 2\ (p_1q_1+p_2q_2)}{(p_1-p_2)^2} = \frac{10.51 \times 2[(0.41 \times 0.59)+(0.76 \times 0.24)]}{(0.41-0.76)^2}$$

$$= \frac{10.51 \times 2\ (0.24 + 0.18)}{0.12} = \frac{10.51 \times 0.84}{0.12} = \frac{8.8284}{0.12} = 73.5 \sim 80$$

3.3.5 Sampling Technique

A stratified sampling method was employed to arrive at the number of facilities for the study. The primary sampling unit was the health facilities:

1. Sampling Frame: List of NHIS accredited secondary facilities; Mayfair clinic, Ladiya Hospital, Salama Infirmary, Savannah Polyclinic, Anna Kitch Medical Centre, St Lukes Hospital, ABUTH Shika and Hajia Gambo Sawaba General Hospital.
2. These NHIS accredited facilities were stratified by ownership status as follows;
    - Public: Hajia Gambo Sawaba General Hospital, ABUTH Shika.
    - Private: Mayfair clinic, Ladiya Hospital, Salama Infirmary, Savannah Polyclinic, St Lukes Hospital, Anna Kitch Medical Centre.
3. Facility Selection

Using a 2:1 ratio, three facilities (2 private and 1 public) were then chosen randomly by balloting. These include:

- Savannah Polyclinic; established in 1986 this private facility is located along Basawa road Samaru, in Sabon Gari LGA and was accredited as secondary care provider in by NHIS in 2006.
- Ladiya Hospital; started activities in 1990 as a private facility in Benin street Sabo Gari, and was accredited by NHIS as a secondary care provider in November 2006.

- Hajia Gambo Sawaba General Hospital; established in 1975, this State owned secondary level facility serves Zaria LGA and functions as a zonal headquarters of Kaduna State Hospital Services Management Board. The facility was accredited as a secondary care provider by NHIS in 2006.

3.4 DATA COLLECTION TOOL

A set of 2 data collection tools were developed for collection of data for the study, viz;

1. Semi-structured self administered questionnaire for the top level management, to determine the facility's various sources of funds and the impacts of resource availability availed by capitation fee from the NHIS in facility's infrastructural structural and staff development.
2. Performance audit form to assess facility's adherence to standard treatment guidelines. It was adopted from the Federal Ministry of Health (FMoH) Performance Standards for Emergency Obstetric Care in Nigerian Hospitals.[113]

The tools were pre –tested by the researcher in General Hospital, Giwa, another secondary Care Provider enrolled in NHIS, in the neighboring Giwa LGA, in the first half of February 2012.

3.5 DATA COLLECTION TECHNIQUES

In each of the facilities surveyed data were collected from records on funding, physical structures, laboratory diagnostic capability, number of staff and number of patients seen, a year before (2005) and 5 years after (2011) joining the NHIS. Facilities were observed to verify some of record data. A total of 320 patient case notes were also reviewed, 160 before and 160 after introduction of NHIS. These were allocated equally between the public and private facilities, 80 before and 80 after introduction of NHIS in each category. In each of the facilities surveyed case

notes of patients managed for the five maternal complications in 2005 and 2011 were sorted out from in-patient admission registers in the various record departments, checked for completeness and code numbered.

With retrieval rates of 97% and 54% in the public and private facilities respectively, a total of 527 and 929 case notes were obtained in the publicly owned Hajiya Gambo Sawaba General Hospital, before and after respectively. In the privately owned Ladiya Hospital and Savannah polyclinic 82 and 107 as well as 79 and 93 case notes were obtained before and after respectively. Systemic sampling technique was employed to arrive at the minimum sample size in each category.

a. In the public facility (Hajiya Gambo Sawaba General Hospital) the sampling intervals were calculated as follows;

$$\text{Sampling interval} = \frac{\text{Sampling frame}}{\text{Desired sample size}} = \frac{527}{80} = 7 \text{ (before)}$$

$$\frac{\text{Sampling frame}}{\text{Desired sample size}} = \frac{929}{80} = 12 \text{ (after)}$$

b. In Ladiya Hospital the sampling interval was calculated as follows;

$$\text{Sampling interval} = \frac{\text{Sampling frame}}{\text{Desired sample size}} = \frac{82}{40} = 2.05 \sim 2 \text{ (before)}$$

$$\text{Sampling interval} = \frac{\text{Sampling frame}}{\text{Desired sample size}} = \frac{107}{40} = 2.67 \sim 3 \text{ (after)}$$

c. In Savannah polyclinic the sampling interval was calculated as follows;

$$\text{Sampling interval} = \frac{\text{Sampling frame}}{\text{Desired sample size}} = \frac{79}{40} = 1.97 \sim 2 \text{ (before)}$$

$$\text{Sampling interval} = \frac{\text{Sampling frame}}{\text{Desired sample size}} = \frac{93}{40} = 2.33 \sim 2 \text{ (after)}$$

Thus, a starting point was arrived at by simple random sampling using balloting between case number 1 to both 7 and 12 (before and after respectively). Subsequently, every 7th (before) and 12th (after) case note were chosen until the minimum sample size was obtained in the public facility. In Ladiya Hospital after the starting point, every other case note (before) and every 3rd were selected for the study. Similarly in Savannah polyclinic every other case note was selected for the study before and after, after randomly selecting a starting point to attain the minimum sample size.

Selected case notes were reviewed against standard protocols adopted from the FMoH Performance Standards for EONC in Nigerian Hospitals[113].

3.6 DATA MANAGEMENT INCLUDING ANALYSIS

A score of 1 point for each standard observed was awarded and non observance of a standard was awarded a zero point. Total adherence score for case reviewed was computed as follows;

$$\text{Adherence level (\%)} = \frac{\text{Total Standards Observed}}{\text{Total Standards for the case}} \times 100$$

Aggregated adherence level was graded thus;

- Poor adherence = % score <50
- Good adherence = % score 50-69
- Very good adherence = % score > 70

The data collection exercise was carried out by the researcher between April and May 2012.

Table 1. Total number of performance standards for the five maternal complications

S/no	Maternal complication	Total number of standards
1.	Incomplete Abortion	16-19
2.	Severe pre-eclampsia/eclampsia	13-19
3.	Postpartum hemorrhage	12-21
4.	Severe anemia in pregnancy	6-7
5.	Severe malaria in pregnancy	6-7

Data collected was checked manually for errors in entry and subsequently imputed, cleaned and analyzed electronically using SPSS version 20. Data was presented in forms of means, percentages, tables and diagrams.

Variables compared in the facilities include resource availability before and after joining NHIS, infrastructural structure, human resource development and level of adherence to the standard guidelines. The difference observed in financial resource availability, physical structures, laboratory tests, human resource availability and number of patients seen in the facilities before and after joining NHIS were analyzed for statistical significance using Wilcoxon Signed Ranks test. Relationships between change in facilities' financial resource availability following the introduction of NHIS with change in number of technical staff, number of laboratory tests, number of beds and number of patients seen, before and after joining NHIS were determined using Pearson Correlation test. Differences observed in adherence to the Performance Standards before and after introduction of NHIS was tested using paired t test, whereas the difference in level of adherence to the Performance Standards between the public and private facilities was

tested for statistical significance by X^2 test. All statistical tests of significance were interpreted at level of significance of < 0.05.

3.7 ETHICAL CONSIDERATION

Ethical clearance from ABUTH Health Research Ethics Committee was sought and gotten. A letter of introduction from the Department of Community Medicine authorities was presented to each of the selected facilities. Informed consent was sought and gotten from the authorities of the facilities selected and from individual respondents among the management staff in the health facilities.

Information drawn from the research was used for the purpose of the research only and confidentiality guaranteed as performance audit forms were identified by code numbers and not client/patient name/case note number.

3.8 IMITATIONS OF THE STUDY

1. As a study from record, aspects of the Performance Standards dealing with the inter-personal relationship between client/patient and the practitioner, usually not put into patient notes, cannot therefore be assessed.

2. The differences that could be observed in adherence to the performance Standards in the facilities may not be due to their enrolment into NHIS alone.

CHAPTER FOUR

RESULTS

4.1 FACILITIES' SOURCES OF FUNDS

Table 2. Comparison of Facilities' Sources of Funds before and after introduction of NHIS

	One year before introduction of NHIS (N)			Five years after introduction of NHIS (N)		
Name of Facility	**Payment for Services (%)**	**Govt. subvention (%)**	**Total (%)**	**Payment for Services (%)**	**NHIS (%)**	**Total (%)**
Private						
Ladiya Hospital	5,856,438 (100)	- (0)	5,856,438 (100)	20,399,176 (74)	7,175,555 (26)	27,574,731 (100)
Savannah polyclinic	1,923,700 (100)	- (0)	1,923,700 (100)	1,897,478 (43)	4,422,000 (57)	6,319,478 (100)
Public						
Hajia Gambo Sawaba General Hospital	3,540,223 (74)	1,231,870 (26)	4,772,093 (100)	10,554,508 (61)	6,695,725 (39)	17,250,233 (100)
Total	11,320,361 (10)	1,231,870 (90)	12,552,231(100)	32,851,162 (64)	18,293,280 (36)	51,144,442 (100)

p = 0.109

Results of this study show that a year before joining the NHIS service provision, the sole source of income for the two private facilities, Ladiya Hospital and Savannah Poly clinic was fee for service, which constituted 100% in both. In the publicly owned Hajia Gambo Sawaba General Hospital, fee for service constituted about 74% of the income. A monthly subvention from the State Hospital Services Management Board (HSMB), to cover for over head running cost was an

additional source of revenue in the facility, accounting for a quarter (26%) of its total yearly revenue (Table 2).

Following joining NHIS, fee for service in the two private facilities fell to 43% and 74% in Savannah Polyclinic and Ladiya Hospital respectively. NHIS capitation and fee for service now accounts for 26% of annual income generated in Ladiya Hospital and 57% in Savannah Polyclinic. In the publicly owned Hajia Gambo Sawaba General Hospital government subvention was withdrawn after facility joined the NHIS in 2006 coinciding with the introduction of the Free Maternal and Child Health Care (FMCH) in the State. The funds accrued to the facility from the NHIS are utilized for overhead running cost and payment of casual staff, among others. Whereas the consumables for the FMCH are centrally supplied from the HSMB. Payment for service fell to 61%, while the NHIS contributed the remaining 39% of the facility's average annual income.

In general, a 3 fold increase in financial resources availability was recorded following introduction of NHIS, with fees from the scheme contributing close to a half (47.4%) of the increase.

4.2.2 THE TREND OF FUNDING IN THE THREE FACILITIES

Table 3. Comparison of financial availability in the facilities before and after introduction of NHIS

Name of Facility	Before (N)	After (N)	% increase	Sig. test
Ladiya Hospital	5,856,438	27,574,731	371	Z= -1.604
Savannah polycliic	1,923,700	6,319,478	229	
Hajia Gambo Sawaba Gen Hosp	4,772,093	17,250,233	261	p=0.109
Total	12,552,231	51,144,442	307	

Table 3 shows that the introduction of NHIS has led to a significant appreciation in the facilities' financial resource availability, from a more than 2-fold in one of two private facilities, Savannah polyclinic and the public facility, Hajia Gambo Sawaba General Hospital, to a 3 fold rise in second private facility, Ladiya Hospital, over the five year period since their joining the scheme. The overall increase in financial resources in the three facilities put together was 307%, (Table 3), the Wilcoxon Signed Rank test of the overall revenue showed that the difference in resource availability of the facilities before and after joining NHIS was not statistically significant, p= 0.109.

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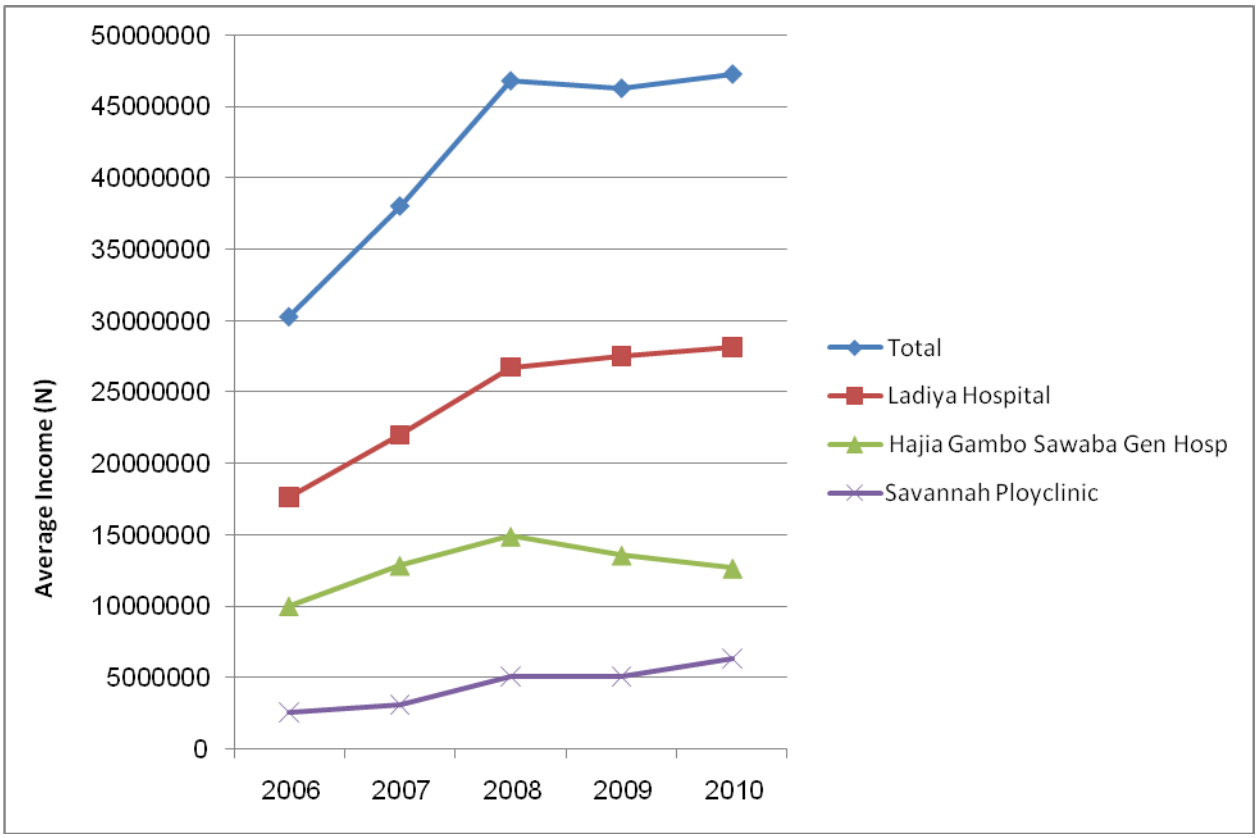


Figure 1. Pattern of financial resource availability in the three facilities during the 5 year period since joining the NHIS.

The general pattern of increase in income shows a sharp rise to a peak in 2008 followed by plateau (Figure 1). The trend in Ladiya hospital is strikingly similar to the overall pattern, contrasting with a much smaller and gradual rise in Savannah polyclinic and some drop in total annual revenue observed in Hajia Gambo Sawaba General Hospital from 2008, coinciding with withdrawal of state subvention

4.2 RELATIOSHIP BETWEEN FINANCIAL RESOURCE AVAILABILITY, HUMAN RESOURCE, LABORATORY DIAGOSTIC CAPABILITY AND PHYSICAL INFRASTRUCTURES

4.2.1 Human Resources Availability

Table 4. Comparison of staff strength by category in the three facilities, before and after introduction of NHIS

	One Year Before (n)			Five Years After			(n)
	Clinical staff	Non clinical staff	Total	Clinical staff	Non clinical staff	Total	% increase
Ladiya hospital	16	9	25	28	13	41	64
Savannah polyclinic	15	10	25	11	8	19	-56
HGSGH	70	95	165	89	126	215	30
Total	101	114	215	128	147	275	38
% Increase				27	29	28	

Table 4 shows a comparison of the number of clinical and non clinical staff during the year before and a period of 5 years after introduction of NHIS in the three facilities. It indicates a rise in both categories of staff in Ladiya Hospital, which is private facility (64%) and Hajiya Gambo Sawaba General Hospital (30%), a government owned facility.

Conversely, the period witnessed a decline in both categories of staff in the second private facility, Savannah polyclinic (-56%).

Similarly, there has been an improvement in number of clinical staff sent for further training in Ladiya and Hajia Gambo Sawaba, whereas none was sent for such training in Savannah, during the period under review.

Overall, a 28% increase in the total number of staff was recorded in the three facilities. This includes a 27% (n=27) increase in the number of clinical staff as compared to a 29% (n=33) rise in non clinical staff.

The facilities' staff strength assessed was classified broadly into clinical and non clinical staff. The clinical staff comprise of doctors, nurses/midwives, laboratory technicians/assistants, pharmacists and pharmacy technicians/assistants. Administrative officers, maintenance staff and security men constitute the non clinical staff. The change in the number of clinical staff was used for the analysis relationship between financial resource availability and staff strength based on the assumption that the clinical staff density has a more direct association with quality of care.

Table 5. Comparison of facilities' clinical staff availability before and after introduction of NHIS

Facility	Before	After	% increase	Sig. test
Ladiya Hospital	16	28	75	
Savannah Polyclinic	15	11	-25	Z=-0.535
Hajia Gambo Sawaba General Hospital	70	89	27	p=0.535
Total	101	128	27	
				r= 0.122, p= 0.665

In both Hajia Gambo Sawaba General Hospital (public) and Ladiya Hospital (private), a rise in clinical staff, of 27% and 75% respectively was observed. In Savannah polyclinic, the second private facility, however, it was a fall of some 25% recorded in the 5 year period following the introduction NHIS as shown in Table 5.

The total rise in the number of clinical staff of the three facilities over the five year period into NHIS service provision is 27%. Wilcoxon Signed Ranks Test showed that this increase in the number of clinical staff in the facilities following the introduction of NHIS was not statistically significant (p= 0.593). The relationship between resource availability and staff strength was tested using Pearson correlation. The test showed that there is no statistically significant relationship between facilities' financial resource availability and staffing, r= 0.122, p= 0.665 (Table 5).

4.2.2 Laboratory Diagnostic Capability

Table 6. Comparison of the number of laboratory diagnostic tests carried out in the facilities, before and after joining NHIS service provision

Name of Facility	Before	After	% increase
Ladiya Hospital	18	18	0
Savannah Polyclinic	14	18	29
Hajia Gambo Sawaba General Hospital	22	26	18
Total	54	62	14

Z= -0.535, p=0.593

Analysis of the facilities' laboratory diagnostic capability reveals some increase in the number of laboratory tests carried out in one of the private facilities, Savannah Polyclinic (18%) and in the public facility, Hajiya Gambo Sawaba General Hospital (26%), five years after joining NHIS (Table 6).

The new tests available in Savannah Polyclinic include retroviral screening, pregnancy test, hepatitis B- surface antigen (HBsag), random/fasting blood sugar(RBS/FBS) and blood group, an addition to the earlier 10 tests; packed cell volume (PCV), malarial parasites (MPs), Blood group, widal test, veeral diseases research laboratory (VDRL), stool microscopy, urine microscopy, culture and sensitivity (MCS), sickling test, sputum acid fast bacilli (AFB) and semen analysis. Whereas in Hajia Gambo Sawaba General Hospital the range of tests carried out by the laboratory before joining NHIS, included FBC,PCV/hemoglobin, urinalysis, RBS/FBS, erythrocyte sedimentation rate (ESR), urine MCS, sputum AFB, grouping and cross matching, pregnancy test, widal, MPs, VDRL, retroviral screening (RVS), HBSag, hepatitis C – antibodies (HCab), liver function test (LFT), x-rays and ultrasound scan. Additional tests after joining NHIS include electrolyte, urea and creatinine, random/fasting blood sugar, genotype and lipid

profile. The number of tests carried out by the Ladiya hospital's laboratory, on the other hand, remains same after joining the scheme .These include MPs, PCV, VDRL, blood grouping, sputum AFB, urinalysis, urine MCS, skin snip, pregnancy test, RVS, stool microscopy, semen analysis, HBsag, HCab, RBS/FBS and ultrasound scan.

The overall increase in the number of laboratory diagnostic tests 5 years into the NHIS service provision was 14%, a rise shown by Wilcoxon Signed Ranks Test to be not statistically significant (P = 0.593). To test the relationship between facilities' resource availability following joining the NHIS and their laboratory diagnostic capability Pearson correlation was computed. It reveals that there is no statistically significant relationship between the two (r=0.061, p=0.89).

4.2.3 Physical Infrastructure

Table 7. Comparison of the physical infrastructure in the facilities, before and after introduction of NHIS

	ONE YEAR BEFORE				FIVE YEARS AFTER			
Name of Facility	No. of Wards	No. of Beds	No. of Offices	No. of Generators	No. of Wards	No. of Beds	No. of Offices	No. of Generators
Ladiya Hosp	6	11	3	2	6	11	4	3
Savannah Poly clinic	5	18	5	1	5	12	5	1
Hajia Gambo Sawaba GH	8	150	8	3	8	188	10	6
Total	19	179	16	6	19	211	19	10

A comparison of the physical infrastructure in the facilities before and after their joining NHIS service provision in Table 7 shows some increase only in the publicly owned Hajia Gambo Sawaba. It remained almost the same in one of the private facilities, Ladiya Hospital. In the second private facility, Savannah Polyclinic, some of the facility infrastructures like number of beds have witnessed a decline in during the period since the introduction of NHIS.

Table 8. Comparison of percentage rise in the number of beds in the three facilities, before and after introduction of NHIS

Name of Facility	Before	After	% increase	Sig. test
Ladiya Hospital	11	11	0	
Savannah polyclinic	18	12	-33	Z= -1.414
Hajia Gambo Sawaba General hospital	150	188	25	p= 0.157
Total	179	211	18	r=-0.096
				P=0.734

Taking percentage rise in facilities' number of beds as representative of change of facilities physical infrastructure with the introduction of NHIS, Table 8 shows a 25% increase in the publicly owned Hajia Gambo Sawaba General Hospital, non increase (0%) in one of the private facilities, Ladiya Hospital and a decline by third (-33%) in the second private facility, Savannah Polyclinic. The overall increase in the three facilities after joining the NHIS, put together is a total 18%, a rise that is not statistically significant as shown by Wilcoxon Signed Ranks Test showed that there is no statistically significant difference in the number of beds of the facilities before and after introduction of NHIS ($Z = 1.414$, $p = 0.157$).

Pearson correlation test revealed that there is no statistically significant relationship between facilities' resource availability and number of beds, an index of expansion of in- patient services provision.

4.3 NUMBER OF PATIENTS SEEN

Table 9. Comparison of average yearly number of patient attending the facilities, before and after joining NHIS service provision

Facility	Before	After	% increase	Sig. test
Ladiya Hospital	1,397	2,190	57	Z = -1.604
Savannah polyclinic	1,553	2,868	100	p=0.109
Hajia Gambo Sawaba General Hospital	36,703	82,956	126	
Total	39,653	88,014	121	r= -0.068, p=0.811

Taking annual patient turn-over to represent access to care, analysis of the data generated from the review of records in the three facilities reveals an increase in the number of patients visiting the facilities ranging from 57% in Ladiya, 100% in Savannah to 126% in Hajia Gambo Sawaba (Tables 9).

Wilcoxon signed ranks test in Table 9, shows that difference observed in the patient influx into the facilities before and after joining the NHIS is not statistically significant (p= 0.109).

Table 10. Trend of increase in the number patients seen in the facilities five years into NHIS service provision

FACILITY	2007	2008	2009	2010	2011	Sig test
Ladiya Hospital	1,897	1,913	2,097	2,190	2,153	
Savannah Polyclinic	1,432	1,539	1,715	1,776	2,868	
Hajia Gambo Sawaba GH	50,418	56,922	73,353	73,521	82,956	
Total	53,747	60,374	77,165	86,922	87,977	p=0.109

Table 10 presents trend of rise in average annual patient flow in the three facilities six years into NHIS service provision. It shows a particularly rapid rise in Hajia Gambo Sawaba General Hospital around 2009-2010. Wilcoxon Signed Ranks Test however, shows that the increase in the number of patients seen before and after joining the NHIS is not statistically significant (P=0.109).

Table 11. Relationship between facilities' financial availability, clinical staffing, laboratory tests, number of beds and patient in flow

Ladiya Hospital						
Period	**2006**	**2007**	**2008**	**2009**	**2010**	**Sig Test**
Amount (N x 10^3)	**17,253**	**23,766**	**26,531**	**26,638**	**26,692**	
No of clinical Staff	16	18	22	27	28	r=0.992, p=0.001
No of lab Tests	18	18	18	18	18	-
No of beds	11	11	11	11	11	-
No of patients	1897	1913	2097	2190	2153	r=0.936, p=0.019

Savannah Polyclinic						
Period	**2006**	**2007**	**2008**	**2009**	**2010**	**Sig Test**
Amout (N x 10^3)	**2,632**	**2,781**	**5,123**	**5,214**	**6,211**	
No of clinical Staff	15	15	12	11	11	r=-0.950, 0.013
No of lab Tests	14	15	17	18	18	r=0.955, p=0.012
No of beds	18	16	12	12	12	r=-0.955, p=0.012
No of Patients	14320	15390	17150	17760	28680	r= 0.837, p=0.077

Hajia Gambo Sawaba General Hospital						
Period	**2006**	**2007**	**2008**	**2009**	**2010**	**Sig Test**
Amout (N x 10^3)	**10,511**	**12,912**	**15,910**	**14,052**	**13,612**	
No of clinical Staff	70	76	81	88	89	r=0.603, p= 0.282
No of lab tests	22	24	26	26	26	r=0.863, p=0.06
No of beds	150	162	180	188	188	r=0.724, p=0.166
No of patients	50418	56922	73353	73521	82956	r=0.648, p=0.237

However, correlation tests of relationship between resource availability and such factors like staffing, laboratory tests, number of beds and access in individual facilities reveal some statistically significant relationships (Table 11). In Ladiya hospital relation was significant between resource availability and staffing (p=0.001) and patient turn over (0.019). Statistically significant relationship was established also in Savannah between resource availability, staffing (p=0.013), laboratory tests (p=0.012) and number of beds (p=0.012). Correlation coefficient (r) is however negative for number of clinical staff (r= -0.950) and number of beds (r= -0.955) which suggests a decrease in these variables as financial resources increase in the facility (Table 11).

Table 12. Comparison of facilities total percentage changes in structural aspects following introduction of NHIS

Facility name	Total % Increase
Ladiya Hospital	33
Savannah polyclinic	18
Hajia Gambo Sawaba General Hospital	49
Total	100

In general, the structural aspects of quality in the facilities surveyed show a 100% increase as described in Table 12. Comparing the facilities individual performance in this regard, the public facility Hajia Gambo Sawaba General Hospital recorded a higher increase in the structural components assessed (49%), followed by the private facilities; Ladiya Hospital (33%), while Savannah polyclinic witnessed the lowest rise of 18%.

4.4 QUALITY OF CARE

4.4.1. Adherence to Standard Treatment Guidelines

Table 13. Distribution of cases of maternal complications reviewed in the facilities

Maternal complication	Before (%)	After (%)	Total (%)
Incomplete Abortion	54(33.7)	58(36.3)	112(35.0)
Severe pre-eclempsia/eclempsia	38(23.8)	44(27.5)	82(25.6)
Postpartum hemorrhage	38(23.8)	33(20.6)	71(22.2)
Severe anemia	25(15.6)	18(11.2)	43(13.4)
Severe malaria	5(3.1)	7(4.4)	12(3.8)
Total	160 (100)	160(100)	320(100)

A total of 320 patient case notes were reviewed during the study, 160 before and 160 after introduction of NHIS in the facilities surveyed. Table 13 shows that incomplete abortion was the most frequent maternal complication encountered representing more than a third of the total (33.7% before and 36.3% after), followed by severe pre-eclampsia/eclampsia representing a quarter (23.8% and 27.5%) and post partum hemorrhage (23.8% and 20.6%).

Table 14. Comparison of the of the Mean Adherence levels to standard treatment protocols in the facilities surveyed before and after introduction of NHIS

Maternal complication	Before (%) (n=160)	After(%) (n=160)
Incomplete Abortion	36.13	52.33
Severe pre-eclampsia/eclampsia	38.42	42.95
Postpartum hemorrhage	28.97	44.28
Severe anemia	57.29	70.56
Severe malaria	28.20	38.29
Total	37.90	46.34

Of the five maternal complications only severe anemia was managed to a level of good quality (57.29%) before NHIS, with PPH and severe malaria recorded least quality with adherence level of 23.20 % and 28.97% respectively. After introduction of NHIS a general improvement in adherence to protocols was observed, more marked in management of incomplete abortion (52.33%) and severe anemia (70.56%). Despite some improvement severe malaria remained the most poorly managed with average adherence level of 38.29% (Table 14).

Table 15. Comparison of level of adherence to standard treatment protocols in the facilities before and after joining NHIS

	Percentage Level of Adherence							
	Before (n= 160)				After (n=160)			
Facility name								
Private	**Poor**	**Good**	**Very Good**	**Total**	**Poor**	**Good**	**Very Good**	**Total**
Ladiya Hosp (n=40, 40)	90	5	5	100	88	12	0	100
Savannah Poly clinic (n=40, 40)	100	0	0	100	45	35	20	100
Public								
HGS Gen Hosp (n=80, 80)	80	5	15	100	46	34	20	100

Facility wise, the two private facilities had the worst performance before NHIS with poor adherence level in 100% and 90% of cases in Savannah Polyclinic and Ladiya hospital respectively. The level in the public facility, Hajia Gambo Sawaba General Hospital was found to be 80% before NHIS. Following introduction of NHIS an improvement in adherence level was recorded, Savannah Polyclinic, a private facility, recorded the highest improvement as good adherence level rose to 55%, followed by the publicly owned Hajia Gambo Sawaba General Hospital with a rise from 20% to 54% adherence. In the other private facility, Ladiya Hospital, the change was a marginal increase in adherence level from 10% before to 12% after (Table 15).

Table 16. Performance standards absolutely not observed in all the cases reviewed

Maternal Condition	Standard practice	% observance
Incomplete abortion	Client given TT	0
	Client informed of post procedure care	0
	Client told signs of recovery	0
	Client counseled on family planning	0
	Client informed when to come back	0
Severe pre-eclampsia/ eclampsia	Signs of toxicity to $MgSO_4$ checked	0
	Clotting time test performed	0
PPH	Anti shock garment applied	0
	Patient put on Tredelenburg position	0
	Oxygen administered	0
	Uterine contraction monitored during follow up	0
	Bleeding monitored during follow up	0

Generally, the most poorly observed standards, in fact not adhered to in 100% of cases of incomplete abortion included giving TT, informing client of post procedure care, telling client about signs of recovery, counseling on family planning and informing client when to come for follow up. In severe pre-eclampsia/eclampsia signs of toxicity to $MgSO_4$ and clotting test were the most left out in the management. Whereas applying anti shock garment in PPH with shock, Tredelenburg positioning, administration of oxygen and monitoring of uterine contraction and bleeding monitoring during follow up are examples of standard practices that were performed least during patient care.

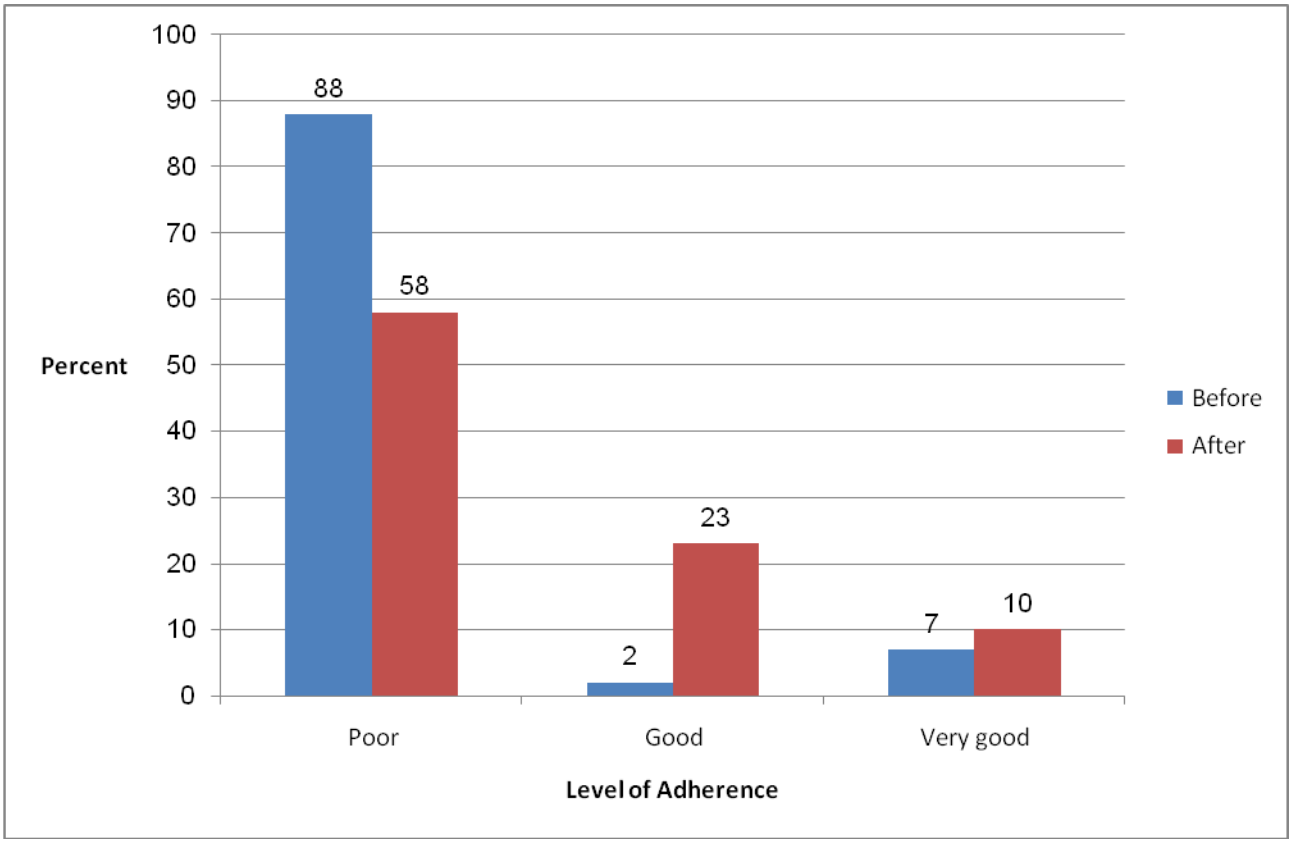


Figure 2. Comparison of level of adherence to standard treatment protocols in the three facilities, before and after joining the NHIS

The summary of the changes in adherence levels with introduction of NHIS in the three facilities surveyed is presented by Figure 3. It shows a decline in non adherence level from a staggering 88% before NHIS to 58% after. Similarly, the level of good and very good adherence have risen from 2% to 23% and 7% to 10% respectively.

4.5 RELATIONSHIP BETWEEN HEALTH INSURANCE AND QUALITY OF CARE (ADHERENCE TO STANDARD TREATMENT GUIDELINES)

Table 17. Comparison of the of the Mean Adherence levels to standard treatment protocols

Maternal complication	Before (%)	After (%)	Sig test
Incomplete Abortion	36.13	52.33	t= -5.625
Severe pre-eclampsia/eclampsia	38.42	42.95	
Postpartum hemorrhage	28.97	44.28	
Severe anemia	57.29	70.56	p=0.005
Severe malaria	28.20	38.29	
Total	37.90	46.34	
	Overall mean adherence 42.12 $\pm$ 21.9% (n=320)		

Overall, quality of care was found to be very poor with mean adherence level of 42.12% (Table 14). This is put at 37.90% before NHIS and this has risen to 46.34% after introduction of NHIS as shown in Table 17. The improvement in adherence level following introduction of NHIS was found to be statistically significant (p= 0.005).

4.6 RELATIONSHIP BETWEEN FACILITY OWNERSHIP AND QUALITY OF CARE

Table 18. Relationship between adherence to standard treatment protocols and facility ownership

	Level of adherence to treatment protocols (%)			
Facility ownership	Poor	Good	Very Good	Total
Private	130 (81.3)	21 (13.1)	9 (5.6)	160 (100)
Public	101 (63.1)	31 (19.4)	28 (17.5)	160 (100)
Total	231 (72.2)	52 (16.3)	37 (11.5)	320 (100)

χ^2 =15.321, P=0.001

Analysis of the results further reveals a statistically significant difference in adherence level between the facilities based on ownership status (p=0.001), with the public facility performing better than the privately owned facilities reviewed (Table 18).

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

Structural aspect of health care, described in terms of physical, technological and social infrastructure as well as human resource for health, is an indirect measure of performance and quality of care. It is useful to the degree that it can be expected to influence the direct provision of care. In spurring on infrastructural growth and development in personnel skills and number of health personnel, the funds from NHIS is expected to impact positively on access and quality of care by expanding heath facilities fiscal base.

In general economic model, investment in infrastructural development leads to growth, enhances productivity and gives increasing value for the fixed capital, through network effects.[114] It therefore follows that giving allowance for capital investment will return the health system to growth path, which in addition to skills, innovation, entrepreneurship and competitiveness are enumerated among the five principal drivers of productivity.[115]

Results of this study showed a - 3 fold increase in financial resource availability following introduction of NHIS in the facilities surveyed. The results further indicated that the increase in funds following introduction of NHIS is higher in the private facilities (300%) compared to 261% in the public facility. The new source of revenue availed by NHIS contributed between 26- 39% of the total (Tables 1 and 2).

Though an increase in income was recorded following introduction of NHIS, the rise in the quantum of money accrued to the facilities was shown to be statistically not significant (P=0.109), which could be attributed to very low coverage of the scheme (<5%, half way to the

period targeted for universal coverage), low capitation fee(though recently increase from N550 per head to N750) and a relatively high administrative cost which is up to 22%, comparing poorly with 5-15% in other countries with much better practice[116]. This study did not find a statistically significant association between financial resource availability and increase in facilities' infrastructure (p= 0.157) and work force development (p=0.535) following introduction of NHIS, a finding in consonance with the conclusion by Kim and Moody that the relationship between health expenditure and both the level of medical infrastructure and health outcomes, is not statistically significant[91]. Major constraints explaining this gap may include paucity of efficiency in the resource utilization, systemic bureaucracies and the fact that medical expenditure is very expensive to provide and maintain.[91] Another factor is the passive approach adopted by NHIS regarding providers investment in infrastructure, because apart from the initial accreditation requirements for facilities,[116] the scheme has no clear regulation and enforcement mechanism for infrastructural expansion and man power development to cater for the envisaged increase coverage.

Another striking finding of this study is that although the private facilities recorded higher increase in revenue due to NHIS, increase in infrastructure and staffing was observed more in the public facility. This is in agreement with the assertion that private funding of hospital infrastructure, done in the purview of partnership, is costlier, economically inefficient, lack accountability and is more unlikely to succeed.[117] Although the difference may not be explained fully by difference in utilization of funds from the scheme, as most of capital projects in public facilities are undertaken centrally by the State Ministry. Nonetheless, this finding is particularly important as NHIS service provision is mainly private driven as up to 80% of the accredited providers are private facilities.[118]

The human resource availability was found to have an overall increase of 28% in the facilities following introduction of NHIS. The improvement in human resource availability was better in the public facility (30% increase) compared to the two private facilities put together (8%). Facility wise Ladiya Hospital recorded the highest rise in human resource (64%), followed by Hajia Gambo Sawaba General Hospital (30%), while Savannah polyclinic recorded a 56% decline, this and a fall in the number of beds is attributed to the demise of the pioneer proprietor just before the facility joins the NHIS service provision. Taking clinical staffing as an indicator of quality, the same trend is observed (Table 4). A test of correlation between financial resource availability and clinical staffing reveals non relationship ($p= 0.665$). This can be explained on the strength of the fact that employing staff in the public setting is centralized, staff are posted from the State Ministry of Health, making it highly unlikely for NHIS capitation fee to have any effect on the number of clinical staff. In the private setting the twin factors of expensive nature of employing clinical staff and the drive to maximize profit margin may explain this finding. In the same vein , despite the increase in both the number of laboratory tests (14%) and the number of beds (18%), Pearson correlation tests showed that there is no statistically significant relationship between facilities' financial resource availability and both the laboratory tests and physical infrastructural development.

The number of patients seen in the facilities has risen (121%) following introduction of NHIS, with the public facility leading in the increase (126%), compared to 57% and 100% in the two private facilities, Ladiya Hospital and Savannah Polyclinic respectively. The higher increase in the public facility could be explained in part, by the introduction of the free maternal and child health services by Kaduna state government, whereas location of Savannah in the area of Samaru with less health facilities may account for the big rise. Statistical tests have however,

shown that the rise is not statistically significant and that there exists no relationship between financial resource availability and number of patients accessing care in the facilities (p=0.109, p=0.811). This is because, in settings of pervasive poor quality of care, not certain of getting value for their money, client will not be willing to pay premium and enroll into insurance, or even access orthodox care. To mobilize demand in these instances, improving quality of care should be seen as a requisite for any viable health insurance scheme and not reversing the order of expecting a prepayment scheme to lead to quality improvement, in circumstances of low consumer confidence in the system.[80]

Process indicators of quality of care are most conveniently and perhaps objectively assessed against standard treatment protocols. Thus, the last two decades have witnessed an increasing prominence of standard treatment guidelines among professional regulatory bodies, training institutions and health care delivery systems.

Using adherence to standard treatment guidelines as a proxy of quality of care, this study demonstrated a general poor quality of care, with a mean adherence level of 42.12%. This is significantly higher than the baseline of Standard Based Management and Recognition (SBM-R) project in some selected states in North Western ad South Southern Nigeria, (5-15%),[103] but lower than what was recorded in University of Benin Teaching Hospital, South southern Nigeria (49%).[102] Though in the same country, the wide difference observed between the results of this study and that of both the SBM-R intervention and Benin study could be attributed to difference in the level of care of the facilities surveyed. Whereas this work was done in secondary tier of care, the study in Benin was carried out in a tertiary tier, a teaching hospital, where more capable hands and better supervisory mechanism are available, and these may have a lot to bear on the process of care provision by the health workers. The SBM-R intervention on the other hand was

carried out in the primary level of care where the setting is certainly less supportive of adherence to guidelines, due to shortage in number and skills of personnel, among other structural limitations. In the same vein, the findings of this study is quite higher than the findings in rural Kenya, Eastern Africa, where only 28% of patients were prescribed anti-malarials as recommended by the National guidelines.[119] Expectedly, this finding of the study is far below the reports of similar studies in Germany (average to high adherence)[99] and the USA (54.8%-59%).[14,15] These studies similarly used adherence to standard treatment guidelines as proxy to quality of care, with the clear difference of presence of such guidelines supported by a robust supervisory mechanism and a well informed population. It is noteworthy also, that even the 'fair' performance in the US is adjudged as poor by the workers, due to the growing concern over the relatively high cost of care in the States and the accumulating evidence alluding to the utility of adherence to recommended guidelines in pruning the soaring cost of care to the Canadian and Western European average.[10,120]

Another striking finding of this study is the presence of significant difference in facilities adherence performance following their enrolment into NHIS, p= 0.0001 (Table 5). The association of resource availability with adherence to guidelines as an aspect of quality is not always that of a linear relationship. This is because as Wennberg and co-workers assert greater spending does not purchase the infrastructure needed to ensure compliance with the standards of practice dictated by evidence-based medicine[121]. In order to overcome this hurdle and ensure the system and the populace get value for their money, several propositions were made. Jurges advocates changing the reimbursement system "to include quality related or guideline-based fees" as one possibility to improve adherence to guidelines, as a way of quality assurance. Furthermore, Karlsson provides an interesting analysis that allows optimizing reimbursement

schemes in a capitation system, in terms of quality provided, instead of the traditional fixed monthly stipend per enrollee[122]. The suggestion by Greenberg and Greenberg of involving other medical professionals is even more appropriate in our environment, where paramedics serve as the first point of contact to most patients/clients, especially at lower levels of care. Thus, a widespread approach that incorporates various stakeholders may be necessary to change adherence behavior.[66] Other measures that can serve the ultimate purpose of promoting adherence to guidelines include implementation and strengthening pay-for-performance initiatives and evolving physician level measurement of performance.[13,17] This individualization of quality assessment of care will put each practitioner on focus and has the capacity to harness the untapped competence and elicit efforts to be exerted in patient care.

The reasons for non adherence by clinicians to standard treatment guidelines vary to a certain extent, according to the wider socioeconomic milieu. In the US and countries of Western Europe, for example, poor adherence emanates from lack of willingness to abide by what is viewed as "recipe" medicine, represented by the standard guidelines, which have the tendency to undermine practitioners' professional autonomy.[99] In most resource restricted societies, however, the reasons of the dismally low adherence level are largely attributable to systemic problems. A qualitative study that sought to identify factors responsible for low adherence to standard guidelines for treatment of malaria in Kenya, grouped such limiting factors into specific policy inadequacies in introduction of standard treatment guidelines, the physicians factors as well as more general problems with the healthcare systems.[119] In another study among primary care providers in New York, Waddimba et al in 2010, used multivariate adherence model to link guideline adherence rates to provider attitudes among 186 survey respondents in a pay -for - performance collaboration, adjusting for individual, practice and community characteristics. The

workers found that physicians attitudes associated with adherence, independent of specialty and prior behavior, include financial salience (adjusted Odds ratio OR =3.6), peer cooperation (OR=2.0), control (OR=0.3-1.0) and autonomy regarding the health plan (OR=0.1-0.6).[123]

Low circulation of guideline documents among practitioners and institutions in the low to medium income countries like Nigeria, underpinning minimal official interest to quality improvement, in addition to a near non existing supervision mechanism in the health system describe the underlying causes of widespread no adherence to such guidelines, where and when they exist. Training messages that contradicted the treatment guidelines and non availability of the recommended drugs and procedure equipment, the infamous 'out of stock' phenomenon, are a common reasons.[119]

If handwriting variation is any pointer to difference in managing clinician, this researcher has observed, during the case note audit exercise, wide difference in adherence to guidelines of clinicians treating different patients/clients suffering from the same case at the same facility, in the same time period. This brings to fore the importance of individual practitioners competence, perception of the potentials of, and attitudes towards the guidelines.

Another study in Tanzania by Leonard et al. in 2007, observed an association between the way a country's health care system is organized and the gap between physician potential ability and actual performance clinically (between competence and effort).[124] Researches from diverse settings in countries ranging from Tanzania to India to the Netherlands document the preponderance of this "know-do" gap, in which doctors do a lot less while treating patients in real sense than they say would during study interviews.[124] Workers have shown that this gap between competence and effort is bridgeable by measures bordering on motivation, like

incentives. This fact is buttressed by a realization that the phenomenon though of universal distribution, is higher in settings where fixed salaries are paid, providing sub optimal stimulus for exerting effort.[123]

This study found significant difference in adherence to treatment guidelines between publicly and privately own facilities (Table 15), in favour of former, although the private facilities get more funds than the public facility, since introduction of NHIS (Table 2). This is particularly important finding as the NHIS is majorly private driven, with up to 80% of the accredited facilities coming from the private sector.[125] In fact, our results are in agreement with an assessment in 2003 DHS. The nation -wide survey revealed that clients are almost twice more likely to be informed about side effects of methods used, informed what to do if side effects are experienced and informed of other methods that could be used, in the public sector than in the private.[126] The finding of this study is also in agreement to what Vikram et al observed in their meta analyses of over 40 studies literature in the USA that not for profit fared better than for profit in quality of care ($P< 0.05$).[94] This is shown in the for-profit context, to be due in part to, proprietors' quest for returns on their investments, of at least 10-15%. These facilities tend to have higher executive salaries and bonuses, so for profit facilities have a strong incentive to minimize expenditures. Minimizing expenditures in turn may lead to lower quality staffing and therefore low quality of care.[80] Our finding is on the other hand in contra distinction to the conclusion of a much lesser coverage than Vikram's that outcome of care was better in the for profit hospitals.[96]

An explanation for the poorer performance of the private facilities in adherence to guidelines can be sought in the following major factors. First, private sector in Nigeria is largely unsupervised. In fact, most of government and donor programmatic efforts on quality assurance (involving

training, distribution of guidelines, commodities as well as monitoring and evaluation) target the on the public sector.[125] Even the accreditation requirements for facilities by NHIS focus largely on facility infrastructure, relegating providers knowledge/competence and quality of services provided to the background.[86,127] Monitoring of private facilities is most often limited to renewal of licenses and taxation.[127] Second, private-for-profit medical practice is essentially a solo enterprise,[127] lacking any form of system and paying much less than their public counterpart.[144]

Thus, most of its staff is constituted by those practitioners who work there on part time basis, reporting mainly after closing from their usually busier routine in the publicly owned facilities where they worked as permanent staff. Spending their productive hours of the working day elsewhere, it is most probable that the law of diminishing return may take effect on their performance in the private sector.[127] Third, being profit driven, the private facilities are more likely to prescribe drugs in accordance with what they have in their pharmacies and not necessarily on what is stipulated in the guidelines. This is supported by an unwritten policy in such facilities that a patient can not purchase drugs prescribed after consultation outside their pharmacies. The conclusion by Vikram and colleagues however is that factors other than the profit status may be responsible for the difference they observed.

Furthermore, changing the organizational structure of health insurance system such that, issues of quality of care like adherence to standards guidelines are made central to resource allocation, in addition to the pivotal role of increasing access. Wennberg et al. suggests strengthening staff-model or group model HMOs in the USA as a means of achieving that. Other measures include implementation and strengthening pay-for-performance initiatives and evolving physician level measurement of performance.[128] This individualization of quality assessment of care will put

each practitioner on focus and has the capacity to harness the untapped competence and elicit efforts to be exerted in patient care.

Supplier induced demand (SID) studies, on the other hand explored answers to the questions whether physicians are able to influence their patients' demand for medical services. Laditka links physician density to the SID hypothesis, consistent with an inference by Chen and Lowenstein that more doctors provide more care.[99] However, the expectation is that more doctors should provide better care in a wider perspective, owing to reformed training and reinvigorated attitudinal change. Jürges also establishes a relation between insurance status and supplier induced demand.

A limitation of this study is its reliance on practitioners documentation of what they do during patient care which most often than not is not comprehensive and thus missing aspects of the performance standards on patient-doctor interpersonal relationship that is usually not recorded in case notes.

Future research directions on this subject should be on factors affecting adherence to standard treatment protocols among practitioners and on effects of NHIS on the outcome of care as proxy to quality.

5.2 CONCLUSION

This study has documented improvement in financial resource availability in the health facilities reviewed with enrolment into NHIS, with revenue from the scheme accounting for almost half (47%) of the increase. There was also a consequent improvement in physical infrastructure, staff strength and diagnostic capability, though analysis of the aggregate data show that the difference so observed was not statistically significant (P= 0.157). The results show also that adherence to standard treatment guideline was generally poor (42.12%), but introduction of NHIS led to significant improvement in facilities' level of adherence, with the public facility performing better than the private for profit facilities in this regard ($p< 0.05$).

5.3 RECOMMENDATIONS

Based on the strength of the findings of the study, more proactive , holistic and quality specific approaches aimed at improving quality of care within the NHIS are recommended to complement the indirect impacts which increase in funds is expected to exert on the way things are done in giving and receiving care.

1. There is urgent need for the NHIS to review its fund re- imbursement mechanism to the registered providers, including pay for performance remuneration system and drastically cutting the administrative cost, to ensure efficient utilization of the contributor's premium.
2. The governments at all levels should ensure inclusively of the private sector in its programmes.
3. All the stakeholders involved should intensify efforts to expand the scheme owing to its role in improving quality of care.

4. The NHIS should make sure that all the standard treatment guidelines are made available to all providers under the scheme, liaise with professional regulatory bodies, professional associations and other stakeholders to include trainings on the guidelines as part of the mandatory continuing professional education and develop a veritable monitoring and evaluation mechanism to ensure adherence to such guidelines.
5. The NHIS should register practitioners, in addition to health facilities, with the view to tracking individual practitioners' performance as well.
6. The MDCN in collaboration with other professional regulatory bodies and training institutions shall review the curriculum of health professionals to include issues of quality assurance, so that the trainees at all levels, appreciate the benefits of adherence to standard guidelines to their clients/patients and the health care system and the practitioners themselves
7. There is needs for further studies on the level of adherence to standard treatment protocols on larger scale and factors influencing adherence, as well as the effect of health insurance on outcome of care, as a measure of quality of care.

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APPENDICES

APPENDIX 1
DISTRIBUTION OF HEALTH FACILITIES IN SABON GARI AND ZARIA LGAs BY NHIS ACCREDITATION STATUS

	Primary		Secondary		Tertiary		Total
Sabon Gari LGA	**Number**	**NHIS accredited**	**Number**	**NHIS accredited**	**Number**	**NHIS accredited**	
Public	34	Saidu Dange Railway Hospital 11 Field Engineering Regiment/Medical Reception Services Depot Nigerian Army/Nigerian Military School Medical Centre	2	University Health Services, ABU Zaria	1	Ahmadu Bello University Teaching Hospital	25
Private	10	Al- Madina clinic Jamaa Hospital Limi Hospital Bawa clinic	8	Mayfair clinic Ladiya Hospital Savannah polyclinic Salama infirmary/maternity		-	18
Zaria LGA	34		4			-	38
Public		-		Hajia Gambo Sawaba General Hospital		-	
Private	4	Grace Memorial Hospital Maraba clinic	5	St Lukes Hospital Ann Kitch Medical Centre		-	4
Total	82		19			1	85

APPENDIX 2

DEPARTMENT OF COMMUNITY MEDICINE, FACULTY OF MEDICINE, AHMADU BELLO UNIVERSITY, ZARIA

MPH THESIS

A COMPARATIVE STUDY OF THE QUALITY OF CARE BEFORE AND AFTER INTRODUCTION OF NATIONAL HEALTH INSURANCE SCHEME IN HEALTH FACILITIES IN ZARIA KADUNA STATE

PERFORMANCE AUDIT FORM

FACILITY CODE: _____

A. BEFORE ENROLIG INTO NHIS

PLEASE ENTER AS APPROPRIATE: 1= YES, 2= NO, 3= NOT AS STATED, 4= NOT APPLICABLE.

(A) MANAGEMENT OF SEVERE MALARIA

S/NO	VERIFICATION QUESTIONS /CASE NOTE CODE NO										
1	Airways cleared/maintained?										
2	Positioned semi-prone or on her side?										
3	Vital signs monitored										
4	If convulsion occurred, 10mg diazepam given IV slowly over 2min?										
5	Other causes of convulsion (eclampsia, meningitis), excluded?										
6	If hypoglycemia suspected, 5ml/kg of 25% DS bolus or 50ml SS given?										
7	Treatment with IV quinine initiated and then referred appropriately?										
	TOTAL										

(B) MANAGEMENT OF SEVERE ANAEMIA (Hb 5-7g/dL)

S/NO	VERIFICATION QUESTIONS/CASE NOTE CODE NO										
1	Patient admitted in the hospital?										
2	Cause of anaemia identified and treated?										
3	Given oral iron/folate od till delivery?										
4	Counseled about the need to continue taking iron/folate tabs od for 3 months after birth?										
5	If very severe anaemia(Hb<5g/dL), was she transfused with packed blood cells?										
6	Was she given double dose of iron/folate?										
7	Post transfusion Hb check done?										
	TOTAL										

(C) MANAGEMENT OF HYPOVOLEMIC SHOCK

S/NO	VERIFICATION QUESTIONS /CASE NOTE CODE NO										
1	Patient put in anti-shock garment or in Tredelenburg position?										
2	Pulse, BP and Breathing rapidly observed?										
3	Covered with blanket?										
4	Oxygen 6-8L/min administered by canula or mask?										
5	Two IV lines using 16-18G needles secured or if not accessible, IV cut down done?										
6	Blood sample taken for hb?, coagulation, blood group and Rh (cross matching)?										
7	Blood requested?										
8	Fluid replaced with saline or Ringer's lactate 1L over 15-20min in each line										

9	At least 2L of this solution administered during the first hour?										
10	Replacement continued IV in accordance with the loss of blood?										
11	Bladder catheterization performed?										
12	Patient kept warm and re-assessed every 15 min (pulse, BP, Mental state and fluid balance)?										
13	If improving, IVF adjusted to IL 6hrly (60 dpm)?										
14	Monitoring continued every 30min?										
15	If conditions did not improve, IVF continued 1L 6hrly(60dpm)?										
16	Oxygen continued 6-8L/min?										
17	Vital signs and fluid balance monitoring continued?										
18	To determine specific cause of shock, abdominal exam done?										
19	VE done?										
22	Diagnosis proposed or cause identified?										
21	Specific actions done to stop bleeding?										
22	Blood transfusion done as soon as possible, if needed?										
23	Referred to other services (ICU, OR, ER, etc.), if needed?										
	TOTAL										

(D) MANAGEMENT OF INCOMPLETE ABORTION

S/NO	VERIFICATION QUESTIONS /CASE NOTE										

	CODE NO.										
1	Amennorrhea or EGA of 20 weeks or less was recorded?										
2	Prolonged and/or heavy bleeding?										
3	LAP and/or cramping?										
4	Vital signs?										
5	Open cervical os										
6	Clear recording of diagnosis or suspicion of incomplete abortion made?										
7	Was shock managed appropriately?										
8	If there was fever >38^{o}C,tender uterus, or foul smelling Vaginal discharge, was antibiotic given?										
9	Assessment for shock done?										
10	Evacuation done using MVA (if uterine size <12weeks) or Suction if >12weeks?										
11	TT given?										
12	Lab tests requested, as needed?										
13	Hb testing done, if necessary?										
14	Management of other complications, as needed?										
15	Informed of Post procedure care?										
16	Told about signs of normal recovery?										
17	Signs that needed attention were communicated to her?										
18	Was told when and where to return for follow up?										
19	Counseling on family planning given?										
20	TOTAL										

(E) MANAGEMENT OF SEVERE PRE-ECLAMPSIA AND ECLAMSIA

S/NO	VERIFICATION QUESTIONS/CASE NOTE CODE NO.										
1	Diagnosis recorded as DBP $\geq$ 110mmHg, 20 weeks gestation, proteinuria 3+ Or convulsions, DBP $\geq$90mmHg, 20weeks gestation ad proteinuria 2+ solution given IV over 5min?										
2	4g of 20 % magnesium sulfate in 20ml solution administered IV over 5min?										
3	5g of 50% magnesium sulfate solution (20ml) given IM with 1ml 2% lidnocaine in each buttock (total 10g).										
4	In the event of 2nd convulsion after 15min, 2g of 50% magnesium sulfate in 4ml										
5	Before maintenance dose respiration rate checked (>16bpm), patellar reflex present, urine output >30ml/hr?										
6	5g of 50% magnesium sulfate solution given IM with 1ml 2% lidnocaine in each buttock every 4hrs, providing no complications?										
7	Magnesium sulfate continued for 24hrsfollowing birth or the most recent expulsion?										
8	Bladder catheterization done?										
9	Input and output monitoring maintained?										
10	Vital signs monitoring (BP, PR, RR) done?										
11	Monitoring of FHR done?										
12	Clotting test performed and evaluated?										
13	Did birth take place within 12hrs, if there were										

	convulsions? Or within 24hrs if there were no convulsions?										
14	Was the patient placed on anti hypertensives, if DBP $\geq$ 110mmHg with IV hydralazine 5mg every 5min or 12.5mg IM every 2hrs until DBP stabilizes between 90-100mmHg, Alternatively, 5mg sublingual nifedepine repeating the dose if the DBP is still >110mmHg after 10min.?										
15	Follow up included hourly monitoring of toxicity (BP, PR,T^o, Patelar reflexes, FHR, urinary output and signs and symptoms of pulmonary oedema)?										
16	Magnesium sulfate suspended if RR<16bpm, patellar reflex absent or urine output < 30ml/hr										
17	If urine output <30ml/hr, magnesium sulfate was withheld and patient was infused with with IVF 1L over 8hrs while monitoring for pulmonary oedema?										
18	In the event of respiratory arrest, assisted ventilation was performed, 10ml of 10% calcium gluconate 1g IV?										
19	If there was pulmonary oedema, 40mg frusemide was given IV stat?										
	TOTAL										

(F) MANAGEMENT OF POST PARTUM HAEMORRHAGE

S/NO	VERIFICATION QUESTIONS /CASE NOTE CODE NO										
1	Diagnosis record as primary or secondary PPH?										
2	Rapid evaluation of PR, BP, RR and general condition done?										
3	If in shock, PR≥ 110bpm,SBP< 90mmHg cold and perspiring skin, rapid breathing, confusion Or unconsciousness:										
	• Women covered and put in Tredelenburg position?										
	• Oxygen started at 6-8L/min?										
	• Two IV lines with 16 0r 18G cannula ?										
	• 10IU of oxytocin administered IM?										
	• Blood taken for hb, cross-matching and clotting tests?										
	• IVF initiated with saline or Ringers lactate, 1L in each line over 15-20min?										
	• Additional 2L administered during the first hour?										
	• Volume replacement continued according to blood loss?										
	• Assessment for need of blood transfusion performed?										
	• Bladder catheterization performed?										
4	Specific management of retained placenta										

	• Extraction achieved by controlled cord traction?										
	• If failed, another dose of 10IU of oxytocin given IM?										
	• Controlled cord traction repeated?										
	• If failed, manual extraction done?										
	• If removed manually a single dose of 1g ampiclox or 5MU penecillin plus Metronidazole 500mg were given IV?										
	• If morbidly adherent, hysterectomy done or referred if facilities not available?										
5	Uterine atony (soft, non contracted uterus)?										
	• Vigorous uterine massage done?										
	• 20IU oxytocin given in 1L saline at 60dpm and 0.5mg ergometrine IM or IV (If not hypersentive)										
	• 20IU oxytocin in 1L saline continued at 40dpm up to a maximum of 3L of solution with oxytocin and ergometrine 0.5mg IM or IV 15 min every 4hrs up to 3 times if necessary, provided the woman is not hypertensive										
	• If hemorrhage was continuing, bimanual uterine compression was										

	Performed										
	• Anti shock garment applied										
	• If hemorrhage was continuing, abdominal aortic compression used?										
	• B-lynch suture inserted?										
	• If hemorrhage was continuing, uterine and utero-ovarian arteries ligated?										
	• If hemorrhage persisted, hysterectomy done?										
6	Incomplete placenta or membranes • Manual or instrumental extraction done (using ring or sponge holding forceps)										
7	Vaginal, cervical or perineal laceration, uterus contracted and placenta expelled • Sutured?										
8	Follow up • Uterine contraction and bleeding monitored every 15min during the first 2 hrs?										
	• Uterine massage and clot extraction done?										
	• Oral hematinics E.g. 120mg iron (200mg ferrous sulfate) and 5mg folate given for 3months?										

	• Intake and output measured?										
	• Vital signs monitored every 30min until stable?										
	• Clotting test performed if hemorrhage persisted?										
	• Volume replaced or blood transfused if necessary?										
	• Hb measured 24hrs after hemorrhage was controlled?										
	• Transfused, if hematocrit < 20% or hb <7g/dL?										
	TOTAL										

SUMMARY

TOTAL STANDARDS OBSERVED										
TOTAL STANDARDS ACHIEVED										
PERCENTAGE										

APPENDIX 3

DEPARTMENT OF COMMUNITY MEDICINE, FACULTY OF MEDICINE, AHMADU BELLO UNIVERSITY, ZARIA

MPH THESIS

A COMPARATIVE STUDY OF THE QUALITY OF CARE BEFORE AND AFTER INTRODUCTIO OF NHIS, IN HEALTH FACILITIES IN ZARIA, KADUNA STATE

TOP MANAGEMENT QUESTIONNAIRE

FACILITY CODE_____

SECTION A: INTRODUCTION

I am MPH student of ABU Zaria, undertaking my thesis on the quality of Care in NHIS accredited Facilities in Zaria, Kaduna State. This questionnaire is the major means of collecting data for the work and the information to be drawn from it is to be used for the research purposes only. Although your response is essential to the success of the study, the participation is purely voluntary and confidentiality is to be maintained. Thanks for your anticipated cooperation.

SECTION B: FACILITY SOURCES OF FUNDING

1. Facility ownership, (Public) /(Private)
2. When was this Facility accredited for NHIS services _____
3. What were the sources of funding for this facility and how much from each source per annum

	Average yearly income (N)						
Source	2005	2006	2007	2008	2009	2010	**Total**

Total							

4. How many enrollees receive services from your facility as at now_____

SECTION C: RESOURCE AVAILABILITY (CAPITATION FEE) AND FACIITY'S HUMAN RESOURCE

S/NO	Staff cadre	Number 1year before ( )	Number 5 years after ( )
1	Doctors		
2	Nurses/midwives		
3	Pharmacists		
5	Pharmacy Technicians		
6	Pharmacy Assistants		
7	Laboratory Technicians		
8	Laboratory Assistants		
9	Administrative Staff		
10	Maintenance staff		
11	Cleaning staff		
12	Security		
13	Staff sent for further training		

SECTION D: RESOURCE AVAILABILITY (CAPITATION FEE) AND THE FACILITY'S INFRASTRUCTURAL STRUCTURES

S/NO	STRUCTURE	Number 1year before ( )	Number 5 years after ( )

1	Wards		
2	Beds		
3	Offices/common rooms Generators		
4	Total		

9. (a) Diagnostic capability of the laboratory

S/NO	Name of laboratory tests before	Name of laboratory tests before
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

D. RESOURCE AVAILABILITY AND NUMBER OF PATIENTS SEEN

Period	**Number of Patients Seen**
2005	
2006	
2007	
2008	
2009	
2010	
Total	