**ASSESSMENT OF AWARENESS, KNOWLEDGE AND PERCEPTION OF THE CAREER PROSPECTS IN OPTOMETRY AMONG OPTOMETRY STUDENTS IN NIGERIA.**

TABLE CONTENTS

[CHAPTER ONE 5](#_Toc151548073)

[1.0 INTRODUCTION 5](#_Toc151548074)

[1.1 BACKGROUND OF INFORMATION 6](#_Toc151548075)

[1.2 STATEMENT OF PROBLEM 16](#_Toc151548076)

[1.3 AIM OF STUDY 16](#_Toc151548077)

[1.4 OBJECTIVES 16](#_Toc151548078)

[1.5 NULL HYPOTHESIS 18](#_Toc151548079)

[1.6 SIGNIFICANCE OF STUDY 18](#_Toc151548080)

[1.7 DEFINITION OF TERMS 19](#_Toc151548081)

[CHAPTER TWO 20](#_Toc151548082)

[2.0 LITERATURE REVIEW 20](#_Toc151548083)

[CHAPTER THREE 25](#_Toc151548084)

[3.0 METHODOLOGY 25](#_Toc151548085)

[3.1.0 RESEARCH DESIGN 25](#_Toc151548086)

[3.2.0 STUDY LOCATION 25](#_Toc151548087)

[3.3.0 STUDY POPULATION 25](#_Toc151548088)

[3.4.0 SAMPLING METHOD 25](#_Toc151548089)

[3.5.0 SAMPLE SIZE 26](#_Toc151548090)

[3.6.0 STUDY DURATION 27](#_Toc151548091)

[3.7.0 STUDY MATERIALS 27](#_Toc151548092)

[3.8.0 SELECTION CRITERIA 27](#_Toc151548093)

[3.9.0 ETHICAL CONSIDERATION 28](#_Toc151548094)

[3.10.0 PROCEDURE 28](#_Toc151548095)

[3.11.0 DATA ANALYSIS 29](#_Toc151548096)

[3.12.0 LIMITATION OF STUDY 30](#_Toc151548097)

[REFERENCES 31](#_Toc151548098)

**LIST OF TABLES**

**LIST OF FIGURES**

**ABSTRACT**

# CHAPTER ONE

## 1.0 INTRODUCTION

The World Council of Optometry gave a more detailed definition of optometry as a healthcare profession that is autonomous, educated, and regulated (licensed/registered), and that optometrists are the primary healthcare practitioners of the eye and visual system who provide comprehensive eye and vision care, which includes refraction and dispensing, detection/diagnosis and management of disease in the eye, and the rehabilitation of conditions of the visual system (World Council of Optometry, 2020).

In 1993, the American Optometric Association defined doctors of optometry as independent primary health care providers who examine, diagnose, treat and manage diseases and disorders of the visual system, the eye and associated structures as well as diagnose related systemic conditions (Rouse *et al*. 1994). This definition highlights optometry's vital role as a primary health provider in the health sector.

Optometry is an essential healthcare profession and optometrists are recognized as physicians under the Medicare program in the United States. They examine, diagnose and manage diseases and disorders of the eye. They also play a major role in an individual’s overall health and well-being by detecting systemic diseases, and diagnosing, treating and managing ocular manifestations of those diseases. They achieve these through the prescription of medications, low vision rehabilitation, vision therapy, prescription of spectacle lenses, contact lenses and performing certain surgical procedures (in some countries that have legislation that permits this). They also help in counselling patients regarding surgical and non-surgical options that meet their visual needs specifically related to their occupations, avocations and lifestyles (America Optometric Association, 2022).

Careers in Optometry could be practice-oriented (with or without further interest in the areas in Optometry) or non-practice oriented (academia, research and industrial Optometry). However, others in pursuit of passion, avocation and interest may enter into entirely different fields such as humanities, medicine, business administration and law. Factors such as career opportunities, length of residency and work-life balance have been reported to have a significant impact on medical students’ choice of career (Lefevre *et al.* 2010, Kiolbassa *et al.* 2011).

The career aspirations of optometry students in Nigeria, though personal, have consequential effect on the country’s eye services delivery and the future of Optometric education and its practice in the country. These choices could affect the distribution of the human resource capital available for healthcare delivery within the country (Giang *et al.* 2015) and Nigeria presently faces a serious challenge of shortage of health workers within its health sector (Aluko *et al.* 2019).

The awareness, knowledge and perception about these career prospects are the bedrock of the career decision making process. Being aware of the possibilities enables the students take necessary steps in time in ensuring that they are able to strategically position themselves in other to adequately maximize time and other resources currently at their disposal while in training to achieve their dreams.

## 1.1 BACKGROUND OF INFORMATION

1.1.1 HISTORY OF OPTOMETRY

Although in ancient times, man used quartz and other crystalline rocks as lenses by placing them directly upon objects they needed to see, Optometry’s formal beginnings date back to 1263 when Roger Bacon first mentioned lenses as “useful for those with weakness of sight” and first outlined the theoretical application of lenses to correct human sight in his *Opus Majus*, but it wasn’t till 1286 when the first pair of wearable glasses was created in Northern Italy (Protas, 2019). However, there is a record of a painting of an ‘Ugo di Provanza’, a cardinal who died in 1262 wearing what seemed to be glasses (Georgia Physicians & Surgeons, 2018).

It is believed that the first book of optics was written by an Arabian scholar called Ibn al-Haytham in the year 1040 AD, the book was first written in ancient Arabic and was later translated to Latin in the 13th century which greatly paved the way for the development of optics, physics and vision science between 13th and 17th centuries (Protas, 2019).

In 1604, the German astronomer Johannes Kepler first described how light enters the eye, forms on the retina and is inverted. This helped explain several visual phenomena and how different types of lenses could help correct different vision problems. He further showed that concave lenses helped correct myopia and convex lenses helped correct hyperopia. In 1623, the first book on optometric principles titled “*The Use of Eyeglasses*” was published in Spain by ‘Daza de Valdes’, where he describes the actual testing of a patient’s sight and the subsequent provision of lenses suitable for that person (Goss, 2007) and by 1685, Johannes Zahn then went on to introduce the concept of trial lenses incorporated within a hand-held instrument. William Molyneux later wrote a book in 1692 on optics and lenses, where he stated innovative ideas on myopia and problems related to close-up vision which provided more explanation on presbyopia and postulated ways to resolve it.

It wasn’t until the year 1759 that the term optometry was first officially used in the book titled “*Treatise on the Eye: The Manner and Phenomena of Vision*” by a Scottish physician called William Porterfield. In the year 1783, John McAllister, Sr. opened the first optometric shop in the United States selling eyeglasses to customers and in 1784, Benjamin Franklin invented the bifocal lenses which provided a therapeutic remedy for presbyopia.

At the dawn of the 19th century, Thomas Young, who was a physician discovered astigmatism as a vision condition which caused blurred vision and George Biddell Airy designed glasses which included a sphero-cylindrical lens to correct that problem. In 1851, the German physician Hermann von Helmholtz invented the ophthalmoscope using the principle earlier put forward by Jan Evangelista Purkinje (Known for Purkinje images) in 1823 which became a critical tool that allowed doctors to assess the interior structures of the human eye for the first time. Franciscus Cornelis Donders who is referred to as the “*father of modern refraction*” introduced the first prismatic and cylindrical lenses to the trial set for assessing patients with astigmatism (Elliot, 2015).

Later that same century, in 1862, the Dutch Ophthalmologist Hermann Snellen designed and produced the first Visual acuity chart which became known as the Snellen’s chart. This invention was critical as it provided a standardized instrument for measuring visual acuity against the earlier unstandardized practice where eye tests were done using the double star of the big dipper and if a patient was able to perceive the separation of the 2 stars, they passed the test (Protas, 2019).

In 1887, the two famous scientists Ficke A.E and Mueller F.A. carried out an experiment with the first contact lenses made from blown glass which was later developed into a useable pair of contact lenses in 1888.

By 1892, what was to be the Optometry practice had increasingly gained recognition and Charles F. Prentice attempted to bill $3 to perform an eye exam on a patient, this made an ophthalmologist complain as he regarded such examination to be a practice of medicine thus initiating what is believed to be the struggle for legal recognition of the profession (Kedzia, 1998). This led to a famous court case which prompted the law at that time to be reviewed so that individuals who were educationally prepared were authorized to perform refractions. One advantage to this law is that it allowed individuals who were educationally qualified to legally practice refractive therapy and also protected the public from unqualified practitioners (Kedzia, 1998).

It wasn’t until 1910 that Optometry was first introduced as a course at Columbia University which became the first university to offer optometry as a course study program. This opened up more inquiry into the Optometric profession in the 20th century and in 1911, Andrew J. Cross published the first book to introduce the theory of retinoscopy which revolutionized eye care allowing examiners to get objective measurements of a patient’s visual abilities.

By 1914, Optometrists in the United States encouraged vision testing before drivers were licensed and moved for the creation of regulations against the operation of vehicles by persons with poor eyesight paving the way for Charles Sheard to introduce the concept of annual eye examination and develop the “*case analysis*” approach to refractive problems in 1926.

Due to the limitations provided by contact lenses made from blown glass earlier produced in the 19th century, Theo Obrig and John Mullen created the first-known functional pair of contact lenses made from plastic (polymethyl methacrylate) in the year 1938. However, in 1974, Bausch & Lomb designed and produced the first soft contact lenses made from hydrogel materials from the innovations by Otto Wichterle (between 1953 and 1962), which provided better comfort for wearers (Georgia Physicians & Surgeons, 2018).

Following the “Odin” court case in Paris in 1924, after an optician was found guilty under the French law of using medical instruments by practising optometry, the International Optical League was formed which was later changed to the International Optometric and Optical League and now the World Council of Optometry (Elliot & Handley, 2015).

The National Eye Institute which opened up new frontiers in eye research and improved vision care was established in 1968 and by 1973, legislation was passed in the United States which allowed optometrists to use pharmaceuticals for diagnostic and therapeutic purposes. In 1981, Optometry was included as a service under Medicare coverage boosting its recognition and relevance in the public health sector in the country and by 1998, the state of Oklahoma enacted the first law which allowed optometrists and ophthalmologists to use lasers for certain treatments (Schleiter, 2010).

These contributions and events in Optometry have made this important profession evolve into a respected discipline within the health space over time.

1.1.2 MISCONCEPTIONS ABOUT OPTOMETRY

Oftentimes, optometrists are confused with other sister professionals such as Ophthalmologists and Opticians. Optometrists are not medical doctors, rather they are health care practitioners who have received a doctor of optometry (OD) degree after completing a 6-year long training in an institution, followed by a one-year internship program. They are then fully licensed to practice optometry which primarily involves performing eye exams and vision tests, prescribing and dispensing corrective lenses, detecting certain eye abnormalities and prescribing medications for certain eye diseases.

On the other hand, ophthalmologists are medical or osteopathic doctors who specialize in eye and vision care. Their level of training differentiates them from the optometry and the opticianry profession as after undergoing about 7 years of medical training, they also have to undergo at least another 8 years of medical training to specialize in the area of ophthalmology. They are licensed to practice medicine and surgery and they diagnose and treat all eye diseases, perform eye surgeries and prescribe eyeglasses and contact lenses to correct vision problems (Hull, 2011).

Opticians are however trained to design, verify and fit eyeglass lenses and frames, contact lenses and other devices to correct eyesight. They use prescriptions which are supplied by ophthalmologists or optometrists to cut and glaze the lens prescription in the laboratory. They do not however test vision, write prescriptions for visual correction or be permitted to diagnose or treat eye diseases.

1.1.3 OPTOMETRY IN NIGERIA

Nigeria was the first country in Africa to have both the bachelor and doctor of optometry degree programs (Oduntan, 2014). Even as of 1993, Nigeria was among the only five countries in Africa (Sudan, Ghana, South Africa, Tanzania) with optometric teaching institutes (Penistern, 1993). Over the years, this program has gradually metamorphosed into a world-class discipline upholding the tenets and standards of the profession.

In Nigeria, the practice of Optometry is regulated by the Optometry and Dispensing Opticians Registration Board of Nigeria (ODORBN) established under the Optometry and Dispensing Opticians Act of 1989 (Cap O9 Laws of Federation of Nigeria 2004). This body makes rules and regulations that govern optometry as a course and profession. They register, regulate, accredit and license training institutes, universities, and colleges of health technology in Nigeria. Provisional licenses given to newly inducted students are also obtained from ODORBN.

All optometrists in Nigeria are registered with the Nigerian Optometric Association (NOA) which was founded in 1968 (NOA, 2022). The NOA is an association that represents optometrists and other optometric groups in the country. There are 37 chapters of the association that represent each of the states in the country and the Federal Capital Territory. An optometrist working in a state must be duly registered with the NOA state chapter, attend meetings, and pay dues according to the rules and regulations of the association.

Being a professional program, Optometry requires a minimum of six years of schooling to graduate with a degree in optometry from any of the accredited institutions. Each university has to undergo accreditation done by the ODORBN board to give the schools the authority to award a Doctorate of Optometry degree to its students.

In 1972, the first optometric professional program in Nigeria began at the University of Benin. It was established in the faculty of science by the late Dr. Paul Olekanma Ogbuehi. Presently, there are 7 institutions that train optometrists in the country. They are- the University of Benin in Edo State, Abia State University in Abia State, Bayero University in Kano State, Imo State University in Imo State, Madonna University in Anambra State, the University of Ilorin in Kwara State and the Federal University of Technology in Imo state.

Following the successful completion of the program in an accredited institution, students are made to sit for the Board examination which qualifies one the right to be inducted into the profession. Successful students are then inducted into the profession as optometrists by the board and awarded a provisional license. This provisional license is valid for up to a year and gives them the opportunity to apply to internship opportunities to gain more hands-on experience in clinical practice under the supervision of a currently licensed optometrist upon which they are given a permanent license at the end of the internship year.

In order to renew an optometry license, an optometrist must have obtained 15 CPD (Continuing professional development) points in a year (ODORBN, 2023). These CPD points can be obtained either through the NOA conference, Seminars or workshops conducted by consultants or through seminars, workshops or conferences organized by any of the Nigerian colleges of Optometry.

1.1.4 CAREERS IN OPTOMETRY

With the discovery and revolutionary trends in the areas of health and technology, optometry as a profession has shown to step in, to bridge the gaps and solve problems relating to this trend. This has opened the profession as a practice into diverse aspects of human life. For the purpose of this study, we will be looking at some of the career prospects in optometry.

1. EDUCATIONAL ADVANCEMENT

After being awarded the Doctor of Optometry (OD) degree, and becoming a licensed optometrist, an optometrist can decide to further advance in education by studying further to attain more degrees which are referred to as “post-graduate degrees”. One of these post-graduate degrees is the “Master of Science” degree which is often abbreviated as M.Sc. or M.S., Sc.M. or S.M. It is a program which allows an optometrist to improve on critical thinking, analytic abilities, time management and presentation skills in any area. A master's program gives an optometrist the opportunity to explore and supplement existing knowledge in the areas of optometry or to embark on a new career direction. It is worthy of note that an optometrist can pursue a master’s degree in any subject area as long as the admission requirements are met. Some of these areas could be business administration, health management, public health, public administration, Organizational psychology, human resources, biomedical engineering etc. In optometry, however, some of the available master's programs include a master in Orthoptics, a master in clinical optometry, a master in applied optometry, a master in research in vision sciences, vision science and investigative ophthalmology, vision rehabilitation therapy, optics and photonics, contact lenses etc.

An optometrist could also decide to specialize in any area of speciality in optometry by undergoing at least a 4-year institutional-based post-graduate training in the College of Optometry. The areas of speciality offered in the Nigerian College of Optometry are Primary care optometry, Public Health Optometry, Contact Lens Practice, Rehabilitative Optometry and Low Vision Care, Pediatric Optometry, Ocular Health and Orthoptics. Some of the requirements to apply for the Nigerian College of Optometrists include a degree of O.D (Doctor of Optometry) from any institution accredited by ODORBN and a 3-year post-NYSC clinical experience (Medical World Nigeria, 2022).

An optometrist may also decide to get a Doctorate of Philosophy (Ph.D.) degree which is the highest degree in the academic level. Some of the requirements to qualify for this include at least an upper second-class honours degree in some institutions or a lower second-class honours degree if the applicant also holds a master’s degree, an applicant must have published a certain number of research studies in similar areas. It is noteworthy that the requirement for admission into a PhD degree program varies from one institution to another and that it isn’t mandatory to have a master’s degree to obtain a PhD degree. Having a PhD degree doesn’t automatically make one a professor as there is a huge difference between them. To become a professor, one must have a bachelor’s degree, or a master’s degree, pass certain national-level competitive exams and may need to have years of teaching or research experience and publications.

1. CLINICAL PRACTICE

An optometrist may also decide to pursue a career in clinical optometry practice where there is a one-on-one interaction with patients through the provision of eye care services. Clinical practice can exist in different forms.

* Public sector

An optometrist can engage his services in the public health sector through the provision of specialized visual care for patients. This could be at the federal level, state level or the local government. The government typically places the Optometrist working in its parastatals on a salary scheme in line with the constitutional guidelines of the civil service. In Nigeria, the optometry community have stressed concerns about the low amount of optometrist employed in the public service (Jannamike, 2018), also experienced by optometrists in the public service is the issue of limitation of the scope of practice by ophthalmologists within the institution (Ukandu, 2022)

* Private sector

An Optometrist could also decide to offer his/her services in the private sector either through Sole proprietorship practice, Partnership or limited liability. The optometrist can tailor his/her billables to suit the needs and the average income in the population he or she is offering these services.

Although there are over 5,000 registered optometrists in Nigeria, 80% of them are in the private sector due to the government’s inability to engage them (Tyessi, 2018).

1. NON-CLINICAL PRACTICE

An Optometrist may also decide to not practice in the clinic and pursue a career outside the four walls of a clinic. An optometrist may combine his or her unique skill set with the knowledge of optometry to explore new niches in different sectors.

* RESEARCH

One of such ways through which an optometrist may practice outside the clinic is in the areas of research. Research which is the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions has been identified to be the bedrock of any discipline. The famous quote by Sir Isaac Newton which states “*If I have seen further, it is by standing on the shoulders of giants*” shows that the research and the constant inquiry and exploration into old and new aspects of any discipline is only possible through building on existing studies. An optometrist may pick up any area of interest and decide to study those areas in view of verifying, correcting or postulating new theories. Several institutions provide employment and grants for optometrists in the area of research.

* INDUSTRY

Optometrists may also have a career in industries working as specialist consultants providing expert advice on matters concerning optometry and related matters. One such area is in the area of technology. Big tech companies investing in gadgets or programs which have direct interactions with human vision such as the Oculus device, a virtual reality device owned by Meta (formerly known as Facebook) require the expert contribution of an optometrist to understand the effect and relationship of the device or program on the human eye. A forensic optometrist may have a career in the security department as a consultant in resolving crime scenes or as an expert witness in court proceedings.

* HEALTH ADMINISTRATOR

An optometrist may also work as an administrator in health organizations, non-governmental organizations or government parastatals. One such health organization is the World Health Organization (WHO) which has its goals and objective to promote health, keep the world safe and serve the vulnerable. Eye health is a global concern, and being a primary healthcare profession, an optometrist is invaluable in such an organization to ensure it is able to achieve its goals. An optometrist may also work with a Health Maintenance Organization (HMO), offering administrative support and expert advice to the organization in its relations with eye health organizations. In the government parastatals, an optometrist may work in the federal or state Ministry of Health where they could contribute expert advice to the government on policy formulation, regulation and implementation of eye health-related issues in the country or state.

## 1.2 STATEMENT OF PROBLEM

Optometry students in clinical years are usually faced with the challenges of making a career choice in or outside optometry. These career decisions play a crucial role in the development of the student in the chosen area of practice. Careers in optometry could be practice-oriented or non-practice-oriented. Factors such as career opportunities, length of residency, and work-life have been reported to have a significant impact on medical students’ choice of career (Lefevre *et al*. 2010, Kiolbassa *et al*. 2011).

Previous studies did not assess the level of awareness or knowledge these students have concerning their career prospects in Optometry (Loughman, 2015). Given that Nigeria has made significant strides in the training of optometrists, it is imperative that the level of awareness and knowledge concerning the career prospects in the profession be assessed. Therefore, this study seeks to assess the level of awareness and knowledge of the career prospects in optometry among optometry students in Nigeria.

## 1.3 AIM OF STUDY

The aim of this study was to assess the level of awareness and Knowledge of Career prospects in optometry among optometry students in Nigeria.

## 1.4 OBJECTIVES

1. To determine the level of awareness of career prospects in optometry among optometry students in Nigeria.
2. To determine the level of knowledge of the career prospects in optometry among optometry students in Nigeria.
3. To ascertain if there was a relationship between the study institution, study level and the level of awareness of career prospects in optometry among optometry students in Nigeria.
4. To ascertain if there was a relationship between the study institution, study level and the level of knowledge of career prospects in optometry among optometry students in Nigeria.
5. To determine the distribution of awareness and knowledge of career prospects in optometry among optometry students across the different Optometry schools in Nigeria.

## NULL HYPOTHESIS

* **Ho1**: There is no high level of awareness of career prospects in optometry among optometry students in Nigeria.
* **Ho2**: There is no high level of knowledge of career prospects in optometry among optometry students in Nigeria.
* **Ho3**: There is no association between age, gender and the level of awareness of career prospects in Optometry among optometry students in Nigeria.
* **Ho4**: There is no association between the institution of training, level and the level of awareness of career prospects in Optometry among optometry students in Nigeria.
* **Ho5**: There is no association between age, gender and the level of knowledge of career prospects in Optometry among optometry students in Nigeria.
* **Ho6**: There is no association between the institution of training, level and the level of knowledge of career prospects in Optometry among optometry students in Nigeria.

## 1.6 SIGNIFICANCE OF STUDY

* This study will assist institutional heads in the recruitment of prospective students and strengthen the career counselling approach for students being provided by their training institutions.
* The Nigeria Optometric Association, Optometry and Dispensing Opticians Registration Board of Nigeria, Ministry of Health and other relevant stakeholders in eye care can rely on the findings for policy development on optometry and eye care in Nigeria as the country makes projections for eye care delivery post-VISION 2020.
* Results from this study will also provide policy makers' more realistic data to develop methods that enhance the professional, scientific and motivation of Optometry students.

## 1.7 DEFINITION OF TERMS

**AWARENESS:** The state or level of consciousness of being aware.

**CAREER:** A person’s occupation.

**KNOWLEDGE:** The fact of knowing about something.

**PERCEPTION:** The conscious understanding of something.

**PROSPECT:** The potential things that may come to pass.

# CHAPTER TWO

## 2.0 LITERATURE REVIEW

A profession cannot thrive without the continual impact of its professionals. For the Optometry profession to grow, it needs young creative minds to strive towards attaining different career levels within the profession to further boost its socio-economic relevance in the life of the population in which it serves.

A paper by Faucher, (2011) on the development of professional expertise in optometry defined “development of professional expertise” as the gradual transition from novice to expert within a profession. He stressed on the need for personal and collective efforts to foster their progression towards expertise. Great interest for the profession, motivation, and deliberate practice were identified as individual attitudes that could help this progression. He also identified the “optometric community of practice,” by means of university (professional) training, continuing education, and collaboration between colleagues, to be other contributors to this progress. He stressed on the relevance of the Optometric Oath as professional development is a vital step in fulfilling that commitment.

A study to assess the attitude of Optometry students towards the optometry profession and Job Prospects performed on undergraduate students at the Mashhad University of Medical Sciences showed that there was a statistically positive attitude towards the academic field and job prospects by the students. 43% of the students disagreed with the question that the possibility of continuing education is low, and 39.5% agreed with the fact that optometry is worth more in higher levels. It was then concluded that although some students had negative attitudes towards the optometry profession and career prospects, the majority of students had a positive attitude towards their academic field, thus providing policy makers' attitudes more realistic to develop methods that enhance the professional, scientific and motivation of these students (Moradi *et al.* 2017).

The choice of a career is a crucial aspect which shapes an individual’s life as it not only determines the success and prosperity, but also impacts individual satisfaction. A study to assess the factors influencing the career choice among optometry students in India showed that of the 42 students of optometry comprising 36 females (85.71%) and 6 males (14.28%) who participated in the study, the second-most rated factor for choosing optometry as a career was the perception of availability of good job opportunities abroad (85%) and in India (37.5%), whereas 72.5% felt that they could set up their own business. More than one-third (40%) perceived that a degree in optometry had a potential for a satisfactory salary or income and only 5% joined because they had to be part of the family business of optometry. 70% of the students agreed that by choosing optometry as a career, they could provide service to patients with eye problems. Whereas only 37.5% believed they could work like a doctor and serve the community (Abhilasha & Kulkami, 2020).

A study to assess the perception and Expectations toward Optometry among optometry students in Mozambique pointed out that the majority of students perceived the role of the optometrist as maintaining eye health, treating cataract and eye disease, and performing surgery. 70% of the students expressed a desire to work within the government sector on completion of their degree and in terms of the expected salary upon graduation, 37% students responded that their expected salary would be more than 20,000 Meticais (652 USD) per month. It was however noted that although the students opted to work within the public sector, almost the same number of respondents expressed their desire to work in urban areas. 25.9% of the students showed a general lack of knowledge of the profession which pointed out the need for increase awareness of the profession in the country through advocacy efforts to help bring about mobilization of resources for service delivery from government and the private sector and lead to the expansion of optometric practice in the country (Loughman *et al.* 2015).

To assess the perceptions and expectations apprehensions and realities of graduating South African optometry students, a total of 143 students across various institutions of training in South Africa were presented with a well-structured questionnaire. It was reported that there were more females (72.7%) than males (27.3%) and also more female participants from each institution which participated in the study. many respondents (44.1%) believed that the most advantageous way to enter practice at the time was to join a franchise. Many (60.8%) of the respondents felt that the most likely mode of practice that will provide the greatest fulfilment for their personal goals within the next ten years is opening their own practices. The areas of optometric practice that the respondents felt least prepared for varied widely and included contact lenses (26.6%), dispensing (23.8%), binocular vision (21.7%), ocular pathology (14.0%) and low vision (4.2%). 5.6% respondents reported that there were no areas for which they felt unprepared. Also, the areas of optometric practice that they felt most prepared for varied and included contact lenses (28.0%), clinical optometry (22.4%), ocular pathology (14.0%), binocular vision (11.9%), dispensing (10.5%), low vision and paediatric optometry (2.8%) each and environmental Optometry (0.7%). About 58.7% felt they have received adequate information adequate information in the optometry management courses regarding the various modes of practice that will be available to them on graduation, while 62.2% felt that they have received adequate information in their practice management courses regarding the effects of various modes of practices in their professional/personal life and future (Oduntan *et al.* 2007).

Optometry students in clinical years are usually faced with the challenges of making a career choice in or outside optometry. In a study by Kobia-Acquah *et al.* (2020) to investigate the Career aspirations and factors influencing career choices of optometry students in Ghana, 209 students sampled from the two universities offering Optometry in Ghana were presented with questionnaires. It was observed that 64. % of the students aspired to be in clinical practice and Environmental/Occupational optometry was the most desired optometric interest area (28.7%). 26.8% of the students had only received career information from optometrist. Gender was observed to be a significant predictor of clinical practice amongst the respondents (p=0.024, OR=2.07), indicating that females were two times more likely to practice optometry than males. The institution of training and information on career opportunities training was found to be a predictor affecting the desire to go into academia/research as a career (p<0.05, OR=5.18). This indicated that students who had good/very good information on academia/research were approximately 5 times more likely to pursue academia/research than students who did not receive good information, showing the significance of knowledge and awareness in career decision process.

To investigate and compare the motivations, influences and expectations of Doctor of Optometry students studying in Canada and the United States of America, Samson, (2020) carried out a study in schools offering optometry as an undergraduate degree program in Canada and the United States of America.

In Canada, he observed that nearly all first-year students (93.4%) and all fourth-year students 42 (100%) said they would be interested in Private practice (Solo or Partnered). Students were also highly interested in Volunteer work, Corporate/ Retail practice, Hospital practice and Involvement with provincial or federal optometric associations. Half of both first- and fourth-year students intended to own a practice, 11.7% of first years and 17.9% of fourth years did not intend to own a practice, and the remaining students were unsure.

In America, the majority (92.8%) of students were interested in Private practice, while 30.9% were interested in Hospital practice, and 29.7% were interested in Corporate/ Retail practice. 36.4% of the students wanted to participate in Volunteer work, and just 30.5% wanted to continue their education via a Residency.

Mashige & Oduntan (2011) in a study to establish the factors which influenced students who were currently studying optometry in South African institutions, comprising 387 students of which 30.5% were males and 69.5% females, with a mean age of 20.73 ± 2.46, observed that 92.8% expressed the desire to help other people, 92% for job availability, 91.2% identified subjects passed and points which were obtained in the matric year while 88.6% identified the potential to earn a good salary. These results showed the impact of certain factors on the choice of students to study optometry as a profession, the decision on the career path to take is similarly affected by some or all of these factors. It was concluded that effective strategies be formulated to ensure the attraction of quality students is sustained in the different areas of the profession, one of which was through effective counselling.

The perception and expectations of newly enrolled optometry students in the optometry profession in optometry schools in northern India was assessed in a study by Anam *et al.* (2023), and it was observed that from the 152 responses collected online, 59.9% students selected optometry as the first choice, 61.2% knew that an optometrist can work as a researcher, 52.6% felt they should get salaries between 25000 – 35000 Indian nation rupees (339.63 – 475.48 US$) after completing the four years optometry profession. It was then concluded that newly enrolled students are aware about optometry profession and its scope but areas like salary expectations and required language skills were grey-areas for these students.

To elucidate the factors influencing the choice of optometry as a career for Saudi students, i.e the students’ perceptions of optometry and its effect on gender, Osuagwu *et al*. (2014) sampled 247 students with an average age of 21.7 ± 1.5 (SD) years and who were already enrolled in two colleges of optometry in Saudi Arabia. It was reported that as regards the first choice of careers, females were 0.4 times more likely to choose optometry than males and the males were observed to be significantly more likely to be influenced by factors such as good salary and the fact that the program ran at both universities and over two-thirds of the respondents viewed the desire to help others, professional prestige as the most influential factors in choosing a career in Optometry. It was concluded that females were more likely to opt for a career in optometry and that the provision of service to others in the community was the fundamental factor motivating their decision to pick a career in optometry among young Saudi students.

Boadi-Kusi *et al.* (2015), assessed the demographic characteristics of Ghanian optometry students and the factors that influenced their choice of a career in Optometry. In this study 280 students from 2 Optometry Institutions-University of Cape Coast (48.3%) and Kwame Nkrumah University of science and technology (51.8%), responded to a questionnaire. It was observed that the availability of job after graduation and the desire to help people were among the main factors influencing a career choice among the students. It was gathered that in the absence of adequate optometry jobs in the public health sector, women will remain marginalized specifically in the rural areas, pointing this to be due to the already existing societal disadvantage being faced by women.

In a more distant continent, in a bid to investigate the career awareness of students majoring in Optometry in Gyeongnam area in South Korea, 6 universities were surveyed using self-administered questionnaires by Kim *et al.* (2014). It was observed that 38% of the students chose optometry because they wanted to get a job and at the beginning of the program 55% thought their job title to be ‘Optician’ after graduation, and at the time of the study, 54% still believed this to be it. 73% wanted to be able to work less than 10 hours a day, with 2 days off a week and a monthly paid holiday. 37% indicated that they were willing to choose optical tasks even if they entered a company that is irrelevant with it.

# CHAPTER THREE

## 3.0 METHODOLOGY

## 3.1.0 RESEARCH DESIGN

This study was a descriptive cross-sectional study.

## 3.2.0 STUDY LOCATION

This study was conducted across 7 schools of Optometry namely; the University of Benin in Edo State, Abia State University in Abia State, Bayero University in Kano State, Imo State University in Imo State, Madonna University in Anambra state, the University of Ilorin in Kwara state and the Federal University of Technology in Imo state currently accredited to offer optometry undergraduate program.

## 3.3.0 STUDY POPULATION

The study population consisted of optometry students in Nigeria in clinical classes that meet the inclusion criteria.

## 3.4.0 SAMPLING METHOD

In each of the selected schools, a systematic sampling technique was used to ensure proportionate allocation until the required sample size is achieved. The proportion to be allocated to each selected school will be calculated by multiplying the sampling fraction (obtained by dividing the final minimum sample size with the total number of students across the different institutions offering optometry) with the total number of students in each selected training institution.

## 3.5.0 SAMPLE SIZE

The minimum sample size (n) was calculated using the Cochran formula used for descriptive studies.

n =

Where:

n = Minimum Sample Size.

Z = Standard normal deviation set at 1.96 (at 95% confidence interval).

p = proportion of the students who received adequate information on the various modes of practice available to them on graduation in a study carried out by Odunta *et al.* (2014) = 58.7% = 0.587

q = 1- p = 1-0.587 = 0.413

d = Degree of precision set at 0.05

Hence:

n =

= 372.5

To make room for non-response, 10% non-response rate was added to the minimum sample size, utilizing the formula for non-response rate.

Where;

nf = Adjusted sample size

n = Calculated sample size

nr = non-response rate = 10% = 0.1

ns = 372.5 **/ (**1**-**0.1) = 413.9

However, a sample size of 500 was used for the purpose of this study.

## 3.6.0 STUDY DURATION

This study was carried out within a period of 3 months (November 2023 to January 2024).

## 3.7.0 STUDY MATERIALS

The main tool for this study was a well-structured questionnaire which was converted to Google Forms to allow for ease of reach to the target population.

## 3.8.0 SELECTION CRITERIA

3.8.1 INCLUSION CRITERIA

1. Optometry students currently studying in Nigeria
2. Students in their 400L, 500L or 600L in the study location.
3. Students who gave consent and were willing to participate in the study.

3.8.2 EXCLUSION CRITERIA

1. Students who did not give their consent to participate in the study.
2. Students who were unable to fill out the Google forms online.
3. Students who had already written their final exams at the time of carrying out this study.

## 3.9.0 ETHICAL CONSIDERATION

Ethical clearance was obtained from the ethical committee of the Department of Optometry, University of Benin. Informed, written consent was obtained from the student after a detailed explanation in the Google form about the study according to the tenets of Helsinki. Only consenting students were used in this study.

## 3.10.0 PROCEDURE

The questionnaire contained a detailed explanation of the purpose of the procedure in Google form format which was administered to get the relevant data.

The questionnaire consisted of three (3) sections:

**Section A** contained questions on the socio-demographic characteristics of the study population. This included as age, gender, state of origin, training institution.

**Section B** consisted of questions to determine the level of awareness of these students about the career prospects in Optometry.

**Section C** consisted of questions to determine the level of knowledge about the career prospects in Optometry.

**Section D** consisted of questions to determine the perception about the career prospects in Optometry.

The recorded responses were then retrieved from the Google Cloud and were properly documented for analysis.

## 3.11.0 DATA ANALYSIS

All data from the field were retrieved, sorted appropriately into those containing information from the different schools, screened for completeness, collated, coded and analyzed using the electronic statistical package IBM SPSS version 26.0 and quantitative variables was expressed as frequencies, percentages, mean and standard deviation. The results obtained was then analyzed and presented in the form of frequency, tables and bar charts. Univariate analysis was done to assess the distribution of variables. The bivariate analysis was done to determine the association between the socio-demographic characteristics of respondents and the level of awareness and knowledge of the career prospects in Optometry. These tests of association for categorical variables were done using the Chi-square test or Fisher’s exact test (where the expected frequency was less than 5 in more than 20% of the cells) and binary logistic regression will be performed to assess the impact of the demographic factors on the likelihood that students would pursue either a career in clinical optometry or non-clinical optometry. A p-value <0.05 will be considered statistically significant.

3.11.1 SCORING

3.11.1.1 LEVEL OF AWARENESS

A scoring system was used to assess the level of awareness of the respondents with a total of 6 questions (including Multiple response questions) with the right responses given a score of “1” and the wrong responses given a score of “0”. The maximum score will be “21”. The cumulative scores were then obtained from the answers and converted to percentages. Respondents who scored ≥50% were considered to have a “good level of awareness” while respondents who scored <50% were considered to have a “poor level of awareness”.

A high level of awareness was declared when ≥70% of the respondents had a “good level of awareness” and a low level of awareness declared when <70% of the respondents had a “poor level of awareness”.

3.11.1.2 LEVEL OF KNOWLEDGE

A scoring system was used to assess the level of knowledge of the respondents with a total of 11 questions (including Multiple response questions) with the right responses given a score of “1” and the wrong responses given a score of “0”. The maximum score was “10”. The cumulative scores were then obtained from the answers and converted to percentages. Respondents who scored ≥50% were considered to have a “good level of knowledge” while respondents who scored <50% were considered to have a “poor level of knowledge”.

A high level of knowledge was declared when ≥70% of the respondents had a “good level of knowledge” and a low level of knowledge declared when <70% of the respondents had a “poor level of knowledge”.

3.11.1.3 LEVEL OF PERCEPTION

A scoring system was used to assess the level of perception of the respondents with a total of 5 questions (including Multiple response questions) with the right responses given a score of “1” and the wrong responses given a score of “0”. The maximum score was “5”. The cumulative scores were then obtained from the answers and converted to percentages. Respondents who scored ≥50% were considered to have a “good perception” while respondents who scored <50% were considered to have a “poor perception”.

A high level of good perception was declared when ≥70% of the respondents had a “good perception” and a low level of knowledge declared when <70% of the respondents had a “poor perception”.

## 3.12.0 LIMITATION OF STUDY

This study was carried out using Google Forms in other to ensure a wider reach of the target audience. Some respondents who fell within the inclusion criteria were not online at the time of carrying out the study to get their responses.

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**DEPARTMENT OF OPTOMETRY, FACULTY OF LIFE SCIENCE,**

**UNIVERSITY OF BENIN,**

**AWARENESS AND KNOWLEDGE OF THE CAREER PROSPECTS IN OPTOMETRY AMONG OPTOMETRY STUDENTS IN NIGERIA.**

I am a 600-level Optometry Student at the University of Benin, Benin City. This questionnaire is designed to assess the level of awareness and knowledge of the career prospects in optometry among optometry students in Nigeria. All information given will be treated as confidential. Thank you.

**SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS**

1. Age (as at last birthday) in years: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Sex: Male ( ) Female ( )
3. State of Origin: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Institution of training: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Current Level in the institution of training: 400L ( ) 500L ( ) 600L ( )

**SECTION B: LEVEL OF AWARENESS**

1. Was Optometry your first choice when coming to the university? Yes ( ) No ( )
2. Do you intend to practice optometry after you graduate? Yes ( ) No ( ) I don’t know yet ( )
3. If yes, how do you intend to practice? \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ (I don’t know yet ( ))
4. Which of the following is/are areas of speciality in Optometry? Geriatrics ( ) Low vision ( ) Environmental and occupational ( ) Binocular vision ( ) Contact lens ( ) General practice ( ) Behavioural ( ) Sports vision ( ) Ocular disease ( ) Paediatrics ( ) Others (specify) \_\_\_\_\_\_\_\_\_(MRQ)
5. Have you heard of the optometry fellowship program? Yes ( ) No ( )
6. An optometrist can engage in which of these? Clinical practice ( ) non-clinical practice ( )
7. An optometrist can be a researcher. Yes ( ) No ( )
8. An Optometrist can work in which of the following? Clinic ( ) Ministry of Health ( ) Road Safety Corps ( ) Sports organisation ( ) IT organisations ( ) Research institutes ( ) University ( ) Hotel and hospitality ( )

**SECTION C: LEVEL OF KNOWLEDGE**

1. Which of the following is an aspect of optometry that deals with care for old people's vision? Geriatrics ( ) Low vision ( ) Environmental and occupational ( ) Binocular vision ( ) Contact lens ( ) General practice ( ) Behavioural ( ) Sports vision ( ) Ocular disease ( ) Others (specify) \_\_\_\_\_\_\_\_\_(MRQ)
2. Which of the following is an aspect of optometry that deals with care vision in sports? Geriatrics ( ) Low vision ( ) Environmental and occupational ( ) Binocular vision ( ) Contact lens ( ) General practice ( ) Behavioural ( ) Sports vision ( ) Ocular disease ( ) Others (specify) \_\_\_\_\_\_\_\_\_(MRQ)
3. Which of the following is an aspect of optometry that deals with specialised care according to occupation? Geriatrics ( ) Low vision ( ) Environmental and occupational ( ) Binocular vision ( ) Contact lens ( ) General practice ( ) Behavioural ( ) Sports vision ( ) Ocular disease ( ) Others (specify) \_\_\_\_\_\_\_\_\_(MRQ)
4. An optometrist can practice in the clinic and still be a researcher. Yes ( ) No ( )
5. An optometrist can practice in the clinic and still be an administrator in a public Agency. Yes ( ) No ( )
6. An optometrist can work with tech companies such as Google, Microsoft etc. Yes ( ) No ( )
7. An optometrist can become a lecturer without a master’s degree. Yes ( ) No ( )
8. Which of the following is a program which allows you to receive highly specialised training following residency training? Masters program ( ) Fellowship program ( ) Specialty program ( )
9. Only a lecturing optometrist can become a professor (PhD). Yes ( ) No ( )
10. An optometrist can only have a master’s program in Optometry Yes ( ) No ( )

**SECTION D: PERCEPTION**

1. There are not a lot of career opportunities for optometrists. Yes ( ) No ( ) I don’t know ( )
2. An Optometrist cannot work in a multidisciplinary Hospital. Yes ( ) No ( ) I don’t know ( )
3. It is better for an Optometrist to work in a clinic than elsewhere. Yes ( ) No ( ) I don’t know ( )
4. A career in Optometry will be boring due to its monotony. Yes ( ) No ( ) I don’t know ( )
5. A career in Optometry will not give me the kind of life and money I want. Yes ( ) No ( ) I don’t know ( )
6. After answering these questions, have your intentions of practising changed? Yes ( ) No ( )
7. If yes, how do you intend to practice? \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ (I still don’t know yet ( ))

THANK YOU FOR YOUR PARTICIPATION.