


RESEARCH NOTE

Open Access



Ugandan optometry students' experiences of their clinical training: a qualitative study

Boaz Mucunguzi^{1*} , Walker Guti¹, Moreen Tumwine², Aloysius G. Mubuuke³, Ian Munabi⁴, Arild Raaheim⁵ and Sarah Kiguli⁶

Abstract

Background There is a gradual increase in the number of optometry education programs in Africa yet there is limited knowledge on optometry students' experiences of their clinical training. Therefore, the purpose of this study was to explore the optometry students' experiences of their clinical learning environment at a national referral and teaching hospital in Uganda.

Methods Between April 2023 and May 2023, face to face in-depth interviews were conducted to explore the experiences of the participants. All 16 optometry students in fourth-year at university were purposefully recruited into the study. Data was collected at the end of the students' clinical training at the eye clinic of a national referral and teaching hospital. Interviews were audio recorded and transcribed for analysis using an inductive thematic approach.

Results Two themes, learning at the eye clinic and organization of the eye clinic, were identified to represent participants' experiences. Each theme had three sub themes.

Conclusion Training optometry students at an eye clinic enhances their clinical skills and knowledge of diagnosing and managing various eye conditions. Future studies should compare optometry students' experiences in lower-level health units to those in national referral hospitals.

Keywords Optometry, Clinical training, Clinical learning environment

Introduction

Africa has seen an increase in optometry education programs [1] with 16 new programs established over the last decade [2]. In Uganda, the 4-year Bachelor of Optometry degree program started in 2014 and is currently offered in one institution, Makerere University College of Health Sciences (MakCHS). The optometry curriculum encompasses theoretical, practical and clinical modules [3] and exposes students to specialty areas in optometry, clinical optometry, biomedical and visual sciences, research, public health and ethics [2, 3]. The program at MakCHS trains category 3 optometrists on the Global Competency-Based Model of Scope of Practice in Optometry [4].

*Correspondence:

Boaz Mucunguzi
mucunguziboaz18@gmail.com

¹College of Health Sciences, Makerere University, P.O. Box 7072, Kampala, Uganda

²Faculty of Allied Health Sciences, Kampala International University in Tanzania (KIUT), Dar es Salaam, Tanzania

³Department of Radiology, School of Medicine & Centre for Health Professions Education, College of Health Sciences, Makerere University, Kampala, Uganda

⁴Anatomy Department, School of Biomedical Sciences, College of Health Sciences, Makerere University, Kampala, Uganda

⁵Department of Education, Faculty of Psychology, University of Bergen, Bergen, Norway

⁶Department of pediatrics and child health, School of Medicine & Centre for Health Professions Education, College of Health Sciences, Makerere University, Kampala, Uganda



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

With the increasing number of optometry programs, it is important to understand students' clinical training (CT). However, there is limited knowledge on optometry students' experiences of the clinical learning environment (CLE) within low resource settings. At MakCHS, students undertake their CT from three sites; Optometry Teaching Clinic, Makerere University Hospital, and eye clinic at Mulago National Referral and Teaching Hospital (MNRTH). The purpose of the study was to explore the optometry students' experiences of their CLE at MNRTH in Uganda.

Methods

Study design and setting

This was a qualitative study involving undergraduate fourth year optometry students at MakCHS. During fourth year, students undergo an eight week long CT in the eye clinic at MNRTH. All the 16 students were purposefully recruited into the study at the end of this period. MNRTH is located on Mulago Hill in the north of Kampala Capital City, west of MakCHS. The eye clinic is staffed by Ophthalmologists, Senior Housing Officers (SHOs), Ophthalmic Clinical Officers, Nurses, and MakCHS faculty including optometrist lecturers.

Data collection and analysis

An experienced researcher used open-ended questions followed by probing questions [5] in one on one face-to-face in-depth interviews conducted between April 2023 and May 2023. The principal investigator, a graduate optometrist, took notes of his thoughts and the non-verbal cues. Data saturation [6] was achieved after twelve interviews. Four participants were added to ensure that no information was abandoned. The audio recorded interviews lasted 30 to 45 min and were stored in a password protected file. Two researchers transcribed the audios and cleaned the transcripts to make meaningful texts. Audios and transcripts were named with unique identifiers for each participant. Three researchers separately listened to each audio against its corresponding

transcript to get familiar with the data. Weekly meetings were held for peer debriefing and triangulation [7].

All data was captured and tabulated into initial codes. A code manual was developed to define each code. The initial codes were discussed against the transcripts, reflexive notes and field notes. The final table of codes was taken for each member to separately search for themes. Researchers documented reflexive notes about their judgements during the searching process. Codes that had similar meanings were grouped under different sub themes and related subthemes were categorized together to generate themes [6]. The researchers went back and forth to make sure that the themes were strongly linked to the raw data [7]. Emerging themes were member checked [8] and there were no changes suggested.

Results

Participants' demographic information

The study comprised of 16 participants, 7 female and 9 male optometry students. 13 of these were aged between 21 and 25 years. Majority ($n=13$) were direct entrants with a Uganda Advanced Certificate of Education while the remaining 3 held a diploma in ophthalmic clinical medicine.

Themes identified from the data

Theme A: Teaching and learning at the eye clinic

Sub theme A1: First day of clinical training

On the first day, students received pre-placement briefing where faculty provided an overview and objectives of the CT, and an on-site tour around the eye clinic premises. These sessions helped students to become familiar with the clinical setting.

We received briefing from our lecturers. They provided an overview and objectives of the rotation (Participant B).

The senior nurse took us around and explained the

Table 1 Themes, sub themes and key codes from the data

Theme A: Teaching and learning at the eye clinic

Sub-Themes	Key Codes
A1: First day of clinical training	Briefing, Overview, On-site tour, Orientation, Excitement, Anxiety, Nervousness
A2: Students' roles at the eye clinic.	Patient care, Hands on practice, Observation Patient interactions, Independent assessment, Discussions, History taking, Refractions, Visual acuity tests, Tonometry, Binocular vision assessments.
A3: Learning outcomes from the eye clinic.	Effective communication, Decision-making, Critical thinking, Confidence, Objective and subjective refraction, Patient history, Binocular vision testing, Visual testing for children, Compassion, Empathy, Patient-centered care, Diagnosing and managing eye conditions
Theme B: Organization of the eye clinic	
B1: Sections of the eye clinic	Optometry, Ophthalmology
B2: Management of the eye clinic	A consultant ophthalmologist, Optometry lecturer, A senior nurse
B3: Supervision at the eye clinic.	Optometry lecturers, Optometrist interns, Ophthalmologists, Senior Housing Officers, Support and guidance

different activities conducted. The orientation gave us an understanding of the clinic setup (Participant A).

Participants reported mixed feelings of excitement, stress, anxiety, nervousness, uncertainty and hesitation to actively engage with hospital staff. Students' emotions were attributed to a lot of expectations to perform, feelings of inferiority and the new experience at the clinic.

I have to admit that I felt a bit anxious... It was a new experience for me (Participant F).

I hesitated to actively engage with them, fearing that my knowledge might not be sufficient to match theirs (Participant L).

However, they reported a gradual gain of confidence and active participation in discussions with the staff, and other activities at the eye clinic. This also improved their skills over time.

I became more accustomed to the routine and understood the limitations and expectations of the rotation (Participant D).

Sub-theme A2: Students' roles at the eye clinic

Respondents mentioned that they engaged in patient care through hands on practice and observation from hospital staff as well as fellow students.

Each of us worked independently with the patients to assess and manage their needs (Participant C).

Despite individual patient interactions, the students shared their experiences by discussing different cases amongst themselves. Students described these discussions as an opportunity for learning from one another's experiences.

We share our experiences and discuss different cases (Participant E).

Students conducted a range of activities in eye care such as history taking, refractions, visual acuity tests, tonometry, and binocular vision assessments. They mentioned that they did not carry out slit lamp examinations, color vision and stereopsis tests while at the clinic.

On the optometry side, we conduct procedures such as refractions and binocular vision assessments (Participant E).

However, we don't do slit lamp, color vision and stereopsis tests (Participant C).

Sub-theme A3: Learning outcomes from the eye clinic

Student expanded their knowledge in diagnosing and managing various eye conditions. They developed skills in refraction, visual acuity testing for children, and managing binocular vision conditions; and attitudes such as empathy, effective communication, and confidence which are essential for optometry practice.

I became more proficient in performing accurate refractions (Participant N).

My communication skills improved as I explained the diagnosis and treatment options to patients in an understandable way (Participant F).

Theme B: Organization of the eye clinic

Sub-theme B1: Sections of the eye clinic

The eye clinic was divided into two sections from which optometry students undertook their CT. In the optometry section, students performed hands-on practices while in the ophthalmology section, they primarily observed from the staff.

In the optometry clinic we do more practical tasks, such as refraction and binocular vision. The ophthalmology clinic provided a great opportunity to observe rare cases (Participant B).

Sub-theme B2: Management of the eye clinic

A consultant ophthalmologist headed the eye clinic and an optometry lecturer managed the optometry section. There was a senior nurse who ran the day-to-day activities of the clinic and offered additional support.

Our lecturer oversees the clinic and manage its operations (Participant I).

If we have any specific concerns, we go to the nurse for assistance (Participant F).

Sub-theme B3: Supervision at the eye clinic

Supervision was provided by optometry lecturers, hospital staff, and optometrist interns who had recently graduated. These were responsible for monitoring students' progress and providing guidance throughout their CT.

In the optometry clinic, supervision is provided by our lecturers, and interns (Participant K).

Ophthalmologists and SHOs ensure that we receive the necessary support and instruction in the ophthalmology side (Participant G).

Respondents mentioned that the supervisors were supportive and always ready to guide and correct them. They advised students on approaching complex situations, and shared their expertise which enhanced students' learning experiences and helped in refining their clinical skills.

They shared their knowledge and advised us on how to approach specific patient cases and challenging scenarios (Participant P).

Discussion

The current study explored the experiences of optometry students in the CLE at the eye clinic of MNRTH in Uganda. Key findings from the study (Table 1) indicate that students' CT was characterized by initial feelings of anxiety and a gradual gain of confidence and skills under the support of their supervisors during patient interactions.

This study highlights the importance of communicating the objectives of CT prior to exposing students to the CLE. Briefing sessions can help students in gaining the picture and expectations of the clinical setting. Anticipating the context of real-life application of theoretical knowledge in a clinical setting may cause feelings of anxiety, stress and nervousness among students. Educators should utilize their own experiences and those of previous students to effectively communicate with the aim of alleviating such feelings in students entering the CLE for the first time.

The current study emphasizes students' transformative journey from initial hesitancy and feelings of inferiority to increased confidence and active engagement. This is possibly because, with time, students become familiar with the CLE and hence overcome personal fears and self-doubt. Similar findings were reported in an Australian study in which students experienced an initial phase of apprehension and uncertainty followed by a gradual development of a sense of comfort [9]. Educators and supervisors should closely monitor students' progress in order to identify and help students who may have difficulty in coping with the CLE.

Learning within the clinical setting is majorly through patient interaction, and hence the learning process directly impact patient's lives [10]. It is essential that clinical educators pay attention to the order in which hands-on practice and observation approaches are used in CT.

For patient safety, students should observe from senior hospital staff and faculty before they can undertake hands-on practice. This way, students would first understand the basic procedures, and how to handle patients in a clinical setting. CLEs have a common task to offer the best patient care while maintaining the maximum level of education for the students [10] yet the patients' safety and needs are the primary focus and must be maintained [11].

A good organization and management structure is essential in ensuring an efficient and effective CLE. It is important that students get acquainted with the structure and functioning of the clinical setting so that they can appropriately address any issues occurring within the clinic. Similar findings were reported in a study by Adam et al. [12] that students' satisfaction and successful learning is likely to occur in a well-structured and organized CLE.

Similar to findings from a study by Denial et al. [10], the current study shows that good supervision is a key factor in enhancing students' experiences during their CT. Supervisors should be approachable and willing to support students in different aspects of the training. When the gap between the supervisor and the student is reduced, their comments, suggestions and evaluations can significantly foster improvement in the students' performance, help to boost their confidence, motivation, and skill-building.

The optometry students' experiences noted in the current study do not differ from those in Ghana [1], Australia [4], and USA [10, 13] where the final year is characterized by intense clinical experiences and complete care of patients under supervision. Similarly, CT enhances students' clinical skills, confidence, and communication skills [4, 10]. The CT outcomes yield competencies to detect and manage refractive errors, binocular vision problems, ocular disease, and pediatric conditions as stated by World Council of Optometry [14]. Participants noted that aspects of optometry such as contact lenses, low vision, color vision, slit lamp examination, and diagnostics that are not encountered at MNRTH, are performed from other training sites.

Conclusion

The present study shows that training optometry students from eye clinics enhances their clinical skills and knowledge of diagnosing and managing various eye conditions. Optometry students should be exposed to eye clinics at different levels in the health care system for a wider experience before independent professional practice. To provide a comprehensive clinical experience, it is recommended to include slit lamp examination for optometry students in CT at all sites. Future studies should compare

optometry students' experiences in lower-level health units to those in national referral hospitals.

Limitations

The study was conducted at one institution and the specific context, such as staffing, infrastructure, and patient demographics, may not fully capture variations in CLEs across different optometry programs.

Abbreviations

CLE	Clinical learning environment
CT	Clinical training
MakCHS	Makerere University College of Health Sciences
MNRTH	Mulago National Referral and Teaching Hospital
SHO	Senior Housing Officer

Acknowledgements

We thank the optometry students for their time and participation in this study. We thank the HePed project, a NORPART project which facilitated the first author's visit to the University of Bergen in Norway under grant number NORPART-2021/10358, from where he drafted the manuscript.

Author contributions

BM conceptualized the idea, designed the study, and participated in data collection, analysis and writing the manuscript draft. WG and MT participated in designing the study, and data analysis. AGM and IM offered supervision during the study process. AR participated in preparation and proof-reading the manuscript draft. SK participated in acquisition of funds that supported the study, and supervision.

Funding

The study was supported by the Fogarty International Center of the National Institutes of Health under Award Number 1R25TW011213. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Data availability

The datasets generated and/or analysed during the current study are available in the Makerere University Institutional Repository, [<http://hdl.handle.net/10570/12188>].

Declarations

Ethics approval and consent to participate

This study was approved by the School of Medicine Research and Ethics Committee of MakCHS (Mak-SOMREC-2022-489). Participants provided written informed consent, and all data collection and analysis processes were according to the guidelines and regulations of the declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 17 April 2024 / Accepted: 26 September 2024

Published online: 07 October 2024

References

1. Kobia-Acquah E, Owusu E, Akuffo KO, Koomson NY, Pascal TM. Career aspirations and factors influencing career choices of optometry students in Ghana. *PLoS ONE*. 2020;15(5):e0233862.
2. Abu SL. The history and current status of Optometric Education in Africa. *Hindsight: J Optometry History*. 2020;51(4):84–92.
3. Moodley VR. Towards a culture of quality assurance in optometric education in sub-saharan Africa. *Afr Vis Eye Health*. 2019;78(1):1–8.
4. Kiely PM, Chappell R. A global competency based model of scope of practice in optometry. *World Council of Optometry*; 2015.
5. Krueger RA, Casey MA. Designing and conducting focus group interviews. *Citeseer*; 2002. p. 18.
6. Tavakol M, Sandars J. Quantitative and qualitative methods in medical education research: AMEE Guide 90: part II. *Med Teach*. 2014;36(10):838–48.
7. Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: striving to meet the trustworthiness criteria. *Int J Qualitative Methods*. 2017;16(1):1609406917733847.
8. Yilmaz K. Comparison of quantitative and qualitative research traditions: epistemological, theoretical, and methodological differences. *Eur J Educ*. 2013;48(2):311–25.
9. Kirkman JM, Bentley SA, Armitage JA, Wood-Bradley RJ, Woods CA. Student perspectives of extended clinical placements in optometry: a qualitative study. *BMC Med Educ*. 2022;22(1):59.
10. Denial A, Nehmad L, Appel J. Student and Faculty perceptions of factors influencing the clinical learning experience. *Optom Educ*. 2011;37(1).
11. McSharry E, McGloin H, Frizzell AM, Winters-O'Donnell L. The role of the nurse lecturer in clinical practice in the Republic of Ireland. *Nurse Educ Pract*. 2010;10(4):189–95.
12. Adam AB, Druye AA, Kumi-Kyereme A, Osman W, Alhassan A. Nursing and midwifery students' satisfaction with their clinical rotation experience: the role of the clinical learning environment. *Nursing research and practice*. 2021;2021.
13. Denial A. Association of critical thinking skills with clinical performance in Fourth-Year Optometry Students. *Optom Educ*. 2008;33(3).
14. WCO Competency Framework for Optometry. Saint Louis, Missouri: World Council of Optometry; 2024.

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.