

GASOC Global Surgery Prize

35 Comparative Performance of Prediction Model, Non-Expert and Tele-Diagnosis of Common External and Middle Ear Disease Using A Patient Cohort from Cambodia That Included One Hundred and Thirty-Eight Ears

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Introduction: Globally 6% of the population suffers from disabling hearing loss and the majority resides in low- and middle-income countries, but diagnosis and treatment are hampered by poor availability of expert diagnosis. We compared the utility of tele-diagnosis, non-expert diagnosis, and prediction model diagnosis as a screening tool for common external and middle ear disorders.

Method: We recruited consecutive adult and paediatric patients presenting with ear or hearing symptoms to ENT outpatients at Children's Surgical Centre, Cambodia. Each participant underwent sequential symptomatic and otoscopic assessment by a non-specialist and an ENT specialist. The non-specialist captured data using a novel automated symptom questionnaire loaded onto a smartphone otoscope. An ENT specialist in the UK subsequently reviewed these data.

Results: 138 ears were recruited. The prediction model performed poorly, but absence of otorrhoea was found to reliably exclude a diagnosis of chronic suppurative otitis media (negative predictive value=0.99). Both on-site non-expert and expert tele-diagnosis had high diagnostic specificity (90-99% and 86-99%), but low sensitivity (<43% and 32-100%).

Conclusions: We report the first study to directly compare approaches for non-specialist diagnosis of disorders of the middle/external ear, which shows suboptimal but comparable performance using an automated questionnaire, on site non-expert diagnosis, or remote expert diagnosis