

# Awareness and Knowledge of Trachoma among Undergraduate Pharmacy Students: A Cross-Sectional Study

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## Abstract

**Introduction:** Trachoma disease remains a menace in Africa despite several awareness campaigns as part of global efforts of trachoma eradication in Africa. Limited access to health care services and knowledge of trachoma prevention is a limitation to its elimination in Africa. Pharmacists play a key role in patient care, disease control and prevention, patient education and counselling.

**Objectives:** This study assessed the pharmacy students' awareness and knowledge of trachoma since they are future healthcare professionals

**Methods:** This is a cross-sectional study conducted on pharmacy students of University of Nigeria Nsukka with the aid of a structured questionnaire using a convenient sampling method. A two-sectioned questionnaire with 14-item questions was used for this study. The collected data was entered into Microsoft excel spread sheet for data cleaning after which it was exported into the IBM SPSS software for inferential and descriptive analysis. The data was summarized using frequencies, percentages mean and standard deviation. Chi-square was used to determine associations between the independent variables and the student's demographic characteristics.

**Results:** Out of 600 questionnaires that were given out, only 406 were properly filled giving a response rate of 68%. Half 203(50%) of the respondents were males, majority (201;49.5%) were between the age of 18 – 29 while 209(51.5%) were in BPharm program. More than half 259(63.8%) of the respondents had good knowledge while the rest had poor knowledge of trachoma.

**Conclusion:** The pharmacy students were aware of trachoma disease and had good knowledge of trachoma. The year of study influenced the students' knowledge of trachoma.

**Keywords:** Trachoma, Knowledge, Pharmacy Students, Neglected Tropical Diseases

## 1. Introduction

Trachoma is a neglected tropical disease and is the world leading cause of preventable blindness. It is chronic conjunctivitis caused by Chlamydia trachomatis that is spread by flies, fomites, and fingers in parts of the world where poor environmental and personal hygiene exists [1]. It affects mostly children, but adults, particularly women, are also at increased risk.

Trachoma is known to be a public health problem and is endemic in 55 countries of; Africa, Asia, Central, South America, the Middle

East, and Aboriginal communities in Australia [2,3]. Globally, about 232 million people live in trachoma-endemic areas with an estimated 7.2 million people having trachomatous trichiasis and in need of trachoma trichiasis surgery while almost 1.9 million people have vision loss [4]. As of March 2022, forty-four countries were known to require interventions against trachoma of which twenty-six were in the WHO African Region.

The WHO targeted to eradicate trachoma as a public health issue by 2020 through the Alliance for the Global Elimination of Trachoma

(GET). The SAFE strategy surgery for trichiasis, antibiotic distribution, facial hygiene, and environmental measures to reduce transmission was advised by the WHO as a means of achieving this objective. It was anticipated that the SAFE program would quickly eradicate blinding trachoma. However, only ten nations reported attaining their elimination goals as of July 2017. Lack of proper implementation of prevention strategies in Africa could be attributed to the failure in the achievement of trachoma eradication in Africa [5].

Trachoma is a disease of poverty, irrespective of geographical region and it affects the most resource limited communities in the world. It is associated with poverty, overcrowding (it affects when less than 3metres distance and prolonged contact with infected person) and poor sanitation (lack of personal and community hygiene) [6].

Trachoma is transmitted through contact with eye secretions of infected people (sharing of towels and handkerchief), by touching a contaminated surface (contact with finger), by saliva (kissing or shared drinks), by skin-to-skin contact (handshaking or hugs) and also by flies that help to spread it. Closed living spaces and poor sanitation increase the spread of the disease [7]. Poor water supply (water source, water distance), face washing frequency, facial cleanliness, access to latrine are strongly correlated with the spread of trachoma disease [6].

Limited access to health care services and poor knowledge of trachoma prevention has been identified as major limitation to eradication of trachoma [8]. A study conducted by Mtuy, et. al., 2019 stated that there was awareness of trachoma its basic symptoms, however, an understanding of aetiology and prevention was poor. In the study trachoma was attributed to pollen, dust, and smoke. Water was recognized as beneficial but seen as treatment and not prevention.

Trachoma disease still exists in Nigeria [9]. A 2024 report by Mpyet et al. showed that there has been over 70% reduction in the number of persons living in districts requiring implementation of the A, F and E components of the SAFE strategy, but it has not been completely eliminated [10]. Providing quality treatment to those with trachoma, in addition to improving preventative measures are challenges faced throughout the country [11]. For an effective control and eradication of trachoma to be achieved, there is need for the health workers who are involved in the management and control of these disease to have adequate knowledge of the disease. Pharmacist are involved in the management of patients in the hospital and community pharmacists are usually the first point of call for patients and they play a key role in patient care, disease control and prevention, patient education and counselling. This study assessed the pharmacy students' awareness and knowledge of trachoma since they are future healthcare professionals. To the best of the authors knowledge, there has not been any study that assessed the pharmacy student's knowledge of trachoma in Nigeria. Information obtained from this study prompt a review undergraduate pharmacy training curriculum.

## **2. Methods**

### **2.1. Study Design**

This is a cross-sectional study conducted on pharmacy students of University of Nigeria Nsukka with the aid of a structured questionnaire using a convenient sampling method.

### **2.2. Study Setting**

The study was conducted in the faculty of pharmaceutical sciences of the University of Nigeria Nsukka (UNN). It is a federal university is situated in Enugu state comprised of seven departments. The Bachelor of Pharmacy (B.Pharm) and Doctor of Pharmacy (Pharm.D) programs are concurrently ongoing in the faculty presently as an undergraduate training program; the first Pharm.D students are in their fourth year of study as at the time of this study.

The students offer both theory and practical courses from all the departments. Each study year comprised of about two hundred students except for first year students.

### **2.3. Study Instrument**

This study was conducted with a structured questionnaire which has two (2) sections: Section A and B. Section A obtained the demographic information of respondents and their awareness of trachoma. Section B assessed the respondents' knowledge of Trachoma. In this section the respondents were to answer "True" or "False" to each of the item questions. The correct responses will be scored "1" while the wrong responses will be scored "0". The responses were expressed as percentages and categorised into "Good knowledge" and "Poor knowledge" using the mean as a cut-off point.

The questionnaire was developed and was examined for face and content validity by three experts; two clinical pharmacist and one public health pharmacists. A reliability study was conducted using Cronbach alpha.

A pilot study was conducted on students fifty students from the faculty of agricultural science who were not part of the study population to ensure that the questionnaire was easily understood and obtained the desired data.

### **2.4. Inclusion/Exclusion Criteria**

Every pharmacy student in their second, third, fourth and fifth year who gave consent to participate in the study was included in the study. Students who are not pharmacy students and those who did not consent to participate in the study were excluded.

### **2.5. Data Collection**

The questionnaire was distributed to Pharmacy students at University of Nigeria Nsukka, each in their 2nd year, 3rd year, 4th year and 5th year. The questionnaires were given out to the students while they were seated in their lecture theatres immediately after lectures and they were given about 10 minutes to respond to the questionnaires after which the questionnaire was retrieved from them and filled. Every pharmacy student in the lecture theatre who

gave consent to participate in the study was given the questionnaire to fill so as to have a good representation of the entire student in the lecture theatre. However, 600 questionnaires were given out to create room for those of them that may not be properly filled.

## 2.6. Data Analysis

The collected data was entered into Microsoft excel spread sheet for data cleaning after which it was exported into the IBM SPSS software for inferential and descriptive analysis. The data was summarized using frequencies, percentages mean and standard deviation. Chi-square was used to determine associations between the independent variables and the student's demographic characteristics.

## 2.7. Ethical Consideration

Ethical approval for this study was obtained from the Research and Ethics committee of the faculty of pharmaceutical Sciences, University of Nigeria Nsukka with the references number FPSRA/UNN/23/0068.

## 3. Results

Out of the six hundred questionnaires that were given out, only 406 were properly filled giving a response rate of 68%. Half 203 (50%) of the respondents were males, majority (201;49.5%) were between the age of 18 – 29 while 209 (51.5%) were in BPharm program. See details in Table 1.

Variable	Frequency	Percentage
<b>Gender</b>		
Male	203	50
Female	203	50
<b>Age</b>		
18-23	201	49.5
24-29	166	40.9
30-34	36	8.7
≥35	3	0.7
<b>Year of study</b>		
2nd year	102	25.1
3rd year	101	24.9
4th year	101	24.9
5th year	102	25.1
<b>Degree</b>		
BPharm	209	51.5
PharmD	197	48.5

**Table 1: Socio-Demographic Characteristics of Respondents (n=406)**

More than half (58.48%) of the respondents were aware of trachoma disease, although only a few (25.06%) had received lectures or training on trachoma disease. However, majority (328;80.59%)

will want the study of trachoma disease to be included in their undergraduate program curriculum. Table 2 shows the details.

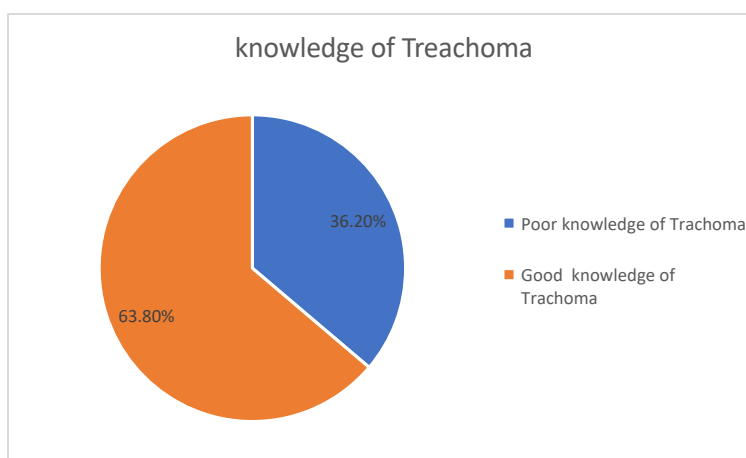
Questions	Yes (%)	No (%)
Are you aware of trachoma	238(58.48)	169(41.52)
Did you receive any lecture or training that provides information on trachoma disease	102(25.06)	305(74.94)
Have you participated in any program on trachoma prevention and control	19(4.67)	388(95.33)
Have you received or completed any course on trachoma prevention and dissemination of information	92.85)	314(77.15)
Will you want the study of trachoma to be included in your undergraduate pharmacy program?	328(80.59)	79(19.41)

**Table 2: Awareness of Trachoma Diseases (n=407)**

A majority (336;82.8%) of the respondent knew that trachoma is a bacterial infection that affects the eyes and caused by Chlamydia trachomatis 325(80.0%). Most 282(69.5%) knew that it can be contacted through sexual intercourse while 316(77.8%) knew that it can be spread through contact with eyes, eyelids, nose and throat

of an infected person. Details is as shown in table 2 below.

The mean knowledge score of trachoma was 34.2241± 15.22. More than half 259(63.8%) of the respondents had good knowledge of trachoma (Figure 1).



**Figure 1: Respondent's Knowledge of Trachoma**

Questions	True (%)	False (%)
It is a bacterial infection that affects the eyes	336(82.8)	70(17.2)
It is caused by Chlamydia trachomatis	325(80.0)	81(20.0)
It is contagious, spreads through contact with the eye, eyelids with nose or throat secretions of infected persons	316(77.8)	90(22.2)
It is a leading cause of blindness	306(75.4)	100(24.6)
It affects children below age 5	269(66.3)	136(33.7)
The bacteria can be contacted through sexual intercourse	282(69.5)	124(30.5)
The disease causes pain, redness, itching and irritation of eyes and eyelids, with eye discharge containing pus and mucus	268(66.0)	138(34.0)
The disease is common in people who live in crowded places	267(65.8)	139(34.2)
It can be prevented through good hygiene and proper handwashing	225(55.4)	181(44.6)
It can be treated with antibiotics	185(45.6)	221(54.4)

**Table 3: Respondents Knowledge of Trachoma**

Table 3 revealed that students who were females and within the age range of 18-23 had more knowledge of trachoma compared to their counterparts though the difference in the knowledge was not statistically significant ( $p = 0.156$  &  $0.757$  respectively). However,

a significant difference in knowledge of trachoma was observed amongst students in various year of study. respondents who were in their 5th study year had more knowledge of trachoma when compared to their counterparts ( $p = < 0.001$ ).

Variables	Poor knowledge	Good knowledge	$\lambda$ value (df)	p-Value
Gender			0.096(1)	0.757
Male	75	128		
Female	72	131		
Age			5.225(3)	0.156
18-23	79	122		
24-29	60	106		
30-34	7	29		
$\geq 35$	1	2		
Year of study			20.558(3)	<0.001
2nd	48	54		
3rd	29	72		
4th	47	54		
5th	23	79		

**Table 4: Association between Students' Demographic Characteristics and Knowledge of Trachoma**

#### 4. Discussion

The study assessed awareness and knowledge of trachoma disease among undergraduate pharmacy students. There has not been any study that assess undergraduate students' awareness and knowledge of trachoma in Nigeria. The pharmacy students in this study were aware and had good knowledge of trachoma despite the fact that they have not received any lecture or training on trachoma disease. This study was conceptualized due to the failure in the achievement of the WHO target to eradicate trachoma disease in Nigeria by 2020. This set back was attributed to lack of proper implementation of prevention strategies [5]. Reports from several studies have stated that limited access to health care services and inadequate knowledge of trachoma prevention has been identified as major limitation to eradication of trachoma [8].

In concordance with the findings of this study, it has been proven that there is good awareness of trachoma disease in Nigeria due to several awareness campaigns and programs in the past [5]. However, high prevalence of trachoma has been recognised in some communities in Nigeria with endemic risk factors. This implies that implementation of preventive measure and strategy is deficient, and this deficiency have been linked to lack of adequate knowledge of both the residents and the healthcare professionals. Studies confirmed that most healthcare professionals have suboptimal knowledge of neglected tropical disease [12]. This could possibly mean that studies on neglected tropical diseases such as trachoma was not included in their undergraduate study programs and possibly postgraduate programs too.

The pharmacy students in this study had good knowledge of trachoma disease despite the fact that they have not had any lecture or training on trachoma disease in their classroom. This implies that they had obtained knowledge of trachoma from other sources such as internet, public health awareness programs etc. Contrary to the findings of this from a study conducted by Mila Nu Nu Htay et al, 2024 in five Asian countries, which confirmed that 50.6% among medical students and 51.9% non-medical students, learned about NTDs from their study programme. The incidences of trachoma disease in some communities in Nigeria despite its awareness and knowledge is an indication that there is poor or improper implementation of preventive strategies. Healthcare professionals play a key role in the control and spread of diseases by ensuring proper implementation of preventive strategies of disease. Unfortunately, most healthcare professionals have inadequate knowledge of NTDs [12,13]. Studies in LMICs highlight the need to incorporate NTDs into medical education and professional training, with a particular focus on the most prevalent NTDs. Strengthening knowledge in this area will enhance the active participation of key stakeholders in prevention and control initiatives [14].

With increased awareness and collaboration between the medical and allied health sectors, the effective prevention, control, and elimination targets of NTDs will be achieved [15]. Equipping Pharmacist with adequate knowledge and skills will boost their confidence; increase their involvement in the prevention and control of neglected tropical diseases and other public health

programs. A Zamfara state reported that the risk factors of trachoma disease are endemic in these communities and requires active control measures [16]. Therefore, pharmacists who are usually the first point of call are required to have acquired the necessary skills and knowledge for the identification of the risk factors, symptoms, clinical manifestations of these neglected tropical diseases and should be able to establish proper preventive and control measures through counselling and education. Hence, buttressing the need for incorporating studies of NTDs into the pharmacy curriculum, since it is believed short courses and training, research, advocacy, and sufficient funding were needed to reduce the burden of NTDs [15, 17-19].

#### Recommendation

Studies of NTDs, identification, diagnosis, management, prevention, and control measures should be included in the undergraduate pharmacy program curriculum in terms of lectures, seminars, and debates by the policy makers and education regulatory bodies.

#### Limitations of the study

This study was a cross-sectional study, which obtained the information at a point in time. Hence the possibility that the responses may differ if the study is conducted at a different time from the time of this study.

#### Conclusion

The pharmacy students are aware and have good knowledge of trachoma diseases. They desire that the study of NTDs to be included in their undergraduate pharmacy program.

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