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TITLE: EVALUATION OF THE HEARING FUNCTION AND ITS RELATIONSHIP WITH THE NUTRITIONAL STATUS IN WORKERS EXPOSED TO HIGH ACOUSTIC DAMAGE

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BACKGROUND: Noise-induced hearing loss (NIHL) is the most frequent and preventable occupational disease. Approximately, 11% of the world's adult population works in a noisy environment with the involved risk. Different studies suggest that diet could be playing a key role in the development of this pathology. Thus, there is evidence of a possible protective effect of several vitamins and ω -3 fatty acids supplementation against hearing loss and damage.

OBJECTIVE: To study the relationship between the auditory function and the dietary intake in aviation workers, who are exposed to noise pollution in the work environment.

METHODS: A sample of 83 aviation pilots, 52 civilians and 31 military (23-62 years), that undergo a periodic medical examination at the *Centro de Instrucción de Medicina Aeroespacial (CIMA)*, was evaluated. Auditory function was assessed by tonal audiometry. Energy and nutrient intake were estimated by 24-hour recall using the DIAL™ program. Statistical analysis was performed by SPSS v.24 program.

RESULTS: The overall percentage of hearing loss was $2.78\% \pm 0.58$ in military pilots and $2,80 \pm 0,65$ in civilian ones. In civilians, this percentage was negatively correlated with vitamin A ($r = -0.290$; $p = 0.037$), vitamin C ($r = -0,314$; $p = 0,023$) and ω -3 fatty acids ($r = -0.273$; $p = 0.05$). However, these correlations were not significant in military pilots. NIHL begins to be evident in frequencies 1000-4000 Hz, related to speech and language comprehension and accentuates in frequencies 4000 and 8000 Hz, related to aviation, being these last ones negatively correlated with vitamin A in both ears (Right $r = -0,315$; $p = 0,023$ and Left: $r = -0,295$; $p = 0,034$). Furthermore, a negative correlation between this frequency and folic acid intake was obtained for the right ear ($r = -0,289$; $p = 0,038$), and with ω -3 fatty acids intake for the left one ($r = -0,286$; $p = 0,004$).

CONCLUSIONS: Several nutrient insufficient intakes may be related to NIHL. Nutritional interventions such as vitamins (A, C and B₉) and ω -3 fatty acid supplementation would be of great interest in slowing down the hearing loss progression in populations exposed to noise pollution in their workplace.

KEY WORDS: FOLIC ACID, HEARING LOSS, NOISE, AVIATION, NUTRIENTS