



# **Evaluating The Relevance, Perceptions And State Of Biomedical Research In Nigeria**

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## **ABSTRACT**

Investment in research is believed to drive economic growth and increase human capital leading to increased productivity and sustainability. In Nigeria where health sector is in a near comatose state and severe health issues continue to ravage the nation such as polio, cholera and the ever present malaria it is expected that a lot will be done to research ways to combat these health challenges with biomedical research towards positive impact on the citizens and the nation. Unfortunately, such positive impacts are not palpable among the resource poor countries. This shortfall which is often attributed to the poor quality of research findings and the reliability of findings seem to be a bane in the strides to overcome these issues. The resultant effect is that while the Nigerian government is making considerable efforts to improve the quality of research through increased funding, as well as sponsorship and training of scholars in advanced institutions, these efforts are rarely translated into impactful products or decisions. This paper therefore seeks to investigate the relevance and state of biomedical research in Nigerian and the challenges witnessed. This is in order to ensure effective generation of knowledge through research to improve the livelihood of the citizens. However, there is still need for the private multinational organizations to support this course. The paper concludes that there are indeed challenges to research in Nigeria and submits that efforts need be made to remedy the situation.

**Keywords:** Biomedical research, Research collaboration, Research institutes, Research impact

## **INTRODUCTION**

Every technologically advanced country in the world that has moved up both economical and otherwise, owe their developmental strides to effective research irrespective of the field of endeavour. Research has aided development in medicine, agriculture, industrialization, education healthcare and even security. In Nigeria, lack of quality research has continued to constitute an impediment in growth and development. Despite its enormous human resources, Nigeria has expended in research and mammoth financial input in establishment of research agencies, only a fraction of its research outputs is palpable. Despite the challenges facing the country both in social and economic fronts, little recourse is made in employing research in solving the nation's problems such as security, epileptic power supply, low agricultural yield, dilapidated and epileptic healthcare and poor educational system. Surprisingly, many of these issues are manageable via robust and efficient research. In Nigeria that is prone to malaria and other debilitating ailments, it is a wonder that drugs to cure these ailments are sourced from countries like China and India that are not affected by these ailment but invest hugely in research to find cure for these ailments. This trend has negative effect not only on the economy of the country via capital flight as most Nigerians pay

heavily for imported drugs, it also negatively impact on the well being of the citizens who may have to rely on foreign aids for cure to ailments.

This situation raises several questions. Why can't Nigerians conduct research to solve indigenous health problems? Are there impediments to the carrying out of serious scientific and developmental research in Nigeria? What are the impediments to research in Nigeria? And how can these impediments be surmounted? However, several notable barriers impeding developmental research have been identified to include lack of funding, equipment and mentoring. Addressing these barriers is a step toward improving research capacity and output. This paper therefore presents a perspective on ways to tackle the challenges through developmental research that will in turn aid economic development of the nation and the wellbeing of its citizens.

### **Research and Biomedical Research Conceptualised**

The definition of research provided by Weigmann (2015), is consistent with that provided by Baro et al. (1981), who defined research as a methodical, controlled observation or careful, methodical investigation intended to establish principles and draw conclusions about a specific problem in a field of knowledge. Baro et al. (1981) continues by saying that it might result in the creation of hypotheses, conceptions, generalizations, and principles. Here, the purpose and nature of the study are made quite apparent, whereas Falode & Nebeife (2013) defines it as a method of arriving at reliable solutions to issues through methodical data collecting, analysis, and interpretation. According to De Maeseneer et al. (2008), the goal of the process will contribute to the advancement of knowledge. Fang & Casadevall (2010) concurs with the above views. They state that research is about satisfying one's curiosity, discovering problems, and looking for solutions. It varies depending on the circumstance. In other words, it may be in biomedicine, agriculture, technology, or even the humanities. This article emphasizes biomedical research which is an offshoot of biological studies (Desmennu & Owoaje, 2018). Research is a reflective undertaking that is also considered an intellectual investigation intended at discerning, deducing, and assessing human empirical factual and conceptual knowledge (Duryea, 2007). Biomedical research is a set of activities that span several fields in biology and medicine. These fields encompass experiments aimed at investigating and comprehending reality. This is accomplished by investigating occurrences at various stages, ranging from the microscopic, molecular, and cellular levels to the organism and population levels.

However, depending on professional associations or academic departments or disciplines, the phrase "biomedical research" might have a significantly broader definition (Zerhouni, 2005). Biomedical research is a vast field of study that investigates biological processes and causes or origins of illness. This is accomplished through meticulous controlled and uncontrolled experimentation, observation, laboratory work, analysis and testing in the pursuit of knowledge, truth, providing solutions and efforts to prove a hypothesis correct or incorrect (Flier & Loscalzo, 2017). However, in order to do so, a problem must be identified, relevant pieces of literature must be examined to provide potential solutions, data must be gathered and processed, and an outcome derived.

### **State of Biomedical Research in Third World Countries**

Significant disparities in the economies and livelihoods of industrialized and developing countries pose a severe danger to global health research efforts. This gap raises ethical concerns about the quality of research findings from these places. In recent years, individuals have migrated from these resource-limited countries due to conflicts, wars, insurgencies, and the desire for greener pastures, which has had unfavorable consequences (Chikwe et al., 2015). As a result, a large number of health issues and disease concern appear to be crossing international borders on a global scale with many Africans seeking remedies from Western or Asia countries. The rise of many infectious illnesses, as well as the threat they provide to public health, is fueled by increased global trade, travel, and ecological system disruption (Bogoro, 2014). As a result, developed countries are compelled to pay attention by increasing funding for healthcare delivery and problem-solving research in order to improve living conditions and increase food supply, thereby stemming the tide of problematic emigration (De Maeseneer et al., 2000). For the most

part, these treatments are not exclusively aimed at addressing the hazards disease transmission; rather, clinical research financed by wealthy academic institutions and pharmaceutical businesses is being used to benefit patients in developed countries. Significant challenges to biomedical research in poor or developing countries are caused by other factors such as communication gaps that negatively impact on assessing information and comprehension of such information. It also encompasses conflict of interest concerning the incompatible nature of recognized ethical standards for research and, the social, political and economic inequities in these developing countries (Akudolu et al., 2018). As a result of the vulnerability and exploitation by multinational organizations, the WHO has put forward some recommendations that will ensure ethical practices and benefits to the study community. These recommendations include; respect for the traditional norms and values of the study communities; encouraging collaborative partnerships; upholding ethical standards in research and provision of feedback to the research population and community (Arai et al., 2018). Observing these recommendations will help in closing the wide knowledge gaps between these two research entities.

### **State of Research in Nigeria**

In developed nations, there are ample opportunities for researchers and other investigators to undertake research. As a result, the researchers now have improved capacity for cooperation both within organizations and with people globally (Holbrook & Sanberg, 2013). The steady advancements in science and technology in these technologically advanced countries have made it possible for these kinds of relationships to grow quickly. Nigeria is distinguished by a heterogeneous political, religious, and ethnic landscape. It is noteworthy that the majority of research is conducted by government-owned research organizations and other higher education institutions (colleges of agriculture, universities, etc.) (Rawat & Meena, 2014).

These public institutions such universities, research institutes, monotechnics, and polytechnics have historically been established and run in a way that reflects the socioeconomic and political configuration of the nation. Nigeria has the biggest human population in Africa, which accounts for the nation's high enrollment rate in higher education (Akudolu et al, 2018).

One of the most important measures of efficient production system is research productivity. Remarkably, research productivity in establishments like universities or research institutes is determined by the quantity of publications each researcher produces (Odeyemi et al., 2019). When compared to the other countries under examination, Nigeria saw a notable increase in scientific publications, according to recent investigations of the research output among six selected West African nations (Fang & Casadevall, 2010). Do this many publications, however, really translate into higher rates of citations, more positive effects on communities, better medical and veterinary care, or even better quality of life as is the case in other regions? The perception that the number of publications produced equals the impact of research highly erroneous. Researchers evaluate the impact of their work differently based on whether it is considered as "external socioeconomic impact," or an "academic impact," or both (Penfield et al., 2013). An academic impact is defined as the intellectual contribution made inside the academic community. How much these research endeavors actually impact the standard of living of the study population would be a more accurate measure of success. However, publications that result in the production of new goods and services and generates new knowledge are also considered impactful (Duryea et al., 2007). The Federal Government of Nigeria may have in recent times been motivated to expand financing for research and training after realizing this reality, thinking that such efforts would have a favorable impact on the nation's scientific, technological, and social development. These efforts are expected to boost human capital, stimulate economic growth, spur the creation of technology and goods that benefit the impoverished, and produce data that will guide policy making and implementation. But can these hopes be fulfilled by the current research being done in our research centers and universities? Because publication is both a requirement for an academic's advancement and a means of evaluating the value and standing of their individual institutions, it is interesting to observe that scholars carry out the majority of research in biological or biomedical science simply for that reason. Academicians and researchers are

only acknowledged by the scientific community by the publications. Samuel & Aranha (2018) agree with the following by stating that advancement in their field is also dependent on the quantity and caliber of their publications. This includes grants for travel, research funding, promotions, and scholarships. The idea of 'publish or perish' was born out of the harsh reality that academicians must publish. Consequently, they strove to publish research works in fake, non-peer reviewed journals and often exaggerate their research findings in order to avoid being demoted or stagnated if they don't produce the required number of publications during a giving period as mandated by the university commission (Vignier & Bouchand, 2018).

Nigerians are well known for being industrious, imaginative, inquisitive, persistent, and patient. These are all the qualities that describe a skilled investigator. Stated differently, Nigerians are excellent researchers, as they have proven throughout the world. Nigerians are highly successful in the global academic sphere outside their state or place of origin. Many research ideas that are generated by postgraduate students in Nigeria are in need of grants or finances from multiple universities, such as those in Southeast Asia. Sadly, there have been several reasons why these potentials have not been investigated, including a lack of finance, supplies, and awareness. Amidst all the aforementioned difficulties, an academic is supposed to teach students, produce books, develop technology that can assist avoid disease, increase animal productivity, etc. These are a few of the primary causes that encourage researchers to falsify and publish exaggerated results. While many of the findings and assertions regarding the research being done in Nigeria today are overstated, it would be unfair to ignore the sincere efforts made by several researchers in regards to the data they publish.

It's also crucial to remember that a significant portion of research is carried out during postgraduate training in Nigerian universities and other higher education establishments. These studies are mostly funded entirely by the postgraduate students themselves, with sporadic assistance from tutors (Desmennu et al., 2018; Okoduwa, 2018). There is no space for error under these conditions. To put it another way, even if it is typical to perform research and not receive the desired results, one will need to keep trying; in the case mentioned above, this will be quite challenging. That is to say, whatever the cost, the outcome has to be achieved.

It is difficult for one person to fund any significant research all the way to completion given the abundance of impediments. In Nigeria, there is, thus, a wealth of correct information available regarding published research findings; however, many other statements involve factual errors.

### **Relevance and Prospects**

The advancement of our nation depends critically on having a highly skilled labor force at the forefront of research facilities and universities. Research universities' successes and strengths are thought to be the primary determinants of a nation's economic progress and citizen prospects. Knowledge is the engine of economic progress in the world's leading nations. The amount of money invested in education, learning, and training determines how developed these kinds of knowledge-based economies become. The importance of universities in the development of knowledge-based economies is becoming increasingly clear. Put another way, wealthy nations will be those who support and encourage their research universities (Arai et al., 2007).

In countries with limited resources, there is a pressing demand for skills that can only be obtained through research involvement. Programs for increasing capacity as well as postsecondary education can help improve these skills. Funding accessibility has a significant impact on research impact and quality, making it a fundamental prerequisite for any research organization. With the exception of a small number of foreign funding organizations, the government regrettably provides the majority of research financing in Nigeria (Baro et al., 2017). Public-private partnerships have been shown to be effective in providing money for research and serving as incentives for the creation of new goods and technology.

Secondly, the necessity of working together is equally vital. In the realm of scientific research, cooperation is a highly sought-after concept. Better ideas and results can only emerge from collaborating with people who have various viewpoints, ideas, and areas of experience. There is a dearth of effective

research partnership promotion between research institutes, universities, and industries (national and worldwide). According to Falode & Nebeife (2013), these kinds of partnerships will aid in expanding knowledge and creating new technologies, making them effective catalysts for innovation and economic expansion. Collaborating on research and academic projects is a great way to expand partners' expertise and improve the caliber of the work produced, all while helping an institution advance more quickly.

This method of conducting research has been shown to be effective in developed nations; however, in Nigeria, it has received little attention. This is partially because some researchers feel more comfortable working independently; this may be the result of personality conflicts, but more often than not, it is the result of people who are not good team players or who dislike sharing credit. Consequently, there is a pressing need to reorient and change course in order to make room for this strategy for the good of the country as a whole. In this sense, it is important to stress, support, and foster intra- and inter-institutional collaboration to the extent that it can enhance the caliber, resources, and capacities of the participating institutions and researchers.

Additionally, every serious country needs to invest in its development and human capital. Research is the only way to develop human capital. Nigeria performs poorly socioeconomically and has a low ranking on human development indices, which often represent the country's status as a human capital pool (Chikwe et al., 2015). Accordingly, research can be seen as an instrument to improve the development of human capital. It is thought that taking care of the following concerns can significantly lessen the difficulties Nigerian researchers have.

Furthermore, increasing funding for research institutes, awarding extraordinary breakthroughs, educating and training health professionals, and raising awareness are all critical and required steps in the right direction toward recognizing the significance of research. However, in addition to the current National Science and Technology Fund, the government is attempting to address the issue of human capital development by introducing the Tertiary Education Trust Fund (TETFund) plan (Samuel & Aranha, 2018). The funds offer postgraduate degree scholarships to scholars wishing to study in nations with higher levels of scientific advancement. The program's objectives are to develop a trustworthy databank, propose and carry out research, and enhance Nigerian education. It also involves finding, educating, and retraining highly motivated employees (Bogoro, 2014). The next step should be to provide funds to these (trained) professionals and create an environment that facilitates research to address the unique problems facing our country.

### **Challenges of Biomedical Research**

The purpose of research is to give people a way to evaluate evidence and apply scientific methods to find solutions to questions. (Kumwenda, 2017). Most research projects in Nigeria come to an end after postgraduate degrees are granted. In other cases, though, it moves on to industrial application. Likewise, the majority of research in the field of biomedical sciences is repetitious. Replicative research is not always a bad thing, but in most cases it lacks originality and leaves little opportunity for novel discoveries, particularly in light of Nigeria's unique characteristics, which frequently affect research outcomes related to endemicity of diseases, climate, and livelihood (Kumwenda, 2017). Replicative studies have several disadvantages from the standpoint of an individual researcher's career, such as publishers' reluctance to publish such works in reputed high impact journals since they don't meet the criteria for being considered novel research and, thus, will not be of as much interest to readers. It is regrettable that most prestigious journals reject articles that lack originality, novelty, or significance of 10; as a result, the likelihood that the study will acquire funding is reduced.

Importantly, a lot of excellent research is sitting in libraries as theses and dissertations waiting to be published, which is another important thing to know about high-quality research in Nigeria (Odeyemi, 2019). Publication is not usually a prerequisite for most job advancement in Nigeria, with the exception of individuals in academia. In industrialized countries, however, articles in high-impact journals are a mandatory graduation requirement. The reputation of Nigerian researchers and research institutions

among their peers has been negatively impacted by this, as successful research publications serve to highlight scholars and their institutions (Rawat & Meena, 2014).

Lack of financing, a lack of facilities and equipment for study, and poor training are some of the obstacles that prevent young researchers from conducting their investigations and publishing their findings, according to recent studies. (Okoduwa, 2018)

Last but not least, becoming a successful researcher requires mentorship. It has been connected to increased productivity and mentee self-efficacy. Sadly, research has shown that trainees from underprivileged backgrounds especially those in Africa receive less mentoring (Sorkness, 2017).

## CONCLUSION

Research has enormous advantages for the growth of human capital and economic stability. As has been noted, reports show that research can have a good financial impact. It has also been demonstrated time and time again that information gleaned from public funding of research can support choices about practice and policy. Unfortunately, low-income nations have limited access to and use of research. However, in contemporary biomedical research, unethical acts and misconducts motivated by a lack of money and support are a matter for concern.

Ultimately, many of the issues impeding Nigeria's research progress could be resolved if politics and favoritism were to be shunned in the process of selecting research proposals for award; if sufficient publicity was guaranteed during the call for applications for research grants; and if more information and guidance on international funding agencies was supplied. Thus, there is a greater need than ever for coordinated measures to restore the integrity and reputation of biomedical research in Nigeria and the reporting surrounding it.

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