

82. HEARING LOSS AFTER COVID-19 VACCINES: A SYSTEMATIC REVIEW AND META-ANALYSIS.

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INTRODUCTION: Hearing loss is generally classified as conductive hearing loss (CHL) and sensory-neural hearing loss (SNHL). It has been reported that COVID-19 infection may affect the vestibular-hearing system causing dizziness, tinnitus, vertigo, and hearing impairment. However, other studies reported that COVID-19 did not lead to significant hearing impairment. Many studies in the literature have reported hearing loss as a complication of COVID-19 vaccines. However, no systematic review or meta-analysis summarizes the literature on this topic. **METHODS:** We performed a comprehensive search for the following databases: PubMed, Cochrane (Medline), Web of Science, and Scopus. All studies published in English till October 2022 were included. These include case reports, case series, prospective and retrospective observational studies, and clinical trials reporting hearing loss following COVID-19 vaccines. Newcastle Ottawa scale (NOS) was used to assess the risk of bias for observational studies. NIH tools were used for non-controlled before and after clinical trials and case reports and case series. A third author solved any disagreements. We analyzed the data using SPSS Software version 26. **RESULTS:** A total of 630 patients were identified, with a mean age of 57.3 that ranged from 15 to 93 years old. The majority of the patients were females, 339 (53.8%). In addition, 328 out of 609 vaccinated patients took the Pfizer-BioNTech BNT162b2 vaccine, while 242 (40%) took the Moderna COVID-19 vaccine. The mean time from vaccination to hearing impairment was 6.2, ranging from a few hours to one month after the last dose. Most patients reported unilateral sensorineural hearing loss post-vaccination 593 (94.1%). In order to report the fate of cases, a follow-up was initiated with a mean of 15.6 and a range of 2 to 63 days after the initiation of the treatment. A total of 20 patients were fully recovered, and 11 reported no response. Three out of 328 patients who took the Pfizer-BioNTech BNT162b2 vaccine fully recovered, while five reported partial recovery. According to the chi-squared test, there is a statistically significant difference between patients in terms of fate and the type of COVID-19 vaccination (P-value = 0.001) while reporting no significant difference in dose number prior to the onset of the symptoms (P-value = 0.65) and gender (P-value = 0.4). The ANOVA test was conducted to compare vaccine types and the number of doses in terms of mean time from vaccination to hearing impairment onset. The results found a significant difference between vaccine types (P-value < 0.000) while showing no significance in terms of the number of doses prior to the onset (P-value = 0.6). **CONCLUSION:** There is a statistically significant difference between patients in terms of fate and the type of COVID-19 vaccination while reporting no significant difference in dose number prior to the onset of the symptoms and gender. Further, we concluded that there is a significant difference between vaccine types while showing no significance in terms of the number of doses prior to the onset.

Key words: COVID-19; Vaccine; Deafness; Hearing.