

Comparison of alpha ratio values between men and women smokers and non-smokers between 18 and 26 years [Comparación de los valores de alpha ratio entre hombres y mujeres fumadores y no fumadores entre 18 y 26 años]

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Smoking habit can cause damage to the voice, even in the early stages, which can hinder the communication process. Early identification of alterations in vocal parameters allows preventive measures to be taken prior to the generation of irreversible damage. The alpha ratio value is a vocal parameter obtained through an acoustic analysis that would allow detecting changes in the voice timbre, being able to be a preventive indicator of vocal pathologies. The objective of this investigation was to determine if there are significant differences between the alpha ratio values of men and women, smokers and non-smokers, without previous vocal pathology. The values Leq 0-1000 [Hz] and Leq 1000-5000 [Hz], which make up the alpha ratio value, were measured in 194 subjects between 18 and 26 years of age who did not use professional voice. The group was divided into 32 male smokers and 21 non-smokers, 61 female smokers and 80 non-smokers. The information gathering process was carried out in two stages: in the first one the subject was asked to inhale deeply and to emit a / a / sustained for a time of 5 seconds, for calibration and verification of parameters. In the second stage, a text of 101 words was requested: For the recording, a microphone was used 10 cm away from the face, with a 45° angle to it. Study subjects were standing at all times. The Audacity and PRAAT programs were used for recording and acoustic analysis, respectively, and for the statistical analysis the STATA version 14 program was used. alpha ratio values in smokers (men and women) presented higher values than non-smokers. Male smokers average alpha ratio: .5181709; male non-smokers average alpha ratio value: .4972945. Female smokers, average alpha ratio: .5321025; Non-smoking women, average alpha ratio value: .5036634. However, no significant differences were found between the values of alpha ratio

between male smokers and non-smokers ($p = .2799$) only among female smokers and non-smokers ($p = .0111$). When there were statistically significant differences between the alpha ratio values of smoking and non-smoking women, the values of Leq 0- 1000Hz and Leq 1000-5000 Hz were analyzed independently. The mean value Leq 0-1000 Hz of female smokers was 36.80148; The mean value Leq 0-1000 Hz in non-smoking women was 35.8655. There is no significant difference between these values ($p = .171$). The mean value Leq 1000-5000 Hz of female smokers was 19.58016; the mean value Leq 1000-5000 Hz in non-smoking women was 18.15138; there is a significant difference between these values ($p = .0095$). These results are consistent with previous research since the alterations of the voice, due to tobacco damage, are manifested in frequencies above 1000 Hz, although it would have been expected that the values of smokers were lower than the non-smokers, and not higher as in this case. This could be due to the fact that the subjects in this study were healthy, with no diagnosed pathology, and are likely to be at an early stage of vocal damage and as a compensatory form their system is making an over exertion that manifests itself in more values high. From the results obtained it can be concluded that the alpha ratio value could be a good early indicator of predisposition for the development of alterations affecting voice timbre especially in the case of women. It is necessary in order to provide a correct preventive diagnosis, to establish reference values of normality that allow to identify alterations and to study how the value of alpha ratio was affected in a population of smokers with greater number of years of smoking habit. © 2019 Centro Interamericano de Investigaciones Psicológicas y Ciencias Afines.

Alpha ratio

Smoking habit

Vocal pathology

Voice