Telaah Sistematik, Pemeriksaan Otoacoustic Emission (OAE) Sebagai Instrumen Surveilans Kesehatan Pendengaran Pekerja Terpajan Bising = The Effectiveness of Otoacoustic Emission (OAEs) as a Screening Instrument for Noise-Induced Hearing Loss: A Systematic Review

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Abstrak

Latar Belakang. Audiometri nada murni (PTA) adalah metode yang umum digunakan untuk deteksi dini gangguan pendengaran pada pekerja terpajan bising. Tetapi diketahui bahwa PTA tidak dapat mendeteksi gangguan pada sel-sel rambut luar yang biasa terjadi pada tahap awal gangguan pendengaran. Emisi otoakustik (OAE) digunakan untuk mendeteksi tahap awal gangguan pendengaran, namun efektivitasnya dalam program surveilans pendengaran masih belum diketahui. Oleh karena itu, penelitian ini bertujuan untuk mengevaluasi efektivitas OAE dalam program surveilans pendengaran untuk mendeteksi gangguan pendengaran akibat bising (NIHL).

Metode. Berbagai database elektronik termasuk Pubmed, Google Scholar, Scopus, dan Proquest ditelusuri dari awal hingga April 2022. Data diekstraksi dari setiap artikel, dan kualitas penelitian dinilai menggunakan alat Quality Assessment of Diagnostic Accuracy Studies-2 (QUADAS-2). Skrining dilakukan dengan menggunakan perangkat lunak COVIDENCE. Hasil disintesiskan secara naratif.

Hasil. Pencarian mendapatkan 412 artikel, di mana 8 artikel disertakan dalam analisis. Sensitivitas, spesifisitas, dan nilai prediktif positif untuk distortion product otoacoustic emissions (DPOAE) adalah 19,4%-100%, 74%-97,1%, dan 13,6%-97,2%. Sensitivitas, spesifisitas, dan nilai prediktif positif untuk transiently evoked otoacoustic emissions (TEOAE) adalah 12,5%-100%, 33,33%-90%, dan 47,37-90%.

Kesimpulan. Temuan ini mengindikasikan bahwa DPOAE dapat digunakan sebagai alat diagnostik tambahan untuk gangguan pendengaran pada frekuensi 2kHz dan 4kHz. Namun, masih ada bukti yang terbatas tentang efektivitasnya untuk mendeteksi NIHL.

.....Background. Pure-tone audiometry (PTA) are commonly used as early detection of hearing loss among workers exposed to noise. Nevertheless, PTA cannot detect the damage in the outer hair cells that usually occur in the early stage. Otoacoustic emissions (OAE) is introduced to detect the early stage of hearing loss, however its effectiveness in the hearing surveillance program is still unknown. Therefore, this study aims to evaluate the effectiveness of OAE in hearing surveillance program to detect noise-induced hearing loss (NIHL).

Methods. Multiple electronic databases including Pubmed, Google Scholar, Scopus and Proquest were searched from inception until April 2022. Data were extracted from each article, and study quality was assessed using the Quality Assessment of Diagnostic Accuracy Studies-2 (QUADAS-2) tool. Screening was performed using COVIDENCE software. Narrative synthesis was used for outcomes.

Results. The search retrieved 412 records, in which 8 studies included in the analysis. The overall sensitivity, specificity, and positive predictive value for distortion product otoacoustic emissions (DPOAE)

were 19.4%-100%, 74%-97.1% and 13.6%-97.2% respectively. The overall sensitivity, specificity, and positive predictive value for transiently evoked otoacoustic emissions (TEOAE) were 12.5%-100%, 33.33%-90% and 47.37-90% respectively.
Conclusions. These findings indicated DPOAE might be used as adjunctive diagnostic tool of hearing loss for 2kHz and 4kHz frequencies. However, there are still limited evidence on its effectiveness to detect NIHL.