Portable Devices for Detection of Glaucoma in Community Health Care Settings in Nigeria

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Background

The aim of this study is to determine the performance of portable diagnostic tests for identifying people with possible glaucoma and evaluate their use in a community clinical setting to support earlier detection of glaucoma in adults in Abuja, Nigeria.

Introduction

- Accessibility and affordability are some of the major challenges of glaucoma management in Low & Middle Income Countries (LMICs).
- The WHO calls called on countries to place a renewed emphasis on incorporating Primary Eye Care (PEC) services into Primary Healthcare (PHC).
- This has led to the PHC system universally adopting PEC in LMICs, with the aim of addressing basic eye health needs in the community.
- Detection of glaucoma is usually challenging as multiple investigations using different equipment are required and no screening protocol is available outside clinic settings.

Materials and Methods

This was a feasibility study which was conducted in 2 phases.

Phase I: How do portable devices compare to standard glaucoma diagnostic tests with regards to effectiveness, diagnostic ability and ease of use in an ophthalmology clinic in Nigeria?

Portable devices compared included;

- PEEK acuity vs LogMAR chart
- PEEK contrast vs Pelli Robertson chart
- iCare vs Goldman Applanation Tonometer (GAT)
- Eyecatcher vs Humphrey visual field analyser
- Remidio fundus camera vs Fundus slitlamp examination with 78D lens

Participants were recruited from the Eye clinic of University of Abuja Teaching Hospital, Gwagwalada, Nigeria.

Phase II: How do the portable diagnostic tests perform in identifying people with glaucoma in community health settings and referred for further management?

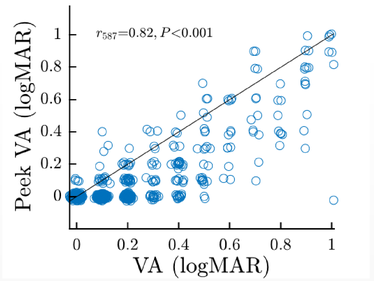
Participants in this phase of the study are patients attending the community health centres and other members of the community.

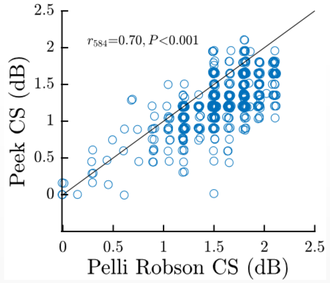
Results

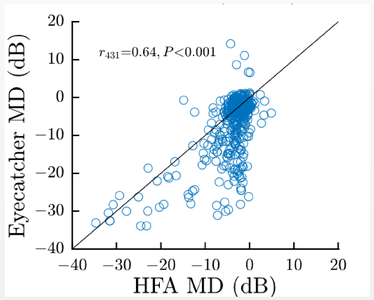
Phase I:

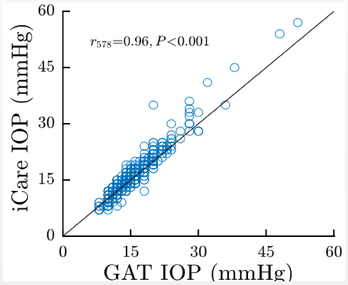
624 eyes from **312** participants were recruited for this phase of the study

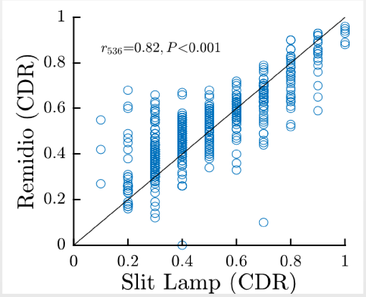
589 eyes were enrolled for the analysis based on the study's eligibility criteria

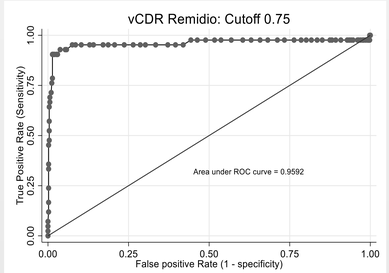












Discussion

- A strong linear correlation with a positive slope is seen between GAT vs icare tonometer and Remidio fundus camera and clinical evaluation of optic disc
- Correlation between other devices (Logmar vs PEEK VA, Pelli Robson vs PEEK contrast sensitivity charts and Humphrey vs Eyecatcher visual field analysers) shows a positive but weaker correlation.
- Glaucoma diagnostic cut-off point was set at vertical Cup Disc Ratio (CDR) of 0.75 and Humphrey -6.00dB. This will explain the high area under the ROC curve with the remidio fundus camera.

Next Phase

- Phase II: A total 2246 participants were recruited in this phase of the study from 4 health centres (3 PHCs and 1 Secondary centre)
- Community health workers in each of the health centres were trained on how to use the portable devices and to detect glaucoma based on a specific guidelines.
- Portable devices used include; PEEK VA, icare tonometer, Remidio fundus camera and Eyecatcher
- Data is currently been analysed.

Conclusion

Portable devices could play an important role in the screening/detection of glaucoma in community health centres. This is an important aspect to explore in the fight against blindness due to glaucoma especially in LMICs where accessibility and affordability are some of the major challenges in the early detection and management of glaucoma.

Literature Cited

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