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World Hearing Day – Impaired Hearing and Noise Culture

The World Hearing Day (WHD) is a declaration of the World Health Organization (WHO) performed annually on 3rd March (3/3). This day (3–3) was set aside because of its symbolism, the figures "3" and "3" represents the shape of the ear (pinna) for left and right. A mirror image of "3" represents the opposite ear. This symbolic date was adopted by the WHO from a Chinese event which recognised this date as a day for the ear creation. The event was formally launched by the WHO in 2007 in a bid to raise awareness about deafness.[1] It was then called International Ear Day which later transformed to World Hearing Day in 2016 in Geneva following the declaration of the World Hearing Forum, where the league of nations were charged with the establishment of policy on Ear and Hearing Care. Since then, World Hearing Day has become the largest global event for awareness campaign on ear and hearing care that calls for urgent action to address the ear and hearing problems. WHD is the ideal opportunity to spread the word and raise the profile of ear and hearing care in people's mind, in the world's media and on the global health agenda by featuring enlightenment and education, free hearing screening, rehabilitation etc. Apart from promoting public health actions for ear and hearing care, WHD is an opportunity to raise awareness on hearing loss and its care at a national and community levels across the world and to encourage behavioral change towards healthy ear and hearing care practices. Every age group is meant to benefit from all the events commemorating the day annually. An appropriate theme is proclaimed every year based on the reality of time and events in the society. This year's theme is "**Ear and Hearing, Care for All. Let's make it a reality**!"[2]

Globally, over 1.5 billion people live with hearing loss of which nearly 430 million people live with disabling hearing loss. Hearing loss affects people of all ages, with 34 million children being affected, and nearly 65% of adults aged above 60 years having hearing loss of varying severity.[1] By 2050, nearly 2.5 billion people are projected to have some degree of hearing loss and at least 700 million will require hearing rehabilitation.[2] About 1 billion adolescents stand the risk of hearing loss resulting from noise and unsafe listening devices.[2]

In Africa, 136 million people live with hearing loss and by 2050, 337 million people are projected to have problems with their hearing. About 80% of these people live in low-income and middle-income countries where they do not have access to required health services and interventions. A report found that most countries in the African sub region had less than one Ear, Nose and Throat (ENT) Specialist or one Audiologist available per 1 million people.[3,4]

The ear is an organ for hearing and balance through its Cochlear and vestibular system. It also sub serves proprioceptive and cognitive functions especially in the newborn and therefore is described as "pathway for the activation of essential functions in humans". A child with functional hearing is the one that could acquire speech and develop good tactile and visual coordination. Furthermore, the first year of life is golden in the acquisition of speech and good cognitive functions catalyzed by good hearing otherwise the child is threatened with neural plasticity which make it very difficult to rehabilitate fully speech and cognition.[5] The perception of sounds in early life activates the auditory pathway and functions, and triggers the acquisition of speech since it is what is heard and programmed that could be reproduced. This is why it is mandatory to screen every newborn for hearing before discharge from hospital in order to detect such congenital or developmental hearing losses early and commence remedial rehabilitation. The minimal acceptable programme is to screen all the 'at risks children' such as the premature delivery, those with neonatal jaundice, obvious deformities or born from sick mothers, family history of genetic hearing losses, history of ototoxicity (consumption of drugs with potential harms to the ears) or eventful deliveries (like birth asphyxia).

There is also evidence suggestive that the nascent hearing apparatus of newborns especially the premature babies are very susceptible to injuries from high pitched sounds from the incubator machines and monitors in the Neonatal Intensive Care Unit or new born wards.[6] It is suggested that these class of children should be protected with ear muffles and sound proofs.

In all cases of hearing loss, early identification is the key to effective rehabilitation. Therefore, to ensure that hearing loss is picked up at the earliest time, everyone should check their hearing from time to time, especially those who are at a higher risk of having hearing impairment. These include but not limited to those listening to music with ear piece at all times, working in noisy places, experiencing ear problems and adults above 60 years. The

adolescents and young adults inadvertently create a noisy and hazardous milieu for themselves through the protracted use of ear piece in listening to music and movies. This ear piece forms a complete seal in the auditory canals and prevents escape of sound or the dampening effect by the ambient noise, resulting in exposure their ears to excessive noise which could progressively result in Noise induces hearing loss. Noise induced hearing loss is usually characterised by a dip in the audiogram tracing at 4KHz. It is worthy of note that the rehabilitation is difficult and therefore prevention is key. All dangerous habits leading to excessive exposure to noise especially beyond 85dB should be discouraged. The intermittent use of ear piece is acceptable, whereas it is safer to use the head phones because they do not form a complete seal of the ear canal. The newer inventions have noise-cancelling properties as well. Ear protective devices must be worn at all times within the factories and other noisy environments. Occupational hazards and environmental noise leads to noise induced hearing loss (a variant of sensorineural hearing loss) which has defiled most rehabilitative measures. Therefore, the ears of workers within noisy environments e.g. markets, clubs, religious homes, factories etc., must be protected with ear muffles and other noise protective devices. The Factory Act of the United Nations and the labour laws mandate entrepreneurs to make provisions for and enforce the use of protective-ear-devices by their employees. Individuals working in potentially hazardous environments must be fostered on shift duty bases of not more than eight hours per day in order to provide for the required minimum of 16 hours for the recovery of the hearing apparatus from the daily challenges by the noise (this is called temporary threshold shift). It is encouraged that noisy power generating machines and other heavy duty equipment should be encased in noise proof containers to reduce the immittance of noise.

Aging is associated with degeneration of the hearing apparatus. This phenomenon age is known as presbyacusis.[7] The specific age when presbyacusis starts is still not globally defined; however, evidence has shown that it may start as early as 45 years. Hence, there is a decline in hearing which typically starts from the higher frequencies of hearing 8 kHz down to 4 KHz. This produces the characteristic sloppy curve on the audiogram which is usually bilateral. The degeneration of the hair cells especially the outer hair cells of the cochlear (inner ear) is mainly responsible for this natural phenomenon. Prompt diagnosis and intervention could slow down the degenerative process. Rehabilitation of the elderly with hearing assistive devices also improves quality life. Beyond age related hearing loss (a variety of sensorineural hearing loss), the elderly are prone to retaining wax leading to impaction of the canal and conductive hearing loss. This is because the protective mucocilliary activities of the ear canal which naturally moves the wax away from the canal (inwards outwards) is lost with aging.[7] Furthermore, the external auditory canal hairs become more coarse and trap the wax within. Simple wax removal would improve hearing in this class of patients. The additional exposure of the elderly to noise would further compromise their hearing resulting in a combination of age-related hearing loss and noise induced hearing loss. Therefore, this group should have regular biennial ear screening care and also be protected from excessive noise. Hearing assistive devices like hearing aids are strongly recommended where indicated for better quality of life.

During the annual celebration of the WHD, WHO provides tools and resources as part of its efforts to raise awareness and increase access to hearing care in the communities especially for those in remote areas. Information and enlightenments are being provided as per when to suspect hearing loss in children and adult, care of discharging ears, hearing and language milestones in children, health tips for healthy ears, hearing aid users and safe listening. As part of WHO efforts towards curbing the menace of hearing problems especially noise induced hearing loss; everyone, especially those who are at with higher risk of having hearing impairment are to abide by the rule of 60/60 which entails: "never turn your music volume beyond 60% (set the "volume limit" to 60% of the full volume, so that you cannot accidentally turn your music too high)", "listen to music only for a maximum of 60 minutes per day, do not fall asleep while listening to music, especially if you are wearing ear buds but set clock's "sleep" function, which will automatically turn off your music". During the 2019 WHD, WHO developed and launched mobile applications (app hearWHO and hearWHOpro) for hearing screening based on digits-in-noise technology. It is a user-friendly application that is available on android and iOS platforms for automated hearing test and interpretation. It helps to assess the background noise level and indicate when the environment is too noisy for the test to be reliable. It displays the user's results and allows for personalized hearing health tracking and monitoring. WHO also launched the Primary ear and hearing care Training manual during the 2023 WHD.[8] This manual is a practical guide on the prevention, identification, and management of hearing loss and common ear diseases that lead to hearing loss. It is intended mainly for health workers and doctors who work at primary care level and provide services to people or patients either at health facilities or in communities. The guidelines in this manual are intended to be administered by trainers/instructors who are familiar with ear and hearing problems, their assessment and management. The training manual is accompanied by a trainer's handboo.[9] that is meant to be used by those involved in training health workers or in coordinating programmes for delivering ear and hearing care.

In conclusion, the World Hearing Day is a global event of the WHO to create awareness on the functions of the ears, the means of protecting, conserving and rehabilitating hearing in all age groups across the world. It is marked on every 3rd day of March ("3" "3") which is symbolic with ear figure representing the ear. Noise and environmental noise pollution is identified as one of the strong factors associated with hearing loss across ages

all over the globe. Education and preventive measures are very pertinent to curbing the menace.

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