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Prevalence of hearing loss among medical students due to online classes during Covid-19 pandemic: A Questionnaire based study.

Dr.Vivek kumar pathak(1), Dr.Rishita Kalra(2), Aman Tiwari(3),AnkitJain(4), Dr.Rohit Saxena(5)

(1) M.B.B.S., M.S.(E.N.T.), Assistant Professor, Department Of Otorhinolaryngology,School Of Medical Sciences &Research , Sharda University , greater noida

(2) JR-2 , Department of otorhinolaryngology,School of medical sciences and research, Sharda university, greater noida

(3) ,(4) UG 3rd year , School of medical sciences and research, Sharda university (5)Professor and hod , department of otolaryngology, school of medical sciences &research , sharda university, greater noida

Corresponding Author:Dr. Vivek Kumar Pathak M.B.B.S.,M.S.(E.N.T.) ,Assistant Professor, Department of otolaryngology,School of medical sciences &research , sharda university-201306

Abstract:
Background: Covid -19 pandemic has altered our way of life . Worldwide online classes are being conducted using various platforms like zoom,google meet,Microsoft teams this is being followed in medical undergraduate and post graduate , this study was undertaken in department of otorhinolaryngology and head and neck surgery, sharda university, it was a desriptive questionnaire based study amongst 150 under graduate students .'

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I. Introduction

Hearing, one of the five senses, is the complex process of picking up sound and attaching meaning to it. The human ear is fully developed at birth hence, very faint as well as loud sounds can be appreciated and responded to very well.[1] Hearing loss occurs as age increases, but these days it is seen to be affecting young adults as well. This could be due to the increasing trend of chronic usage of personal listening devices (PLDs) such as mobile phones and earphones, which cause damage to the inner hair cells of the ear(2).

1.1 billion young people (aged between 12–35 years) are at risk of hearing loss due to exposure to noise in recreational settings. A person who is not able to hear as well as someone with normal hearing – hearing thresholds of 25 dB or better in both ears – is said to have hearing loss. Hearing loss may be mild, moderate, severe, or profound. It can affect one ear or both ears and leads to difficulty in hearing conversational speech or loud sounds.[3]

With the advancement of technology, the role of mobile phones is not limited to only making or receiving calls. Present-day smartphones support a wide range of services such as texting, internet access, short-range wireless communications (infrared, Bluetooth), business applications, gaming, and photography. Research has shown that approximately 40%–55% of the radiofrequency output from mobile phones is absorbed in the user's head.[4]

The operating frequencies of most mobile phones are around 900–1800 mHz. Although this frequency is within the acceptable range yet data on its long-term cumulative effect and influence on cellular damage is lacking. The ear remains closest to the mobile phone and is the direct recipient of the noise, thermal energy, and EMR waves emitted by the phone.[5]

There is a concern that this may damage the inner hair cells in the organ of Corti. Various studies have been undertaken to assess the hearing status in long-term mobile phone users, but results are inconclusive.[6,7,8].

Due to COVID -19 pandemic, most of the governments around the world have initiated a common goal to curb the spread of this highly contagious disease by imposing lockdown, social/physical distancing, avoiding face-to-face teaching-learning, and restrictions on immigration [9]. Around 600 million school-going learners are affected across the world due to the closing down of educational institutions, has reported that around 320 million learners are affected in India, of which about 34 million belonged to the tertiary level of education.[10,11] The closures of the educational institution due to the outbreak of COVID-19 lead to an unprecedented impact on education. During the lockdown, teachers are instructed to teach through online learning platforms[12] The outbreak of COVID-19 resultef in the digital revolution in the higher education

system through online lectures, teleconferencing, digital open books, online examination, and interaction at virtual environments [13,14].

It is identified that this lead to hearing problems in medical students attending online classes using headphones and mobile phones. With this background, the present study aims to identify the risk of hearing loss among undergraduate medical students of the School of Medical Science &Research, Greater Noida.

II. Aim And Objective

To evaluate prevalance of hearing loss among medical students during covid -19 pandemic due to chronic mobile phone and earphone use

III. Materials And Method

This descriptive online survey-based study of the 150 undergraduate students was undertaken in department of otorhinolaryngology and head and neck surgery, greater noida

A structural questionnaire link using google form wad sent to students through WhatsApp and E-mail. Participants provide full consent before participation in the online survey. A total of 200 students provided complete information regarding the survey.

EXCLUSION CRITERIA- The participants who didn't gave consent , who leave the questionnaire forms incomplete , Students with the previous history of ear discharge, ear surgeries,previous hearing loss also excluded from the study .

Stastical analysis/ Results were analyzed using excel and Chi-square test for multivariate . p vaue <0.5 was considered statically significant.

Results and observations:

150 participants out of which 53 were male and 97 were female .

Duration of online classes was reported more than 3 months by 91.3 percent participants, 1-3 months by 7.3 percent participants, less than 1 month by 1.4 percent participants .

90 percent participants reported attending online classes 6 days/week ,8.7 percent reported 7days/week, 1.3 percent reported 5 days/week .

52 percent participants reported attending online classes 4-6 hours,33.3 percent reported attending online classes more than 6 hours ,14.7 percent reported less tha 4 hours .

76 percent participants used mobile phone ,18 percent used computer/laptop ,6 percent participants used tab.

58 percent participants used earphones, 32 percent used loudspeakers.

62 percent participants complained of subjective hearing loss in either of the ears , 38 percent reported none.

47.3 percent participants had to increase volume of television while 53.7 percent participants had not to increase.

IV. Discussion:

Covid -19 pandemic has altered our way of life . Worldwide online classes are being conducted using various platforms like zoom,google meet,Microsoft teams this is being followed in medical undergraduate and post graduate study also but this has lead to increased exposure to sound through ear phones, headphones .Our study clearly shows that students are subjectively complaining of hearing loss and they have increase volume of television to hear better, but this is purely survey based descriptive study these students should be followed up by serial pure tune audiometry aur otoscoustic emissions.

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