

MANSA

e-bulletin

EDITION 2020

Dual language e-bulletin with:

10 Short articles

3 Long articles

Message from the President



Dear MANSA Members

It is with great pleasure to present MANSA's very first issue of e-bulletin!

Since the inception of MANSA, it has always been our aim to produce a bulletin for the audiology fraternity to share knowledge, experiences and as an avenue for audiologists to showcase their good work as well as writing skills. As the saying, better late than never, we finally has our first issue of the bulletin.

I would like to thank and congratulate Dr. Nor Haniza Wahat, our Executive Committee for Research and Development for spearheading this effort together with her hardworking team members. It is not an easy task to make sure all articles or sharing in the bulletin are of good quality and fulfils the needs for all audiologists, especially our members.

I hope more good works for this e-bulletin will continue and be the mainstream knowledge and experience sharing for all audiologists in Malaysia. We welcome more contribution of articles and sharing of knowledge to ignite the further success of future issues.

Hope all members, audiologists and student audiologists will fully benefit from this e-bulletin.

Thank you.

Kind regards,

Patrick Tan

President
Malaysian National Society of Audiologists
2018-2020

Message from the Chief Editor



Dear MANSA Members

MANSA has been part of the professional development journey in most Malaysian audiologists since the year 2010. For the very first time, MANSA e-Bulletin is finally here! In conformity with one of MANSA's mission, i.e. to promote excellence in audiology, which include gaining up-to-date knowledge, this dual-languages e-Bulletin covers ten short and three long articles.

I would like to thank all the editorial board members for their immense hard work. Not forgetting our creative and committed designer, and most importantly, thank you to all contributing authors for making this happen.

I am positive that more articles will be contributed in coming e-bulletin and we hope to receive more contributions from the industrial players.

Cerita P. Ramlee tak pernah jemu
Disebut jauh disebut dekat
Cintai guru cintai ilmu
Hidup pasti bertambah berkat

Kind regards,

Nor Haniza Abdul Wahat

MANSA e-Bulletin Chief Editor &
Research and Development
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Keperluan Audiologis Dalam Bidang Kesihatan Awam : Suatu Pandangan

Noise Exposure, Effects of Noise & Hearing Loss

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Noise either on an occupational or non-occupational basis (also refers to community, domestic, residential, or environmental noise) has always been a significant problem to humans since centuries ago. In ancient Rome and Medieval Europe, rules were applied to certain activities such as the usage of iron wheel wagon carriages and horse carriages and horse-back riding at night time to ensure that noise emitted from these activities did not disturb the sleep of residents in a town or village (1). However, in the early years of human civilization, the noise was far less complex than today's noise emitted from various human activities either at work or at recreation.

Noise is always associated with high economic activities and the usage of heavy machinery in developed countries, but today, noise does not only pose a problem to developed countries but also developing countries (2). Noise in developing countries is even more complex and creates greater problems compared to developed countries due to bad planning, poor construction of buildings, lack of legislation and enforcement by the governmental bodies and agencies (1,3). Prolonged and constant exposure to excessive noise over time can permanently damage the auditory system. The extent of hearing loss is depending on the duration of exposure and the intensity of the sound to which individuals are exposed to. Noise is considered as the second most important cause of hearing loss after presbycusis among adults (4-7). Hearing loss due to noise exposure is known as noise-induced hearing loss (NIHL) or sometimes also referred to as occupational noise-induced hearing loss (ONIH).

The causative relationship between excessive noise exposure and occupational hearing loss has been acknowledged for centuries. National Institute of Occupational Safety and Health (NIOSH)(8) reported that historically this causal relationship was mentioned by Sir Francis Bacon in his writings in 1627. Sir Bacon's commented on a sudden hearing loss resulting from the exposure to loud sounds and also referred to Pliny the Elder's Natural History, in which he described the hearing problems experienced by

people who lived near the waterfall along the Nile in the first century A.D. Almost a hundred years after Sir Bacon's writing, a formal report on occupational noise-induced hearing loss was published by Ramazzini in 1713. He made comments on copper workers who suffered hearing loss as a result of hammering on metal. The other significant contributor to this "noisy world" was the discovery of gunpowder in the second half of the 19th century and the development of the Industrial Revolution in Britain which later gradually spread throughout Europe and the United States. Since the Industrial Revolution, there has been a massive transition from manual labor and draft-animal-based economy to machine-based manufacturing. This transition has also introduced a new scenario where more people who worked in these industries developed NIHL (9).

During this period the term "boilermakers' disease" was widely used to refer to workers in the steam boiler industry who developed hearing loss from noise exposure (6). From the audiological perspective, the term 'boilermaker's deafness' was described following the high incidence of NIHL among shipyard workers in Britain (10). In this study Somerville (1976) was able to localize the damage or, as he put it, the "seat of the mischief" to the inner ear, and he noted the protection afforded by wearing Indian rubber earplugs (10). Since then more research has been conducted to study the effects of noise on humans in different settings such as industrial, construction, mining, agriculture, military, and so on.

In the United States, audiology had its beginnings in the military services during World War II (WWII) and the Korean War (1950-1953). The establishment of the profession was related to the high incidence of service-connected hearing loss as a result of noise exposure among veterans who returned from these wars. During that period, hearing conservation programs did not exist in the military which then initiated research programs to be carried out to better understand the auditory and non-auditory effects of noise. Efforts such as the establishment of aural rehabilitation programs at selected military hospitals across the United States were placed to help these veterans with transition to civilian life (11). With regards to this development, many professionals such as physicians, speech pathologists, psychologists, and teachers-of-the deaf worked together in diagnosis and provided rehabilitative services to those with hearing problems (12).

During and after WWII, numerous studies have been conducted to collect data on noise levels generated by equipment used by the military personnel and the dosage of noise received by military personnel working in certain settings. A report called the Biological called the Biological

Effects of Noise Exploratory Study (BENOX) in 1953 by a research team from the National Academy of Science – National Research Council (NAS-NRC) and the Committee on Hearing and Bioacoustics (CHABA) revealed results from studies on the harmful effects of noise on hearing. As a result of these and several other studies, hearing conservation programs that implemented set limits to noise exposure from jets and rocket power plants and audiometry testing were introduced for military in 1948. This regulation was then revised and improved, and later comprehensive hearing conservation programs were introduced in and outside the military (11). The development of noise control techniques, and the promulgation and enforcement of noise regulations were then introduced (8).

In a modern world, noise is part of everyday life. Noise sources from various activities in job processes in the workplace and from leisure activities or hobbies outside work. Leisure noise come from sources such as personal stereos, amplified music, or high-powered machines, discotheques, live bands, concerts, motor sport, snowmobiles, speed boats, target shooting and hunting, rifles, shotguns, chain-saw or other power tools (6,13-17). Noise also comes from daily life activities such as air traffic, crowded urban streets, trains, busy highways or streets, industries, construction, public work, and neighbourhood. These noises are classified as community noise, whereas noise emitted in the industrial workplace is considered as occupational noise (1).

In recent years, NIHL has also affected children and young adults. Children are often exposed to toys that produce high noise levels that can cause hearing damage in children. The types of toys that normally produce high noise level are squeaky rubber toys and toy sirens that can emit sounds of 90 dBA. Other types of toys include cap guns, talking dolls, vehicles with horn and siren, musical instrument and toys with cranks (18). In young adults, exposure to noise is normally associated with their hobbies and activities. From various studies that have been conducted to evaluate NIHL among young adults, it was found that there were trends of high frequency hearing loss among adults associated with their hobbies and leisure activities (19). The common sources of noise exposure among young adults are listening to amplified music at concerts and discotheques/dances and in pubs, clubs, aerobic classes, and when using MP3, or other personal audio systems (14-17,20-22). NIHL is also quite common among professional musicians with the prevalence reported between 45% and 78% of notches mainly at 6000 Hz (23).

Noise is a significant problem to people in the current century, even though it has been acknowledged since early human civilization. Noise affects many people around the world, either in developed or developing countries, across continents and nations, regardless of age and gender

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