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Capabilities, Challenges and Prospects

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NATIONAL CENTRE FOR TECHNOLOGY MANAGEMENT (NACETEM)

AN AGENCY OF THE FEDERAL MINISTRY OF SCIENCE, TECHNOLOGY & INNOVATION, NIGERIA

OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE, OSUN STATE, NIGERIA.

About Nacetem

The National Centre for Technology Management (NACETEM) was established by the Federal Government of Nigeria in September 1992 as the Science and Technology (S&T) Policy Research and Training Centre under the National Planning Commission. Today, NACETEM operates as an agency of the Federal Ministry of Science, Technology and Innovation (FMSTI) and is vested with the mandate of training and developing middle- to high-level manpower, as well as engagement in policy research in the areas of Science, Technology and Innovation (STI) management for all tiers of government and the private sector. The Agency is located within the Obafemi Awolowo University, at the Ile-Ife campus. In the discharge of its mandates, the Agency provides knowledge support for the FMSTI and constitutes the software component of the Nation's STI system.

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To play a leading role in the build-up of expertise for effective management of Science, Technology and Innovation management and to actively engage in policy research, design, evaluation and review.

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PREFACE

This document contains a summarised report of a survey of the Nigerian Pharmaceutical Industry titled "Towards a Competitive and Socially Inclusive Local Pharmaceutical Manufacturing in Nigeria". The study explored the following five thematic areas that are of relevance to the development of the industry in Nigeria:

1. Drug Affordability
2. Human Resources available for the Pharmaceutical Manufacturing Sector
3. Research and Development
4. Intellectual Property Rights and Technology Transfer & WHO Certification
5. Academia-Industry Linkages

The survey, which was conducted in 2019, was co-sponsored by the African Centre for Technology Studies (ACTS) Kenya, and the National Centre for Technology Management. The survey was supervised by Prof. W. Erhun of the Department of *Clinical Pharmacy and* Pharmacy Administration of the Obafemi Awolowo University, and Prof. Okechukwu Ukwuoma, the Director General/Chief Executive Officer (DG/CEO) of the National Centre for Technology Management (NACETEM), an Agency of Nigeria's Federal Ministry of Science, Technology & Innovation.

It is hoped that the implementation of policy interventions discussed in this book would enable the Nigerian Pharmaceutical Industry to develop along the path of excellence.

ACKNOWLEDGEMENTS

The National Centre for Technology Management (NACETEM) is grateful to the African Centre for Technology Studies (ACTS), Kenya, for awarding us the consultancy project titled "Building competitive and socially inclusive local pharmaceutical manufacturing in West Africa through enhancing research, innovation and intellectual property", on which this report is based.

The project team appreciates the support and cooperation of all individuals and organisations that have played key roles in the success of the survey. Most appreciated are key stakeholders whose responses formed the bedrock upon which this report stands. These include pharmaceutical firms, faculties of pharmacy, researchers in Nigerian universities and research institutes, and pharmaceutical associations and regulatory organisations. The interviewees include PCN, PSN, NAFDAC, NIPRD, NOTAP, BPP, PMG-MAN, AHAPN, RMRDC, the Food and Drugs Services Department of the Federal Ministry of Health, among others.

Finally, the project team is grateful to the DG/CEO of NACETEM, Engr (Prof.) Okechukwu Ukwuoma and the entire management for their support that enabled the project to be successful.

Thank you all.

EXECUTIVE SUMMARY

Healthcare for all can only be achieved when essential medicines are accessible and affordable to the general populace irrespective of their income status in a country or region. Access to affordable medicines remains a big challenge in developing countries, and Nigeria's case is worrisome because most people purchase their medicines out of pocket. Affordability poses a major barrier to accessing medicines for a reasonable percentage of the Nigerian population. Consequently, many Nigerians with chronic diseases do not access orthodox medications due to affordability issues; instead they use traditional medicines.

Previous studies in the early 2000s (FMoH-WHO, 2005) show that patients in Nigeria paid between 2 to 64 times the international reference prices for medicines at various health facilities in both the private and public sectors. These payments are mostly out-of-pocket expenditure (OOP); these make up about 95.9 per cent of all private expenditure on health in the country. The high cost of medicines in Nigeria is attributed to several factors including costly supply chains, poor government oversight, neglect/non-prioritization of the pharmaceutical industry, and loss of manufacturing capacity. The need to reposition pharmaceutical manufacturing in Nigeria necessitated this study.

This study investigated how issues such as the affordability/cost of medicines, human resources, research and development (R&D) activities, intellectual property protection, technology transfer, and government-academia-industry linkages affect pharmaceutical manufacturing and the entire pharmaceutical subsector in Nigeria. A mixed research method was adopted: this involved a desk review, key informant interviews and quantitative surveys of sampled pharmaceutical firms, research institutes and universities.

Our findings were not far from positions already established about the pharmaceutical industry in Nigeria. Serious challenges are confronting manufacturing in general; however, the high costs of importation of medicines and active pharmaceutical ingredients (API), and high OOP expenditures on healthcare constrain the social inclusion and competitiveness of drug manufacturing in Nigeria. The Nigerian pharmaceutical manufacturing sector is populated by small firms; and this impacts on their productivity,

ability to conduct R&D, and overall technological capabilities. R&D involves high capital outlay and is a necessity for an industry such as pharmaceuticals. The size of these firms makes it impossible for them to mobilize the huge resources required for such R&D.

Moreover, the Nigerian health sector has been described by the United States Agency for International Development (USAID, 2021) as having one of the worst health indices in the world; and this could be partly attributed to the poor involvement of both the government and the private sector. Despite the opportunities, Nigerian pharmaceutical firms could neither capitalize on the Nigerian market nor benefit from the procurement system and the technologies developed from local R&D activities. The WHO earlier worked with eleven Nigerian pharmaceutical firms to achieve international good manufacturing practice (GMP) standards that would enable their products to become pre-qualified for WHO certification. Reports indicate that four of the companies have been pre-qualified by the WHO; however, one collapsed due largely to the huge capital involvement and the rigorous process of pursuing the qualification.

Results from our survey of Nigerian universities and schools of pharmacy reveal that about 40 per cent of the R&D undertaken by their researchers is mainly basic research, which may not be of immediate use to pharmaceutical firms. Lack of funds and non-availability of facilities/infrastructures including laboratories constrain their R&D efforts, including research and development of API. Self-sponsorships and government sponsorships are the major sources of funding for the R&D of the researchers. The study further reveals that high capital outlay, the WHO certification process, intellectual property issues, lack of incentives and the absence of a functional petrochemical industry also constrained the development of API in the country.

23 out of the 75 federal and state-owned universities offer pharmaceutical programs, and 21 of them are accredited by the Pharmaceutical Council of Nigeria (PCN) as of 2021. These 23 universities address the human resources needed in the Nigerian pharmaceutical industry. These institutions have produced well over 8,000 graduate pharmacists and about 800 postgraduates (Masters and Doctorate degree holders in Pharmaceutical Sciences) between 2014 and 2018.

The three research institutes that were covered in the study revealed that they have developed some products. The National Institute for Pharmaceutical Research and Development (NIPRD) developed Niprisan/Nicosan for the

management of sickle cell anaemia and is in the process of developing other phytomedicines for the management of prevalent priority diseases; while the Nigeria Natural Medicine Development Agency (NNMDA) has developed various herbal therapies and nutritional supplements directed at health challenges such as diabetes, arthritis, topical dermatitis, erectile dysfunction and prostate enlargement, among others. The Nigerian Institute of Medical Research (NIMR) has been involved in testing for the efficacy of some drugs.

The successful development of Niprisan is an indicator of the potential and unexplored capabilities of the pharmaceutical industry in Nigeria. This calls for adequate funding for pharmaceutical R&D for the development of natural pharmaceutical resources, and challenges pharmaceutical firms to exploit local R&D outputs in their operations.

In conclusion, the Government of Nigeria has to give priority to the pharmaceutical industry for reasons of national security and the enhancement of local firms' performance.

LIST OF ACRONYMS

ACPN	Association of Community Pharmacists of Nigeria
ACTS	African Centre for Technology Studies
AHAPN	Association of Hospital and Administrative Pharmacists of Nigeria
API	Active Pharmaceutical Ingredient
ARVs	Antiretrovirals
BPP	Bureau for Public Procurement
FMoH	Federal Ministry of Health
FMST	Federal Ministry of Science and Technology
GMP	Good Manufacturing Practices
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IP	Intellectual Property
IPR	Intellectual Property Rights
IPTTO	Intellectual Property Technology Transfer Office
NAFDAC	National Agency for Food and Drug Administration and Control
NOTAP	National Office for Technology Acquisition and Protection
NAIP	Nigerian Association of Industrial Pharmacists
NHIS	National Health Insurance Scheme
NIMR	Nigeria Institute of Medical Research
NIPRD	National Institute for Pharmaceutical Research and Development
NNMDA	Nigeria Natural Medicine Development Agency
NUC	National Universities Commission
PCN	Pharmacists Council of Nigeria
PMG-MAN	Pharmaceutical Manufacturing Group of Manufacturers Association of Nigeria
PSN	Pharmaceutical Society of Nigeria
RMRDC	Raw Materials Research and Development Council
R&D	Research and Development
SHESTCO	SHEDA Science and Technology Complex
SON	Standards Organisation of Nigeria
TETFUND	Tertiary Education Trust Fund

TRIPS	Trade-Related Aspects Intellectual Property
UHC	Universal Health Coverage
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
WAPCP	West African Postgraduate College of Pharmacists
WHO	World Health Organization
WIPO	World Intellectual Property Organization

CHAPTER ONE

INTRODUCTION

Health is one of the major human development indices and the need for Universal Health Coverage (UHC) was acknowledged in Sustainable Development Goal (SDG) 3, which aims to *"Ensure healthy lives and promote well-being for all at all ages"*[1]. To achieve this goal, it is important to provide quality health care to the populace through the establishment of healthcare infrastructure, the recruitment of qualified personnel and the provision of adequate, affordable, and quality medicines. However, the provision of adequate, affordable, and quality health care to the population remains a major challenge for governments in many African countries including Nigeria, a country with a high burden of tropical diseases, and consequently, with poor health indicator indices. For instance, the Health Access Quality (HAQ) Index (GDB, 2016) ranked Nigeria 187 out of 195 countries in 2018,[2] while the Global Health Security Index was estimated to be only 32.3, ranking Nigeria 130 out of 195 countries in the year 2019.[3]

Inadequate access to essential drugs and other healthcare commodities has been identified as having negative impacts on people's health in most developing countries (UNIDO, 2011). To address this challenge in Nigeria, the Nigerian Government has been targeting the availability of effective, affordable, safe and good quality medicines at all times and in all sectors of the health care system. To achieve this goal, a policy thrust of the government that is contained in the National Drug Policy is to ensure adequate supplies of drugs (FMoH, 2018). The first National Drug Policy that was published in 1990 and the revised version of 2005 targeted the availability of drugs as stated above. However, decades after the first Policy was launched, many of the set targets are yet to be realized.

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[1] https://www.un.org/sustainabledevelopment/health/

[2] https://businessday.ng/health/article/nigerias-health-care-system-ranks-187th-globally/

[3] https://www.ghsindex.org/wp-content/uploads/2019/10/2019-Global-Health-Security-Index.pdf

As noted earlier, the Nigerian health sector has been described as having one of the poorest health indices in the world and this has been partly attributed to underfunding of the sector by the government. For instance, between 2009 and 2018, the cumulative budget of the Federal Government of Nigeria (FGN) for 10 years was N55.19 trillion. Of this amount, the health sector was allocated N2.51 trillion, which is 4.55 per cent. This percentage is far below the 13 per cent that was recommended by the World Health Organisation (WHO) and the 15 per cent that the African Union recommended[4] (Obasanjo, 2018). The low budgetary allocation to the health sector notwithstanding, most of the budget is spent on personnel costs. Consequently, the health of most Nigerians remains poor and the country remains fraught with poverty, diseases and malnutrition.

Access to medicines is an integral component of Universal Health Coverage (UHC). Target 3.8 of the Sustainable Development Goals (SDGs) specifically declares *"Access to safe, effective, quality and affordable essential medicines and vaccines for all"* (UN, 2015). This declaration and target underscore the importance of a robust and reliable pharmaceutical sector in any economy, given its prominent role in the health status and general well-being of the citizens. In Nigeria, there is a continuous growing demand for safe, effective and affordable medicines, but weak local pharmaceutical manufacturing capacity is making the country depend largely on imported medicines.

According to UNIDO (2011), the installed capacity utilization of about 120 local drug manufacturers that existed in Nigeria as at the time of compiling the report was about 40 per cent. This level of production was only able to satisfy 25 per cent of the local demand for drugs, while imports, mainly from Asian countries (especially India and China) accounted for the remaining 75 per cent. As of 2013, pharmaceutical imports in Nigeria amounted to about US $481 million (Gumel, 2014) and increased to about US $1.45 billion in 2019.[5]

Pharmaceutical industrial firms in Nigeria are confronted with several constraints that make local products more expensive when compared with imported ones. The firms operate with high production costs as a result of the high cost of inputs, poor infrastructure, inconsistent local and regional

[4] Obasanjo, O. (2018) Vanguard, 8th July. https://www.vanguardngr.com/2018/07/nigeria-has-some-of-the-worst-health-indices-in-the-world-obasanjo/

[5] https://tradingeconomics.com/nigeria/imports/pharmaceutical-products

tariffs, difficult access to foreign exchange as well as the devaluation of the Naira (NGN), the Nigerian currency, in the international market, thereby rendering the cost of imported raw materials high.

Another threat confronting Nigeria's Pharmaceutical Sector is drug price control. UNIDO (2011) reveals that prices of health products in the market are high and most Nigerians cannot afford them. Therefore, given the high prices of drugs, rising health care spending, and a larger percentage of the Nigerian population purchasing drugs through out-of-pocket expenses, the goal of making drugs accessible and affordable remains unrealised.

The aforementioned challenges result in low-capacity utilization, and a reduction in domestic drug production in Nigeria. Beyond policy reversals and inconsistency, there are also the problems of low patronage of drugs made in Nigeria. This is worsened by problems of unregulated drug distribution channels that have promoted illicit markets in tandem with fake and substandard products. UNIDO (2011) noted that manufacturers' products are routinely faked and sold at lower prices than genuine products; consequently, local drug manufacturers are losing a significant share of the drug market in Nigeria to illicit drug dealers. The poor performance of the pharmaceutical industry has manifested itself in the poor health indicators of the country. With the high population of Nigeria, which makes the country a big market for pharmaceutical products, reliance on the importation of bulk drugs and active pharmaceutical ingredients (API) would not be sufficiently beneficial to the national economy, and it is not a reliable option for the supply of medicines to citizens of the country, as the constancy and adequacy of their supply cannot be guaranteed. This may render Nigerian citizens vulnerable to interruption of the supply of medicines. To prevent this from occurring, there is a need to promote domestic drug manufacturing.

Many authors have written about the Nigerian Pharmaceutical Industry. For instance, UNIDO (2011) published a profile of the industry as of 2011. The publication, which was the report of a project on strengthening the local production of essential generic drugs in the country, provided a comprehensive picture of the status and operating environment of the pharmaceutical sector in Nigeria. The publication was also designed to assist stakeholders with the necessary information for discussions on how local production fits into the strategy for an improved supply of medicines.

To enable us to assess the Nigerian Pharmaceutical Sectoral Ecosystem with a view to build an inclusive, formidable and competitive local pharmaceutical manufacturing industry, this study gathered information on diverse aspects

of the industry including: the status of Research and Development (R&D), available human resources, capabilities for the production of Active Pharmaceutical Ingredients (API), and issues associated with intellectual property and technology transfer in the sector. The study also obtained information on various challenges confronting the industry. The role and extent of interaction between the pharmaceutical firms, university pharmacy faculties, the Nigerian government and its agencies, and other stakeholders in the Nigerian Pharmaceutical Sector Ecosystem were also obtained.

Research Context: Pharmaceutical Industry in Nigeria

Nigeria has the biggest and one of the most rapidly growing pharmaceutical industries and also the largest market for pharmaceutical products in Africa. The country has over 200 registered pharmaceutical firms, of which about 120 are involved in the manufacturing of medicinal products (UNIDO, 2011). Among these firms, nine are listed on the Nigerian Stock Exchange; and five of these listed companies are indigenous. The nine quoted firms are responsible for about 58 per cent of the manufactured pharmaceutical products in Nigeria (AUC/UNDO, 2012; Gumel, 2014; Ugbam and Okoro, 2017). While most pharma firms operating in Nigeria are affiliated with multinational companies, others are either privately or publicly owned.

The Nigerian pharmaceutical industry is a major player among the countries of the Economic Community of West African States (ECOWAS), and it has the potential to be a leader in the production and distribution of pharmaceuticals to Sub-Saharan Africa. Nine of the pharmaceutical firms operating in Nigeria currently export their products to various ECOWAS countries (Obukohwo et al., 2018). Furthermore, UNIDO (2011) reports that health products produced in Nigeria account for about 60 per cent of all drug consumption in the ECOWAS countries.

The estimated value of the Nigerian pharmaceutical industry in 2016 was US $9.4bn and was projected to rise to $13.2bn by 2020, while the market was estimated to be worth about $3.0bn (UNECA, 2020). This high potential demand notwithstanding, the Nigerian pharmaceutical industry is not able to fully satisfy the Nigerian market; consequently, the country has to depend on importation. Probably, the poor performance of the industry is one of the factors responsible for the poor health indices of Nigerian citizens. Ugbam and Okoro (2017) noted that Nigeria does not feature among the 17 notable pharma growth markets in the sector. Worse still, imports of pharmaceutical products to Nigeria rose from US $481m in 2013

(Gumel, 2014) to $1.45 billion in 2021[6]. This poor performance of the local pharmaceutical industry in providing the drugs needed for the Nigerian market, and the consequential importation to cover the deficit, points to the need for stakeholders in the industry to promote local pharmaceutical manufacturing companies to improve on their capacity utilization.

Scope of the Study

The main issues covered in this survey were affordability of medicines, human resource development and its availability for the pharmaceutical manufacturing sector, research and development (R&D) activities in support of industrial production, intellectual property rights and technology transfer activities on pharmaceutical products. Others are WHO certification for medicines that are produced in Nigeria for export and research-industry interaction within the Nigeria Pharmaceutical System. The study specifically obtained information on the factors influencing the productivity of Nigeria's pharmaceutical manufacturers and the roles of key stakeholders within the system. The information was collected with the aim of designing appropriate policy interventions that could help build a robust local pharmaceutical manufacturing industry in Nigeria.

Methodology

The research design adopted for the study included a desk review for relevant information, surveys covering pharmaceutical firms, research institutes and universities with schools of pharmacy and pharmacy-related programmes, and key informant interviews.

A. Desk Review

The desk-based component of the study involved a review of relevant academic literature on the current position of the pharmaceutical industry in Nigeria. These included journals, books, reports, working papers, and the grey literature. In addition, several secondary sources of data including global bodies (WHO, UNIDO, etc.) and the publications of relevant national government ministries, departments and agencies (MDAs) were accessed for information.

[6] https://tradingeconomics.com/nigeria/imports/pharmaceutical-products

B. Quantitative Surveys

Three set of structured questionnaires were designed and used to obtain information from three groups of respondents: research institutes, university pharmaceutical researchers, and pharmaceutical firms. The questionnaires included both close-ended and open-ended questions.

Sample and Sampling Techniques

- The research institutes covered were: the Nigeria Natural Medicine Development Agency (NNMDA), National Institute for Pharmaceutical Research and Development (NIPRD) and Nigerian Institute of Medical Research (NIMR).
- 55 pharmaceutical manufacturing firms, spread across seven states in five geographical zones of the country were selected for the study. The firms included major players in the industry that were purposefully selected, while the rest were randomly selected. Figure 1.1 shows states with manufacturing pharma firms that were covered. One copy of the questionnaire was completed by each firm.
- All the 21 universities with faculties of pharmacy were covered in the survey. One set of the questionnaires was administered on the dean of the Faculty and the Heads of the following departments in the faculties: Department of Pharmacognosy, Pharmacology, Pharmaceutics, and Pharmaceutical Chemistry and other similar departments.

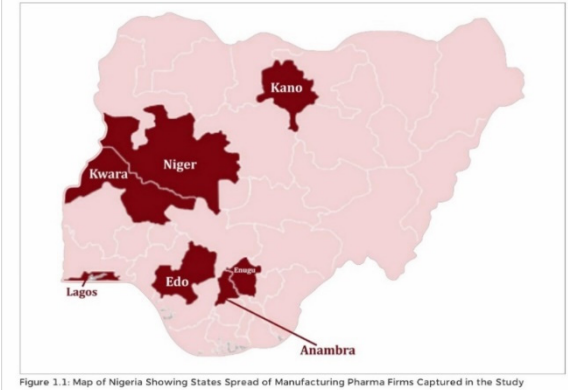

Figure 1.1: Map of Nigeria Showing States Spread of Manufacturing Pharma Firms Captured in the Study

C. Key Informant Interviews

The study collected data from relevant stakeholders with interviews conducted with key informants within the Nigerian Pharmaceutical Industry to address the identified research questions on the roles each of them is playing in the Industry. The interviews were conducted with the Director-General/Chief Executive Officers (D-G/CEO) of the organisations or their nominees, using interview guides focussing on the activities of the organisation in question. The interview guides sought to obtain information on the role of each organisation in strengthening and enhancing the performance of the Nigerian pharma sector, as well as their interaction with other players in the industry. The majority of the interviews were conducted face-to-face, while some were conducted over the telephone. The Nigeria Government organizations covered were: the Department of Food and Drug Services of the Federal Ministry of Health, Raw Materials Research and Development Council (RMRDC), National Agency for Food and Drug Administration and Control (NAFDAC), National Institute for Pharmaceutical Research and Development (NIPRD), Nigeria Natural Medicine Development Agency (NNMDA) and Nigerian Institute of Medical Research (NIMR).

The non-governmental organizations that were covered included: the Pharmaceutical Manufacturing Group of the Manufacturers Association of Nigeria (PMG-MAN), Pharmacists Council of Nigeria (PCN), Pharmaceutical Society of Nigeria (PSN), Association of Hospital and Administrative Pharmacists of Nigeria (AHAPN), Association of Community Pharmacists of Nigeria (ACPN), Nigerian Association of Industrial Pharmacists (NAIP), Nigerian Representatives of Overseas Pharmaceutical Manufacturers (NIROPHARM) and the West African Postgraduate College of Pharmacists (WAPCP). All interviews were audio recorded, and they were later transcribed by trained personnel. The responses were thereafter used as appropriate in the compilation of the results. Efforts to conduct face-to-face or telephone interviews with officials of three of the organisations were futile, consequently, information that was relevant to the study regarding the activities of these organizations, which was obtained from other reliable sources, was used in the report.

Data Collection and Analyses

The three sets of questionnaires that were administered to the research institutes were successfully retrieved from them, while 69 out of the 105 copies of questionnaire that were administered to the universities were retrieved, representing a 66 per cent retrieval rate. Out of the 55 copies of

questionnaire that were administered to the industrial firms, 32 were retrieved giving a response rate of about 59 per cent for the firms. The list of firms that returned completed questionnaires is presented in Appendix 2, and the number of questionnaires retrieved from each geographical zone is as follows:

- South East: 11
- South South: 3
- South West: 14
- North West: 2
- North Central: 2

Data collected were analyzed using descriptive analysis with the aid of the Statistical Package for Social Sciences (SPSS) tool.

Study Challenges

The researchers experienced some constraints in the course of data collection, especially data collection from firms. Efforts to gain access to the premises of many pharma firms proved abortive: some even claimed non-acceptance of questionnaires as company policy; while some firms that collected the questionnaires did not return them. A similar situation was experienced among the academia, as some of them did not return their questionnaires. Another challenge that was encountered was that some firms claimed they are no longer involved in drug production and so were excluded from the list, while others had either relocated or folded up.

Results and Discussion

The next five chapters of this report are used to present the results from the surveys and key informant interviews to provide a holistic view of the Nigerian Pharmaceutical Sector under the following five main themes:

1. Affordability;
2. Research and Development;
3. Intellectual Property Rights Issues, Technology Transfer and WHO Certification;
4. Interaction Within Nigeria's Pharmaceutical Industry;
5. Human Resource Development for the Pharmaceutical manufacturing sector.

CHAPTER TWO

AFFORDABILITY OF DRUGS IN NIGERIA: ISSUES AND CHALLENGES

EMMANUEL E. EJIM-EZE

Introduction

Healthcare for all can only be achieved when essential medicines are accessible and affordable to the general populace irrespective of their income status in a country or region. Access to medicine is described as "the percentage of population that has access to a minimum list of 20 essential medicines, which are continuously available and affordable at a health facility or medicines outlet, within one hour's walk from the patient's home".[1] WHO (2018) reported that access to medicines is a multidimensional problem in view of the rising prices of new medicines and persisting problems of medicine shortages, among other reasons. The World Medicines Situation (WHO, 2004) and Jitta *et al*. (2003) estimated that about half of the population in Africa lack regular access to essential medicines. Consequently, having access to quality affordable medicines remains a big challenge in many developing countries, Nigeria included (DFID, 2004; Nyanwura and Esena, 2013; Ekeigwe, 2019).

Previous studies of medicine prices in Nigeria indicated that 90 per cent of Nigerians (who live below the income level of US $2 per day, as well as government workers who earn a minimum wage of US $1.4 per day) cannot afford medicines (McIntyre *et al.,* 2006; Wambebe and Ochekpe, 2011). Affordability poses a major barrier to access to medicines for a reasonable population of Nigerians, and some segments of the population with chronic diseases do not take medications due to affordability issues (FMST, 2011). This barrier is based on the fact that out-of-pocket expenditure (OOP) makes up about 95.9 per cent of all private expenditure on health in Nigeria.

[1] https://rho.emro.who.int/Metadata/availability-of-selected-essential-medicines

The prevalence of OOP in Nigeria has continued to rise since the year 2000, and was 77.22 per cent of the health expenditure in 2017 (World Bank, 2020). This 2017 value for Nigeria's OOP was double the sub-Saharan African average of 35.54 per cent for the year.

Prices of Medicines in Nigeria

Drug prices in Nigeria are set mostly by market forces, with government tariffs, taxes and distribution mark-ups accounting for a significant proportion of the final price. Prices vary between outlets, facilities and types of products, with generic drugs priced much higher than their equivalents in neighbouring countries. A national survey on medicine prices was undertaken in 2004 by the Federal Ministry of Health (FMoH) in collaboration with the World Health Organization (WHO), the UK's Department for International Development (DFID), the European Union and Health Action International (FMoH-WHO, 2002, FMoH, 2010). The results of the survey revealed the following:

1. Patients pay between 2-64 times the international reference prices for medicines at various health facilities in both the private and public sectors;
2. Prices in the public sector were almost identical to those in the private pharmacies;
3. Private health clinics charge about 184 per cent more than public health facilities and about 193 per cent more than private retail pharmacies;
4. Innovator brands cost between 2-7 times the lowest priced generic equivalents;
5. Affordability was largely dependent on the choice of therapeutic class, product or sector from which the medicine was purchased. For example: - "A worker would pay 0.7 days' wages to treat an infection with amoxicillin and pay an additional 18.8 days' wages when using ceftriaxone injection to treat the same infection";
6. While innovator branded medicines compared well with prices in other countries, generic medicines were up to 825 per cent more expensive in Nigeria when compared to seven other countries;
7. Medicine prices are made up of such components as government tariffs and taxes, as well as mark-ups for distribution, which account for a significant proportion of what patients pay for medicines. Mark–ups by the importers, distributors and retailers were found to be up to 900 per cent the manufacturers' price.

The high cost of medicines in Nigeria is due to a costly supply chain and poor government oversight. This cost has hindered a large proportion of Nigeria's population from being able to afford medicines, even when the medicines are available. The issue of the non-affordability of medicines is addressed in the revised National Drug Policy that authorises the Bureau for Public Procurement to facilitate bulk purchase of medicine for government hospitals, and the National Health Insurance Scheme that offers healthcare subsidies to its enrollees.

Drug Procurement in Nigeria

The Federal and State Governments in Nigeria are making efforts to make drugs affordable to the populace through the procurement schemes they have initiated. According to the official that represented the Federal Ministry of Health for the key informant interview, the current practice in Nigeria with respect to procurement of medicine by the Federal Government is the Drug Revolving Fund, which is a key component of the Essential Medicine Program of the Government. The officer disclosed that:

> A key component of the Essential Medicine Program of the Government is the Drug Revolving Fund (DRF) Scheme, through which a dedicated pool of fund for the purpose of procuring essential medicines is recycled. This policy of the Government ensures that essential medicines are affordable, accessible, efficacious and safe. The drugs are purchased directly from the manufacturers or importers so that the long chain of movement is side-lined, because at each junction of the chain there is inbuilt profit margin. The principle behind this direct procurement of essential medicine is that the Government invest once and the operators of the scheme manage the fund, which they recycle without going back to the Government. The drugs are sold with a little margin so that they would be affordable to the generality of the populace.

The Public Procurement Act of 2007 (FGN 2007) the Nigeria's National Drug Policy (FMoH-WHO, 2005), and the Executive Order 003 (FGN, 2017) are policy instruments through which the FGN emphasized the need to patronize made-in-Nigeria goods. Beside the issue of making essential medicine affordable, the Public Procurement Act of 2007 regulates the procurement of drugs by Government agencies in Nigeria. Below is a description of the activities of the Bureau of Public Procurement.

Public Procurement Act 2007

The procurement process is a major determinant of the availability and affordability of controlled medicines in government hospitals. To encourage patronage of locally produced goods the Federal Government of Nigeria passed the Public Procurement Act 2007 (FGN, 2007) which established the Bureau of Public Procurement (BPP). The Act empowers the BPP to oversee all procurement processes in all public and government agencies in Nigeria. These include the procurement of goods (including medicines), services and works. The objectives of the Bureau are harmonized with existing government policies and practices on public procurement and aim to ensure probity, accountability and transparency in the procurement process; the establishment of pricing standards and benchmarks; and the attainment of transparency, competitiveness, cost effectiveness and professionalism in the public sector procurement system. The BPP also has the power to review all procurement transactions to ensure compliance with the provisions of the Public Procurement Act and to debar any supplier, contractor or service provider who contravenes any provision of the Act.

The 2007 Act stipulates Nigerian Government Policy in support of preference for supplies of domestic products and services for Government projects. The Act empowers the BPP to grant a margin of preference in the evaluation of tenders when comparing bids from domestic companies with those from foreign firms or when comparing tenders from domestic suppliers offering goods manufactured locally with those offering goods manufactured abroad. Where a procuring entity intends to allow domestic preferences, the bidding documents must clearly indicate that preference will be given to domestic suppliers and contractors and must also provide the information required to establish the eligibility of a bid for such preference. Margins of preference shall apply only to tenders under international competitive bidding. The Act further empowers the BPP to set the limits, compute the margins of preference and determine the contents of goods manufactured locally, from time the time.

Government Procurement Policy (in BPP) stipulates that 70 per cent of essential medicines that are procured by the Government should be procured locally. However, it is not certain if the people implementing the policies are following its dictates. A comment from one of the key informants suggested that efforts are being intensified on advocacy to remind government agencies and MDAs to abide by the policies and patronize medicines that are manufactured in Nigeria. There is also the need to review