A survey to measure UK audiologists' otoscopic examination accuracy using video-otoscopic images

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Introduction

Otoscopy is one of the primary tools used by audiologists and will be conducted in almost all audiology appointments. Current training for audiologists focuses on performing otoscopy safely and identifying when onward referral may be required. However, minimal data exists for the reliability of, or confidence in, otoscopy skills of audiologists in the UK.

Project aims:

- Evaluate the confidence of UK audiologists when interpreting high quality otoscopy images.
- Assess the accuracy of interpretation of high quality otoscopic images for UK audiologists.

Methods

- An online otoscopy quiz was developed using high-quality video otoscopic images.
- Two consultant otologists independently described a range of images and rated image quality.
- A total of 25 images were used in the quiz where there was agreement between the otologists and images were rated as high quality.
- Each question was split into two parts: 1) whether the image was normal or abnormal; 2) identification of pathologies (multiple choice).
- Audiologists in the UK were invited to take the quiz.

Participants

A total of 402 UK audiologists completed the quiz. Figure 1 shows the experience and qualifications of the participants.

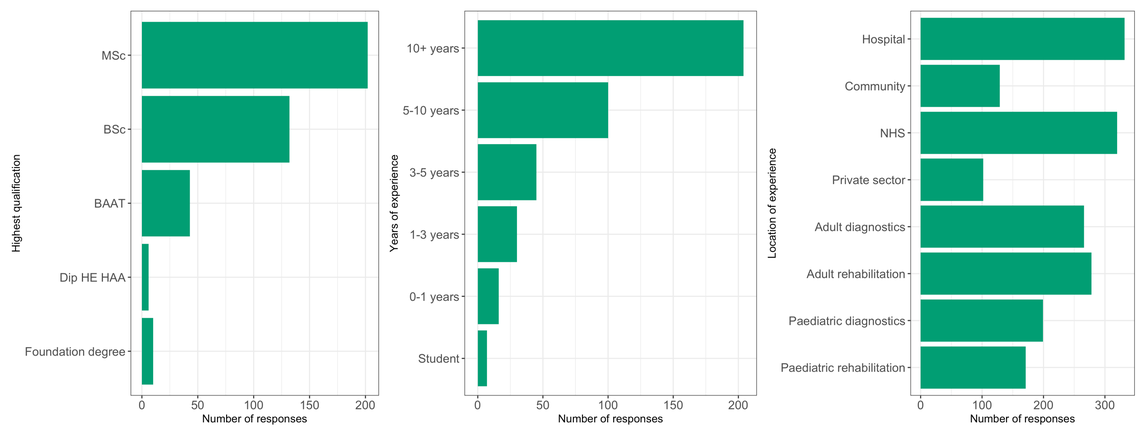

Figure 1 Distribution of demographic information. Panel A shows highest qualification, panel B shows years of experience, panel C shows location of experience.

Results

Participants had significantly greater confidence in their ability to identify whether an ear appeared normal or abnormal compared to their ability to identify a particular pathology (p<.001; Figure 2).

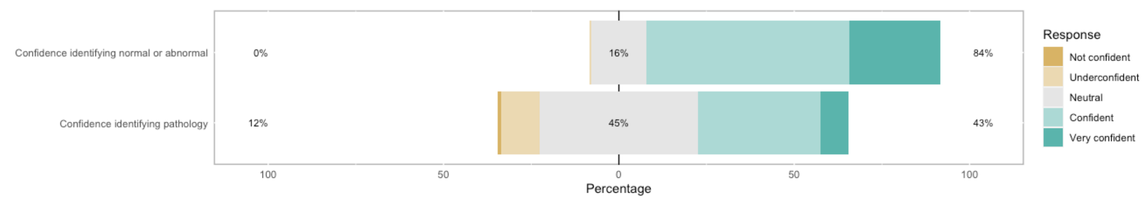

Figure 2 Audiologists' reported confidence levels in conducting otoscopy.

- There was no significant association between ability to distinguish between normal and abnormal ears and any factors including confidence, years of experience or qualifications.
- There was a significant relationship between confidence and the ability to identify of pathologies (p=.007; Figure 3).
- There was no relationship between the ability to identify pathologies and either years of experience or qualification.

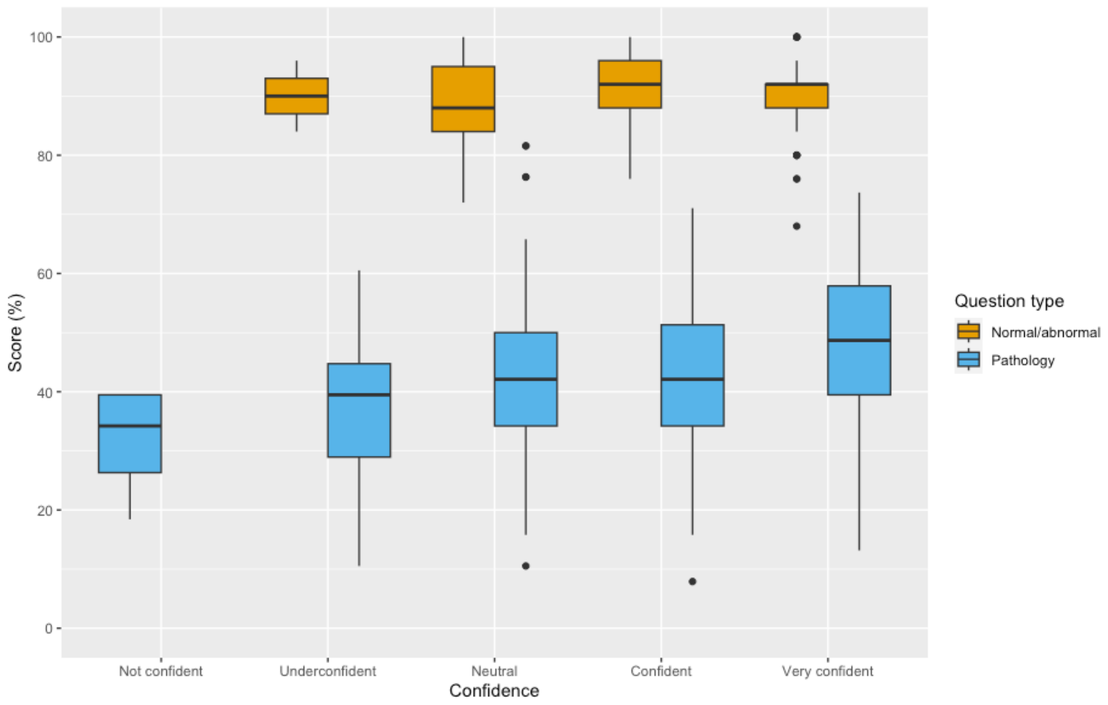

Figure 3 Relationships between quiz scores and confidence.

- Nineteen abnormal images were presented and 95.5% of participants correctly classified these as abnormal.
- Six normal images were presented and 71.6% of participants correctly classified these as normal.
- Some pathologies were correctly classified more often than others (Table 1).

Table 1 Correct identification of pathologies.

Pathology	Number of images	% correctly identified
Grommet	1	97.01
Tympanic membrane perforation	3	89.47
Cholesteatoma	1	76.87
Tympanosclerosis	9	58.51
Retraction	7	40.37
Acute otitis media	2	38.93
Active infection	1	35.32
Otitis media with effusion	4	23.94

Discussion

- UK audiologists are excellent at identifying otoscopic abnormalities and they are also confident about this part of their role.
- Audiologists are less confident and less proficient at correctly identifying specific pathologies.
- Results suggest that audiologists know their limitations when identifying pathologies as those with more confidence are more proficient.
- Further training may allow audiologists to give more comprehensive information to ENT colleagues and to appropriately identify urgent and non-urgent referrals.

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