Impact assessment of pharmacy awareness campaigns conducted in selected high schools across Lagos, Nigeria

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**Keywords:** Health sciences, Public health, Pharmacology, Social sciences, Education, Pharmacy, Pharmacist, Profession, Students, Career, High school

**ABSTRACT**

**Background:** It is revealing that pharmacy as a key health care profession is almost invisible within more recent health policy initiatives in Nigeria. This research is an effort to improve awareness about the pharmacy profession. The target shall be young, science inclined individuals in high schools; they are the future.

**Objective:** To assess the levels of knowledge of high school science students about pharmacy and their interest in becoming pharmacists before and after sessions of awareness and education about the profession.

**Method:** The study was a behavioral intervention study with pre and post cross-sectional survey; carried out in three high schools across Lagos, Nigeria; 127 science students participated. Information was collected using questionnaires inquiring into the career interests of the students and their levels of awareness of the pharmacy profession before and after series of coordinated sensitization about pharmacy. There was one sensitization exercise conducted per school and each lasted for about 80 min with breaks in between. An average of 40 students per school (all science majors present on the day of the survey) participated in the study. A pretest was first conducted, followed by the campaign and then a posttest to assess impact. Communication was done in English language all through the survey.

**Results:** and Discussion: Most of the students claimed to know who a pharmacist is. However, upon further probe, only 3.1 percent of the respondents had a very good knowledge of what the pharmacy profession entails, from the pretest. At the end of the awareness discussions, an appreciable 18.1 percent of the students now had very good knowledge of the pharmacy profession. Similarly, a better 11.8 percent of students became interested in becoming pharmacists against the previously recorded 5.5 percent. This depicts how strategic advocacies can be utilized in building good professionals and ensuring a sustainable legacy for pharmacy in Nigeria.

**Conclusion:** The study establishes that the knowledge and awareness of high school science students about the pharmacy profession is relatively low across three selected secondary schools. The sensitization held yielded measurable improvement in awareness and interest. In view of this, Pharmacists in Nigeria are implored to do more of career mentorship.

1. **Introduction**

The history of pharmacy dates back to the nineteenth century [1]. The pharmaceutical sector comprises of the academia, administrative, regulatory, community, industry, and hospital practice areas. The practice of pharmacy in Nigeria is regulated by the Pharmacists Council of Nigeria (PCN) [1]. Currently, there are eighteen pharmacy schools authorized to teach and produce pharmacists in Nigeria. As a minimum, the degree required to become a pharmacist in Nigeria is the Bachelor of Pharmacy [1]. In addition to this, some Nigerian pharmacy schools now train pharmacists with extra clinical skills and exposure to earn the Doctor of Pharmacy degree.

The history of pharmacy in Nigeria is old; information about drugs and remedies was mostly in the custody of traditional practitioners [2]. During this old era, most of the ‘pharmacists’ that existed were simply ‘dispensers’ of medicines. Hospitals were managed by medical officers. There were only four hospitals in Nigeria as at 1900; all of them referencing a common formulary for therapies [2]. In 1887, Mr. Zaccheus Bailey opened the first drug shop in Nigeria, in Lagos State. It was essentially to address the drug needs of his European clients and a few
other Africans. Other community pharmacies began to spring up in 1920 and beyond. Industrial pharmacy in Nigeria formally began with the arrival of May and Baker in 1944, Glaxo and Pfizer in 1954 [2]. These companies were primarily into importation of pharmaceuticals. Large-scale drug manufacturing started after 1960, involving agencies of the government, multinationals and some local entrepreneurs. Today, the drug manufacturing sector has developed significantly, with over 115 registered production outfits in Nigeria [2]. The evolution of pharmacy in Nigeria has been remarkable over the years. There are many indications of more dynamics in the years to come, Nigerian pharmacists must therefore brace up in readiness.

The responsibility for ensuring the safe and efficacious use of medicines rests on the shoulders of pharmacists. Pharmacists interface between the developer and producer of pharmaceuticals on one hand, and the users of their products on the other: they are society's experts on drugs [3]. The pharmacist's involvement in therapeutic drugs extends from the initial development of new chemical entities, their formulation into medicines, their testing, marketing and distribution, their supply to patients, and ultimately to the monitoring of patients taking them. According to the 1968 Medicines Act, a drug was defined to be any substance or article administered to human beings or animals for a medicinal purpose [3]. This definition covers a broad range of items, including not only over the counter and prescription medicines but also blood products and vitamins. It has recently been extended to include homeopathic and herbal products [3]. Drugs interfere with the physiological states or functions of the body to elicit actions that could be temporary or permanent. These actions are usually intended to be desirable. However, in some instance, these medicinal substances can produce debilitating or adverse reactions. These drugs are made and given by pharmacists. Because they are delicate and potentially poisonous articles, they are best handled by individuals specially trained to make and dispense them – pharmacists. This underscores the immense relevance of pharmacists as professionals in any society.

Pharmacy is the health profession concerned with therapeutic medicines. Today, pharmacists practice in a situation of rapid development, where it is difficult for health professionals to keep up with all the latest knowledge, where patients themselves increasingly go to their doctor armed with information gleaned from the internet, and where the consequences of error are increasingly great [3]. The role of pharmacists is to promote and support the safe, effective, and rational use of medicines amongst the people that they serve. However, this role takes different forms in different parts of the world. In most developing countries health care is a mixture of public and private provision. There has never been a greater need for people to access high-quality expertise about the effectiveness, safety and use of medications. Pharmacists are very skilled professionals who perform various roles to ensure optimal health outcomes for their patients.

While drugs improve health and save lives, they are not without risk [4]. The collective influence of current health care trends and policies compels the profession of pharmacy to make fundamental changes in how it carries out its professional role to meet society's health care needs effectively and safely [4]. The modern pharmacist is largely responsible for helping patients navigate an increasingly complex and costly health care system, particularly with respect to medications [5]. It is revealing that pharmacy as a key health care profession is almost invisible or nonexistent within more recent health policy initiatives in Nigeria [6]. This research is an effort to improve prominence and awareness about the pharmacy profession. The target shall be young, science inclined individuals in high schools; they are the future.

2. Method

2.1. Study area and population

The study was conducted in Lagos, Nigeria. Lagos is a state in the southwestern geopolitical zone of Nigeria. It is the smallest in area of Nigeria's 36 states. Lagos State is arguably the most economically important state of the country, containing Lagos, the nation's largest urban area. It is a major financial center and would be the fifth largest economy in Africa, if it were a country. The diversity of the inhabitants of Lagos, its commercial prominence and levels of development makes it a good representation of the Nigerian populace and by inference an appropriate and representative study area for this study. The assessment was carried out in three high schools, distributed across Lagos state. The schools involved in this assessment are:

1. Kuje Senior Secondary School, Agboju, Amuwo-Odofin, Lagos
2. Firstgate Optimus High School, Mowe-Ofada, Mowe, Lagos
3. Homvat Pivotal College, Owutu, Ikorodu, Lagos

A total of 127 science students across these schools were engaged in the assessment. The schools are widely spread in the different local government areas of the state.

2.2. Study design

The study is a behavioral intervention study with pre and post cross-sectional survey. In a cross-sectional study, information and potentially related factors are measured at a specific point in time for a defined population. In the case of this study, a survey of career interests and an assessment of subjects' knowledge of the pharmacy profession were made before and after targeted sensitization talks and education by the researchers. There was one sensitization exercise conducted per school and each lasted for about 80 min with breaks in between. An average of 40 students (all science majors) participated in the study at each of the schools. Ethical approval for this study was obtained from the Scientific Review Sub-Committee of the Education and Training Committee of the Young Pharmacists Group of the Pharmaceutical Society of Nigeria, PSNYPG, Lagos Nigeria, with approval number PSNYPG/LG/19/001a. In addition to this, informed consent was sought and obtained from participants before proceeding with the study.

2.3. Sampling technique

The sampling method is purposive. The students were deliberately targeted as subjects of the research. As high school students, they are deemed to be at a relatively early phase of their education where academic strength, extent of information and passion can significantly influence the choice of career they wish to pursue. All identified and willing respondents were recruited for the study.

2.4. Participants' number

A total of 127 students were enrolled for this study. The students were all science majors, with an average of about 40 students participating per school. This number represents the total number of students in these schools that consented and were available to participate in the study.

2.5. Inclusion criteria

i. High school science major students (in year 1–3 of the senior secondary school)

2.6. Exclusion criteria

i. High school students that are not science inclined
ii. Students who disagreed to participate in the assessment
2.7. Data collection

2.7.1. Pretest

A set of questionnaires (Pretest) was used to assess the knowledge of the students about the Pharmacy profession before the campaign and to determine the percentage of students who are interested in becoming pharmacists.

Questions of the Pretest:

1. What would you like to be in the future? (Q1)
2. Do you know who a Pharmacist is? (Q2)
3. If your answer was yes (above), who is a Pharmacist? (Q3)

2.7.2. Posttest

A set of questionnaires (Posttest) was used administered to the students to assess the knowledge of the students about the Pharmacy profession after the campaign and to determine the percentage of students who had developed interests in becoming pharmacists.

Questions of the Posttest:

1. What would you like to be in the future? (Q4)
2. Would you consider being a Pharmacist in the future? (Q5)
3. Who is a Pharmacist? (Q6)

The questionnaire used for the study is attached to this script as a supplementary material.

The schools were visited between Monday 05/08/2019; and Friday 16/08/2019. Communication with participants was in English language. The pre and post survey questions were developed by the researchers (all pharmacists) based on the intent of the survey and the focus population. No incentive was offered to participants throughout the course of the survey. The participants were educated by means of verbal discussion sessions handled by young pharmacists. These discussions bordered around definitions of who a pharmacist is, history of pharmacy in Nigeria, the scope, and prospects of being a pharmacist. The students were also enlightened on the pathway and prerequisites to becoming a pharmacist in Nigeria, some misconceptions about the profession were cleared. All through, the sessions were made very interactive and easy to understand. The goal was simply to educate and inspire participants.

An assessment of the knowledge of respondents about who a pharmacist is was made by grading the correctness and completeness of the details provided by the participants on subjects such as what a pharmacist does, where he works, what he earns, how he is trained, how he is called, among other things. The accuracy of these responses was placed on a measure of 0–5, with 0 indicating the lowest level of knowledge about pharmacy and 5 representing the highest.

2.8. Ethical issues

The respondents were minors. The school authorities were first educated on the coverage and relevance of the study. Informed consent was obtained for every participant via consent from their handlers.

2.9. Statistics

A statistical comparison was made between percentages representing the levels of knowledge about the pharmacy profession before and after the sensitization. This was done to establish the level of significance between pre and post intervention awareness about pharmacy, setting p to be less than 0.05.

\[ H_0 \] There is no significant difference between the percentages representing the levels of knowledge about pharmacy before the survey intervention and after the survey intervention.

3. Results

Table 1 summarizes key demographic features of the study group. Participants were mostly females (58%) and generally teenagers. Information obtained from responses to the pretest and posttest questions are presented in Figures 1 and 2 and Tables 2, 3, 4, 5, and 6. Figure 1 presents what the students wanted to become in future before the awareness discussions, with most of them wanting to become medical doctors and just 6 percent of them all wanting to become pharmacists. Figure 2 shows responses to questions on career choice, a better 15 percent now wanted to become Pharmacists. In Table 2, participants overwhelmingly claimed to know who a pharmacist is with affirmative responses; at 94.5 percent. Tables 3 and 4 summarize the levels of knowledge of participants before and after the awareness discussions and sensitization, with percentages indicating improved awareness after the intervention. Table 5 compares the levels of knowledge of the participants in percentages, before and after the awareness discussions with results from a Chi-square statistic depicting the level of statistical difference between the two categories.

4. Discussion

Students in Nigeria define their career paths under the influence of a lot of factors. Parental guidance, societal perspectives, peer influence among other things are responsible for the kind of ambition nurtured by school students. While these influences are difficult to ignore, it is most ideal that career interests are formed by passion and knowledge of the peculiarities of each profession. The pharmacy profession is a noble and rewarding one. The researchers who are practicing pharmacists identified a gap in awareness of young individuals on the coverage and prospects of pharmacy, as a profession. The campaign was to assess and sensitize students in this regard. The schools visited for the study are spread across different axis of the Lagos metropolis. The motive was to get a diverse representation of the interests of these students and provide them enlightening and empowering information for better decision making.

The individual respondents were generally young. As minors they are largely prone to errors in decisions; it is a very vulnerable age class. As a group of concerned professionals, equipping them with relevant information is just appropriate. The students were detailed on who a pharmacist is, what he is trained to do, and how they can go about becoming pharmacists. Information gathered from the pretest that preceded this career talk reveals that a huge percentage of the kids wanted to become medical doctors and just a few wanted to be pharmacists as presented in Figure 1. Table 2 further clarifies that many of the students in reality did not even know what it meant to be a pharmacist. While this may appear disturbing, correcting that was the primary objective of the awareness research in the school. At the end of the discussions, the posttest conducted revealed that there was an increase in the number of school kids that were now aware of pharmacy as a profession, its scope and prospects as represented comparatively in Table 6 before and after the intervention (with p < 0.05). The sharp transition from 3.1 to 15.0 percent in Tables 3 and 5 (for students who now had ‘excellent knowledge’ of the pharmacy profession) attests to an impressive progress and a commendable achievement of the study objective.

In a similar study conducted by Joshi and Pant in 2011 in an Indian school, students’ perception and inclination towards pharmacy seemed to be very poor [7]. This agrees with the submissions observed in the pretest of this assessment conducted in Lagos, Nigeria. While 94.5 percent of the students claimed to know who a pharmacist is, further probes revealed that the prevailing level of knowledge of the scope of
the profession and details of what a pharmacist does is mostly fair. Upon completion of the sensitization sessions, an encouraging 52 percent of these kids were already considering the possibility of becoming pharmacists. This is indicative of how effective advocacies and strategic campaigns can lure young and brilliant minds to a profession as noble as pharmacy. This is a call to duty for Nigerian pharmacists.

Table 1. Summary of demographic characteristics.

| Category             | Details                      |
|----------------------|------------------------------|
| Age                  | 12 years–19 years old        |
| Gender               | Male: 53 (41.7 %)            |
|                      | Female: 74 (58.0 %)          |
| Year of School       | Years 1–3 of Senior Secondary School (Science majors) |
| State                | Lagos State (South-west Nigeria) |

![Career Choice of Students (Pretest)](image)

**Figure 1.** Response to Q1: What would you like to be in the future?

![Career Choice of Students (Posttest)](image)

**Figure 2.** Response to Q4: What would you like to be in the future?
4.1. Limitations to study

The coverage can be said to be relatively low (3 schools). In subsequent studies and campaigns, a larger size of students across a wider geography will be considered.

5. Conclusion

The study establishes that the knowledge and awareness of high school science students about the pharmacy profession is relatively low across three selected secondary schools in Lagos. It was observed that sensitization sessions held with the students resulted in an improvement in their knowledge and interest in the profession. In view of this, Pharmacists in Nigeria are implored to do more of career mentorship.

Declarations

Author contribution statement

Y. Ghazali, A. Okeke and F. Okoya: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Competing interest statement

The authors declare no conflict of interest.

Additional information

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