



## ORIGINAL ARTICLE

# Evaluations of refraction competencies of ophthalmic technicians in Mozambique



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### KEYWORDS

Refraction;  
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Upskilling;  
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### Abstract

**Purpose:** Ophthalmic technicians (OT) work at health facilities in Mozambique and are trained to provide primary and secondary eye care services including basic refraction. This study was designed to assess OT competence and confidence in refraction, and investigate whether an upskilling programme is effective in developing their competence and confidence at refraction. **Methods:** Thirty-one trainee OTs and 16 qualified OTs were recruited to the study. A background questionnaire was administered to determine the demographic profile of the OTs. A confidence levels questionnaire explored their self-reported skills. Clinical competencies were assessed in relation to knowledge (theory exam) and clinical skills (patient exams). 11 OTs were upskilled and the clinical evaluations carried out post training.

**Results:** Initial evaluations demonstrated that confidence and competence levels varied depending on the OTs training (location and duration), and their location of work (clinical load, availability of equipment and other eye care personnel). The qualified OTs were more competent than trainee OTs in most of the evaluations. Post upskilling results demonstrated significant positive impact on confidence and competence levels.

**Conclusion:** These evaluations identified factors affecting the refraction competencies of the OTs and demonstrated that upskilling is effective in improving confidence and competence levels for refraction. They demonstrate the need for a refraction competency framework. The overarching aim of this research was to inform the development of a nationwide programme of OT mentoring, upskilling and leading to the establishment of clinical competency standards for the new OT curricula, relevant to the professional demands.

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**PALABRAS CLAVE**

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Incremento de  
conocimientos;  
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## Evaluaciones de las competencias sobre refracción de los técnicos oftálmicos en Mozambique

**Resumen**

**Objetivo:** Los Técnicos Oftálmicos (TO) trabajan en los centros sanitarios de Mozambique, y están formados para aportar servicios de cuidados oculares primarios y secundarios que incluyen la refracción básica. Este estudio fue diseñado para evaluar la competencia y seguridad de los TO en cuanto a refracción, así como investigar la eficacia de un programa para incrementar sus conocimientos para desarrollar la competencia y seguridad en la refracción.

**Métodos:** Para el estudio se reclutó a treinta y un TO en formación y a dieciséis TO cualificados. Se les proporcionó un cuestionario de antecedentes, para determinar el perfil demográfico de los TO. Un cuestionario sobre los niveles de seguridad exploró sus técnicas auto-reportadas. Las competencias clínicas se evaluaron en relación al conocimiento (examen teórico) y las habilidades clínicas (evaluación de los pacientes). Se incrementaron los conocimientos de 11 TO, realizándose la evaluación clínica tras su formación.

**Resultados:** Las evaluaciones iniciales demostraron que los niveles de seguridad y competencia variaban dependiendo de la formación del TO (emplazamiento y duración), y de su emplazamiento de trabajo (carga clínica, disponibilidad de equipos y de personal adicional de cuidados oculares). Los TO cualificados fueron más competentes que los TO en formación en la mayoría de las evaluaciones. Los resultados tras el incremento de conocimientos demostró un impacto considerablemente positivo sobre los niveles de seguridad y competencia.

**Conclusión:** Estas evaluaciones identificaron aquellos factores que afectan a las competencias sobre refracción de los TO, y demostraron que el incremento de conocimientos es eficaz para mejorar los niveles de seguridad y competencia en cuanto a refracción. Demostraron la necesidad de un marco de competencias en refracción. El objetivo más importante de esta investigación fue el de informar sobre el desarrollo de un programa nacional de tutelaje e incremento de conocimientos de los TO, encaminado a establecer los estándares de competencia clínica para los currículum de los nuevos TO, que sean relevantes para las demandas profesionales.

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**Introduction**

Africa is characterised by an extreme paucity of eye care personnel and facilities.<sup>1</sup> Currently, eye care in Africa is provided by a range of professional cadres including ophthalmic nurses, ophthalmic assistants, refractionists, ophthalmic technicians (OT), optometrists and ophthalmologists.<sup>1</sup> VISION 2020 targets suggest each country should aim to achieve a ratio of one eye care personnel who can perform refractions per 50,000 people by 2020.<sup>2</sup> Based on the recommended VISION 2020 figures, Mozambique would need at least 500 trained eye care personnel to serve its population of 25 million by 2020.<sup>2</sup> In Mozambique, in 2011 when this study commenced, there were 13 ophthalmologists and 34 qualified ophthalmic technicians (OT).<sup>3</sup>

The scarcity of health professionals with sufficient training motivated a Ministry of Health (MISAU) decision to start an 18-month competency-based OT specialist-training programme in order to educate additional OTs. 31 students working as nurses or health agents (18-month training) were enrolled on the course. Curricula to train mid-level eye care (MLEP) vary significantly across countries based on local need.<sup>4</sup> The emphasis is on a shorter training duration due to a lack of other trained personnel.<sup>5</sup> The curriculum was adapted from the Institute of Health Science (IHS) OT curriculum from 1996.

The course outcomes are broad with no defined list of refraction competencies. They state that the OT should be competent in managing refractive errors and prescribing spectacles. The course syllabus for refractive error includes a module on refractive error (diagnosing myopia, hyperopia, astigmatism, aphakia, anisometropia and presbopia; clinical refraction including retinoscopy and subjective refraction; and prescribing glasses for children) and anomalies of accommodation (accommodation insufficiency, paralysis, spasm, convergence/accommodation ratio and effects of refractive error on accommodation and convergence). The refraction component consisted of 40 h of theory and 40 h for practical sessions however this was condensed to a three-week period (two weeks theory, one week practical) within the overall curriculum. There was no known validation of the programme. The students completed a portfolio stating they had completed five refractions to make them eligible for the final clinical evaluation. However, competency in refractive error was not assessed during their training. There was no framework in place to evaluate refraction skills. This was the first known evaluation of OTs refraction competencies.

The development of competency-based education for MLEP has been identified as an important component in the solution to avoidable blindness and vision impairment.<sup>6</sup> A competency is defined as the ability to perform the activities within an occupation to the standard expected

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