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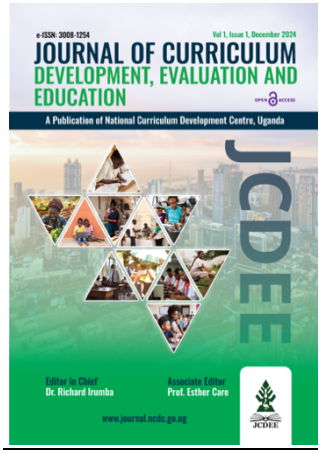
# Pharmacological Literacy as Curriculum Input for Functional Health Education Programme: Perception of Health Educators in Nigeria

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## Abstract

Health Education (HE) was established as a distinct programme from Physical Education less than three decades ago in Nigeria to address the country's growing preventive healthcare needs, as recommended by the World Health Organization (WHO) at the Alma Ata Conference in 1978. Despite multiple curriculum reviews aimed at aligning with national health philosophies, significant gaps remain in addressing both communicable and non-communicable diseases. The inclusion of pharmacology in health education is increasingly recognized as essential for enhancing healthcare outcomes. This study investigated the perceptions of health education students regarding the inclusion of pharmacological literacy in the Functional Health Education programme in Nigeria. Utilizing a descriptive survey research design, the study addressed three research questions and sampled 1,892 participants. The instrument used was the Inclusion of Pharmacological Literacy Questionnaire (IPLQ). The findings revealed a positive perception among health education students towards incorporating pharmacological literacy into the curriculum. Consequently, it is recommended that the National University Commission (NUC) incorporate Pharmacological Health Education into Nigeria's academic programme in Health Education.

**Keywords**: *Curriculum input, Health education, Pharmacological literacy, Functional Health, Education, Nigeria*

## Background

Health Education as a programme of study in universities is growing rapidly in Nigeria, with most public and private colleges of health technology, colleges of education, and universities offering the course, resulting in strong student interest and increased enrolment. This phenomenon arises from the long-overdue need for the subject to stand alone as a distinct field of study, given its significance as a key tool for addressing the preventive health needs of the population. This has been the focal point of healthcare strategies that utilise Primary Health Care (PHC) as a working model identified by the World Health Organization (WHO) at the Alma-Ata Conference since 1978.

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Nigeria is making concerted efforts to align with this WHO strategy by exploring various means to achieve health for all and to fulfil the national health philosophy and needs, identifying the teaching of health education as a distinct course to be pursued in schools and universities, as proposed at the Alma-Ata Conference, as a driving force for preventive medicine.

For health education to realise the outlined goals, it must undergo continual curriculum review and updates, which necessitates that various related disciplines comprise a significant portion of the content areas to be examined.

The study of anatomy and physiology, medical psychology, drug education, epidemiology, vital statistics, nutrition, medical anthropology, and the introduction of pharmacology is becoming essential to make health education more effective in achieving its predetermined goals of disease prevention and fostering positive health behaviour for health promotion. Many health education professionals are working to facilitate the modification of health behaviours, which has led to a persistent search for an appropriate definition of health education. Downie, Fyfe, and Tannahill (1990) defined it as a communication activity aimed at enhancing positive health and preventing or reducing ill health in individuals and groups by influencing their beliefs, attitudes, and behaviours. The World Health Organization (1998) described health education as comprising consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including enhancing knowledge and developing life skills that promote individual and community health. Gold and Miner (2002) defined health education as any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities with the opportunity to acquire the information and skills needed to make informed health decisions. Green and Kreuter (2005) defined health education as any planned combination of learning experiences designed to predispose, enable, and reinforce voluntary behaviours conducive to health in individuals, groups, or communities. Health education encompasses any combination of planned learning experiences using evidence-based practices and/or sound theories that provide the opportunity to acquire the knowledge, attitudes, and skills necessary to adopt and maintain healthy behaviours (Joint Committee on Health, 2012).

Critically examining the various definitions proposed, some fundamental elements are quite clear. Firstly, health education is a systematic, planned application, which qualifies it as a science (Sharma, 2017). Secondly, the delivery of health education involves a range of techniques rather than just one. Previously, health education encompassed a broader range of activities, including community mobilisation, networking, and advocacy, which are now encompassed within the term health promotion. It is evident that health education is a dynamic programme of study that should continually evolve to meet the demands of a changing world through periodic curriculum review.

Pharmacology is the scientific study of the effects of drugs and chemicals on living organisms, and its study is interdisciplinary. It encompasses various aspects of drug discovery, development, and preclinical drug safety, integrating knowledge from multiple scientific disciplines, including chemistry, biochemistry, biology, and physiology, thereby providing a significant positive impact on

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human health (Hobbing, 2023). The five branches of pharmacology include: pharmacokinetics, which involves understanding what the body does with a drug once it is taken; pharmacodynamics, which examines the biochemical and physical effects of drugs and how they work within the body; pharmacotherapeutics, which pertains to the use of drugs for both prophylactic and therapeutic purposes; pharmacognosy, which is the study of natural sources of drugs, including plants and animals; and toxicology, which involves the study of the toxic effects of drugs on the body. These branches of pharmacology are interconnected and are essential for effective training in health education, particularly at the introductory level, to enhance understanding of health education principles for positive changes in health behaviour. Additionally, knowledge of drugs is vital for improving patient adherence to therapeutic regimens (Beusekom, Grootens, Bos, Guchelaar & Broek, 2016).

Pharmacological literacy can be defined as the acquisition of the knowledge and skills needed to navigate our world—a world filled with drug-related pressures, promises, and panaceas. Introductory knowledge of pharmacology will enhance career opportunities for health education graduates, both for self-employment and paid positions within pharmaceutical organisations. Students must develop the competencies necessary to thrive in this dynamic environment (University of Victoria, 2015; Okueso & Okanlawon, 2016; Verveloet, Dijk, Rademakers, Bouvy, DeSmet, Philbert, & Koster, 2018; Silva, Nogueira, Cavalcante, Felipe, Morais, Moreira & Oliveira, 2022).

Health education, as an emerging field of study to drive home public health principles and achieve the preventive health goal as approved by the World Health Organisation, requires continuous review to keep pace with the ever-changing world. As practitioners in health promotion and education, students often inquire about career opportunities and pathways for further study, particularly in public health. Graduate students from the Faculty of Education have expressed concerns about discrimination during job interviews and in the workplace when compared to graduates of health education from teaching hospitals and colleges of basic health sciences. This disparity stems from factors such as curriculum deficits, course content taught in schools, and insufficient exposure to practical aspects of public and community health, which often lack core courses that should be included in health education programme.

Consequently, this study was conducted to investigate the views of student practitioners on the inclusion of pharmacological literacy, aiming to enhance the functionality of health education. This process may initiate the inclusion of an Introduction to Pharmacology as a course of study within health education in the Faculty of Education in Nigeria.

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## Theoretical Review

Two pertinent theories underpinning this study are the Health Belief Model (HBM) and the Diffusion of Innovations (DOI) theory. The Health Belief Model is a psychological framework used to explain and predict health behaviours by focusing on individuals' attitudes and beliefs (Champion & Skinner, 2008). The HBM comprises several key constructs, including perceived benefits and barriers. In the context of integrating pharmacology into the health education curriculum, the HBM helps identify perceived benefits, such as enhancing career opportunities and improving the functionality of health education programmes, as well as perceived barriers, such as resource constraints, including a lack of manpower or resistance to change among health educators. Understanding these perceptions is crucial for effective curriculum planning and implementation regarding the inclusion of pharmacology in health education programmes.

On self-efficacy, the model's emphasis aligns with the goal of enhancing both educators' and students' confidence in their professional competencies through improved pharmacological literacy. Regarding cues to action, the study identified specific triggers that facilitated the integration of pharmacology into the curriculum, promoting proactive steps in curriculum development, similar to the inclusion of leisure education in public health as proposed by Jordan et al. (2021) following the COVID-19 pandemic.

The Diffusion of Innovations theory, developed by Everett M. Rogers in 1962, was also applied to this study as it highlights the roles of innovators, early adopters, early majority, late majority, and laggards in the adoption process. It provides a framework for understanding how the new idea of integrating pharmacology into the health education curriculum will be received by health educators. As change agents, it identifies key innovators to improve opportunities for graduate health educators at various levels, as well as early adopters among health educators, which can help drive the acceptance and integration of pharmacology into the curriculum. Understanding the characteristics of these groups can aid in tailoring strategies to promote the adoption of this new curricular area.

## Methodology

A descriptive quantitative survey research design was adopted for the study, and a multi-stage sampling procedure comprising three stages was used to select the sample. Firstly, a simple random sampling technique was employed to select five universities offering health education as a course of study in the southern part of Nigeria. A purposive sampling technique was then used to select students from the Department of Human Kinetics and Health Education within the Faculty of Education. An internet survey administered a questionnaire titled "Inclusion of Pharmaceutical Literacy Questionnaire (IPLQ)" online for participants to respond to, based on their opinions on the subject. The instrument was validated with a reliability of r=0.823, having been trial tested among selected student health educators from Northern Nigeria. To answer the three research questions based on the study's objectives, descriptive statistics, including frequency counts and percentages, were used to specifically describe the participants' perceptions of the application of pharmacological literacy to make health education more functional.

## Results

**Table 1: Distribution of Respondents based on Demographic Information**

| Demographic Information | Frequency | % |
|---|---|---|
| **Gender** | | |
| Male | 448 | 23.7 |
| Female | 1444 | 76.3 |
| **Age Group** | | |
| Less than 20 years | 404 | 21.4 |
| 20-25 years | 1356 | 71.7 |
| 26-30 years | 124 | 6.6 |
| Above 30 years | 8 | 0.4 |
| **Level** | | |
| 100 | 228 | 12.1 |
| 200 | 736 | 38.9 |
| 300 | 480 | 25.4 |
| 400 | 448 | 23.7 |

**Table 1** above presents the demographic characteristics of health educators in public universities in Ogun State. Findings indicated that female gender dominated the sample population as indicated by 76.3% while male represent only 23.7%. Similarly, in terms of age group, majority were between 20-25 years of age as indicated by 71.7%, followed by 20 years of age or less as indicated by 21.4% then by 26-30 years as indicated by 6.6%. Findings further revealed that 38.9% were 200 level students and 25.4% were 300 level students while 23.7% were 400 level students.

Research Question One: Which of the following areas of pharmacology content will undergraduate health educators want to be included in the curriculum if introduced?

**Table 2: Descriptive statistics showing areas of pharmacology content needed to be included in the curriculum if introduced**

| S/N | Content Areas | Yes | | No | |
|---|---|---|---|---|---|
| | | Freq | % | Freq | % |
| 1 | Vaccines use and application | 1820 | 96.2 | 72 | 3.8 |
| 2 | Cardiovascular drugs' use and application | 1500 | 79.3 | 392 | 20.7 |
| 3 | Musculoskeletal drugs' use and application | 1500 | 70.3 | 392 | 20.7 |
| 4 | Obstetric and Gynaecological drugs' use and application | 1468 | 77.6 | 424 | 22.4 |
| 5 | Gastrointestinal drugs' use and application | 1536 | 81.2 | 356 | 18.8 |
| 6 | Antibiotics use and application | 1812 | 95.8 | 80 | 4.2 |
| 7 | Analgesic drugs' use and application | 1560 | 82.5 | 332 | 17.5 |
| 8 | Haematinic drugs' use and application | 1380 | 72.9 | 512 | 27.1 |

| S/N | Content Areas | Yes | | No | |
|---|---|---|---|---|---|
| | | Freq | % | Freq | % |
| 9 | Antipyretic drugs' use and application | 1396 | 73.8 | 496 | 26.2 |
| 10 | Addictive drug drugs' use and application | 1348 | 71.2 | 544 | 28.8 |

**Table 2** above presents the descriptive statistics showing the areas of pharmacology content that undergraduate health educators will want to be included in the curriculum if introduced. The findings above indicated that all the ten (10) listed content areas were perceived by the undergraduate health educators as a must to be included in the curriculum if introduced. This includes: Vaccines use and application, Cardiovascular drugs' use and application, Musculoskeletal drugs' use and application, Obstetric and Gynaecological drugs' use and application, Gastrointestinal drugs' use and application, Antibiotics use and application, Analgesic drugs' use and application, Haematinic drugs' use and application, Antipyretic drugs' use and application and Addictive drug drugs' use and application.

**Research Question Two: 2.** What is the perception of health education students on the role of Pharmacology as a needed course in making health education more functional?

**Table 3: Descriptive statistics showing whether students of Health Education will perceive Pharmacology as a needed course in making health education more functional**

| S/N | Perceptions | SA | | A | | D | | SD | |
|---|---|---|---|---|---|---|---|---|---|
| | | Freq | % | Freq | % | Freq | % | Freq | % |
| 1 | Introduction of pharmacology will improve general knowledge of drug classification | 1052 | 55.6 | 836 | 44.2 | 4 | 0.2 | - | - |
| 2 | Knowledge of pharmacology will boost public health knowledge of students of health education | 1020 | 53.9 | 848 | 44.8 | 24 | 1.3 | - | - |
| 3 | Pharmacology as a course is a long-expected course of study in health education | 672 | 35.5 | 1096 | 57.9 | 124 | 6.6 | - | - |
| 4 | Pharmacology as a course of study is only needed by doctor and nurses | 404 | 21.4 | 328 | 17.3 | 116 | 61.3 | - | - |
| 5 | Pharmacology has nothing to do with health education as a programme of study | 548 | 29.0 | 172 | 9.1 | 1172 | 61.9 | - | - |
| 6 | Introduction of Pharmacology as a course of study will amount to share duplication of courses in health education | 436 | 23.0 | 404 | 21.4 | 1052 | 55.6 | - | - |

The descriptive statistics presented in Table 3 above explore the perceptions of students in Health Education regarding the necessity of incorporating Pharmacology into their curriculum to enhance

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the functionality of health education. A significant majority of students, 1052 (55.6%), strongly agree that the introduction of Pharmacology will enhance their general knowledge of drug classification. Additionally, 836 students (44.2%) agree with this statement, while only 4 students (0.2%) disagree. This overwhelming support suggests that students recognize the value of Pharmacology in expanding their understanding of drugs. Similarly, 1020 students (53.9%) strongly believe that Pharmacology will boost their public health knowledge, with another 848 students (44.8%) in agreement. Only a small fraction, 24 students (1.3%), disagree. This consensus further underscores the perceived benefits of Pharmacology in enriching public health education. When asked if Pharmacology has long been expected as a course of study in health education, 672 students (35.5%) strongly agree, and a more significant number, 1096 students (57.9%), agree. However, 124 students (6.6%) disagree, indicating some level of contention but overall strong support. The perception that Pharmacology is only necessary for doctors and nurses is not widely held among the students. Only 404 students (21.4%) strongly agree and 328 students (17.3%) agree with this notion, whereas a substantial majority, 116 students (61.3%), disagree, suggesting that students see the relevance of Pharmacology beyond traditional medical professions. The belief that Pharmacology has no connection to health education is also not prevalent. A majority of students, 1172 (61.9%), disagree with this statement, while 548 students (29.0%) strongly agree and 172 students (9.1%) agree, reflecting that most students see a significant relationship between Pharmacology and their field of study. Concerning whether the introduction of Pharmacology would lead to unnecessary duplication of courses, 436 students (23.0%) strongly agree and 404 students (21.4%) agree. However, a majority of 1052 students (55.6%) disagree, indicating that most students do not view Pharmacology as redundant within their curriculum.

It can be concluded here that, the findings suggest that students of Health Education overwhelmingly perceive Pharmacology as a valuable addition to their curriculum, enhancing their knowledge of drug classification and public health. While there is some concern about the necessity and potential redundancy of the course, the predominant sentiment is in favour of its inclusion.

**Research Question Three: What is the perceived knowledge of students of health education of pharmacology as an attribute to the course to improve their career opportunity?**

**Table 4: Descriptive statistics showing students of health education perceived knowledge of pharmacology as a course to improve their career opportunity**

| S/N | Perceptions | SA | | A | | D | | SD | |
|---|---|---|---|---|---|---|---|---|---|
| | | Freq | % | Freq | % | Freq | % | Freq | % |
| 1 | Pharmacological knowledge will broaden job opportunities for health educators. | 892 | 47.1 | 896 | 47.4 | 104 | 5.5 | - | - |
| 2 | Pharmaceutical companies will hire graduate heath educators with background knowledge of pharmacology. | 636 | 33.6 | 1112 | 58.6 | 144 | 7.6 | - | - |
| 3 | Knowledge of pharmacology will serve as an opportunity for a graduate health educator to be given direct admission to study pharmacology in any university. | 568 | 30.0 | 1132 | 59.8 | 192 | 10.1 | - | - |
| 4 | Knowledge of pharmacology will not in any way improve career opportunities for graduate health educators. | 656 | 34.7 | 260 | 13.7 | 976 | 51.6 | - | - |
| 5 | Pharmacological knowledge will broaden job opportunities for health educators. | 756 | 40.0 | 1032 | 54.5 | 104 | 55.5 | - | - |

**Table 4** above revealed that the overwhelming majority of students believe that knowledge of pharmacology will broaden their job opportunities. With 47.1% strongly agreeing and 47.4% agreeing, a total of 94.5% of respondents see a positive correlation between pharmacological knowledge and enhanced career prospects. A significant majority of students (92.2%) agree that having a background in pharmacology would increase their chances of being hired by pharmaceutical companies. This reflects a strong belief in the value of pharmacological knowledge in the health education field. Interestingly, this item shows that 51.6% of students disagree with the statement that pharmacological knowledge will not improve their career opportunities, indicating a predominant belief in its positive impact in promoting career opportunities in health education. This repetition emphasizes the previous finding with slight variations, reaffirming the positive perception students have towards pharmacological knowledge in enhancing their job prospects.

Conclusively, the descriptive statistics strongly suggest that students of health education perceive pharmacology as a significant asset to their career development. The high percentages of agreement across multiple statements underline a consensus that pharmacological knowledge not only broadens job opportunities but also enhances employability in pharmaceutical companies as medical sales representative and academic advancement in pharmacology which can broaden their integration into working in the hospital setting as professional. The data highlights the importance of integrating pharmacology into health education curricula to meet students' career aspirations and industry expectations.

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## Discussion

The findings in the study revealed that all the items of pharmacological content presented to the participants to be included in the curriculum were favoured to be included in the curriculum but four of the items: Vaccines (96.2%), Gastrointestinal drugs (81.2%), Antibiotics (96.8%) and Analgesics (82.5%) were the most favoured to be included in the curriculum as the positive responses were above 80% in favour of their inclusion in the pharmacological literacy curriculum content for Functional Health Education. It is therefore important to note that when describing the content of Introduction to Pharmacology as core curriculum input, all the content should be considered as areas of interest to the students. The finding of the study that has antibiotics as the drugs that should be added to the list of the content in pharmacological literacy is in agreement with the findings of previous study that agrees that literacy about antibiotics is important because of increased rate of misuse (Aslam, Gajdacs, Zin, Abrahmam, Ahmed, Zafer et al, 2020)

The findings revealed that the participants perceived the introduction of pharmacological literacy to the health education programme will make it more functional hence the inclusion of the course, Introduction to pharmacology in curriculum for health education in the Faculty of Education in the universities of Nigeria. The need to Include pharmacology to health education curriculum is becoming inevitable as students are yearning for improved knowledge of pharmacological components to enhance awareness about, prophylactic diagnostic, therapeutic drugs. The finding in the study also agrees with the position of Centre for Disease Control and Prevention (2019) that reported the continuous need for health communication for effective health literacy which the findings of the study agrees that pharmacological literacy will boost knowledge for better society.

Findings of the study showed that the participants perceived the introduction of pharmacological literacy to health education will improve career opportunity for graduate health educators and promote admission opportunities for further studies in related public health studies. The inclusion of Pharmacology will broaden knowledge of health educators and improve their opportunities in employment especially in pharmaceutical and other allied companies. The work of Xu, Wang, Li, Li, Wang, Wu, Hao, and Wang, (2022) affirms the result of the finding that pharmaceutical literacy is imminent for the young ones for improved knowledge and better public health practices.

## Conclusion

The descriptive statistical analysis was conducted to determine whether students of health education perceive pharmacology as an essential course for enhancing the functionality of health education. The findings indicate significant support for the integration of pharmacology into the health education curriculum. The study revealed the need for continuous curriculum review to meet the ever-dynamic world and health education as an emerging field of study. The curriculum requires an upgrade to meet societal needs and align with global best practices. The inclusion of pharmacology in the health education programme has been perceived to improve the programme's functionality, enhance career opportunities, and broaden chances of gaining admission into various other health-related courses at universities for further studies, as well as employment in pharmaceutical outlets.

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## Recommendations

It is therefore recommended that curriculum developers and planners be informed of the need to include pharmacology as a course of study in health education to make it more functional, and the employment of staff with adequate knowledge of pharmacology to teach that aspect of health education in the faculty of education. Lastly, there should be periodic curricular review in health education to meet ever changing needs of the society in public health entreprise.

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