



# Noise-Induced Hearing Loss in Young Adults

Richard Mwangi\*

Department of ENT, IncusEar Hearing & E.N.T Centre, Kenya

## Case Study

Excessive noise is increasingly encountered in many aspects of day-to-day life. Among the many people exposed to noise at their place of work, occupational hearing loss is common. Additionally, concern is growing about the ever-greater exposure to noise in recreational settings: dangerous levels of sound are frequently experienced in a variety of non-occupational settings such as nightclubs, discotheques, pubs, bars, cinemas, concerts, live sporting events and even fitness classes. Mobile technology usage and Bluetooth enable earbuds has recently increased, such as mobile phones, portable music devices example iPods and MP3 players. In May 14 2008, Reuters Canada wrote a tragic story of a Kenyan student killed in freak helicopter crash, "Witnesses told local media that Otieno had gone out for a walk and was listening to music with earphones or headphones, so he may not have heard the stricken aircraft coming down on a busy street until it was too late".

Most young adults do not understand the dangerous decibels (a unit used to measure the intensity of a sound or the power level of an electrical signal by comparing it with a given level on a logarithmic scale). When listening to their stereo earbuds. It has now emerged that hearing loss is a public health concern, especially in young adults. In cities like Nairobi, Kenya we have witnessed an increase of stereo earbuds usage, 70% of young people are all blasting their ears with dangerous volume of music to an extent of when you hoot behind such person he/she can hardly hear a car hoot. Young adults do not understand that hearing loss from noise damage as a result of continuous long-term exposure is permanent and irreversible. Most of those youth suffer from bilateral high-frequency hearing loss, which is often caused by too much noise exposure.

In my research, I come across young adults pimping up their cars, a case study is where I visited a garage and found a pimped sports car spitting flames through the exhaust and the firing was more way above 85 decibels, and the "fired shots" were in average of 6 rounds to 7 rounds. Uncontrolled exposure to dangerous noise both long-term, repeated exposure to noise and a single exposure to an extremely intense sound causes damage to the auditory system and results in hearing loss, termed noise-induced hearing loss.

## OPEN ACCESS

### \*Correspondence:

Richard Mwangi, Department of ENT,  
IncusEar Hearing & E.N.T Centre,  
Kenya,

E-mail: richard@incusear.com

Received Date: 10 May 2019

Accepted Date: 31 May 2019

Published Date: 04 Jun 2019

### Citation:

Mwangi R. Noise-Induced Hearing Loss  
in Young Adults. Am J Otolaryngol Head  
Neck Surg. 2019; 2(5): 1053.

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Our ears convert vibrations in the air to waves in liquid, and then into nerve signals that travel through cochlea to auditory nerve and finally to the brain for interpretation (Figure 1).

## How Noise Affects Our Ears

The hearing loss is usually slow in onset but progresses relentlessly for as long as the exposure continues.

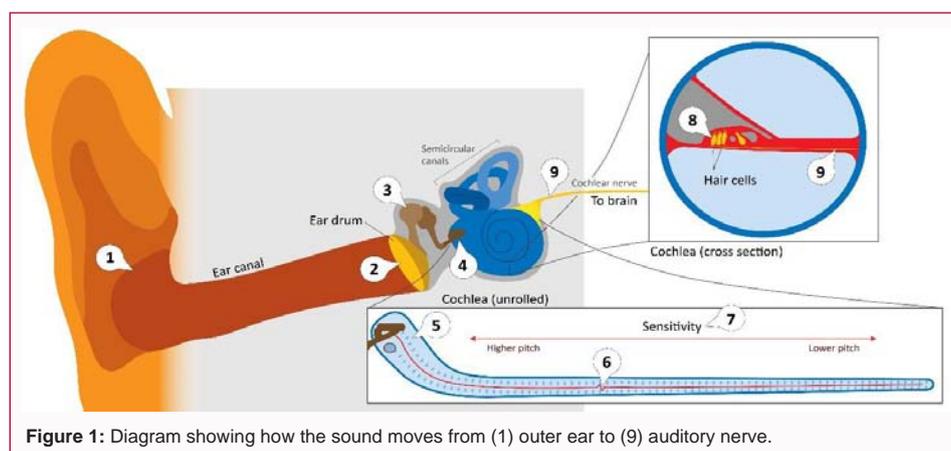


Figure 1: Diagram showing how the sound moves from (1) outer ear to (9) auditory nerve.

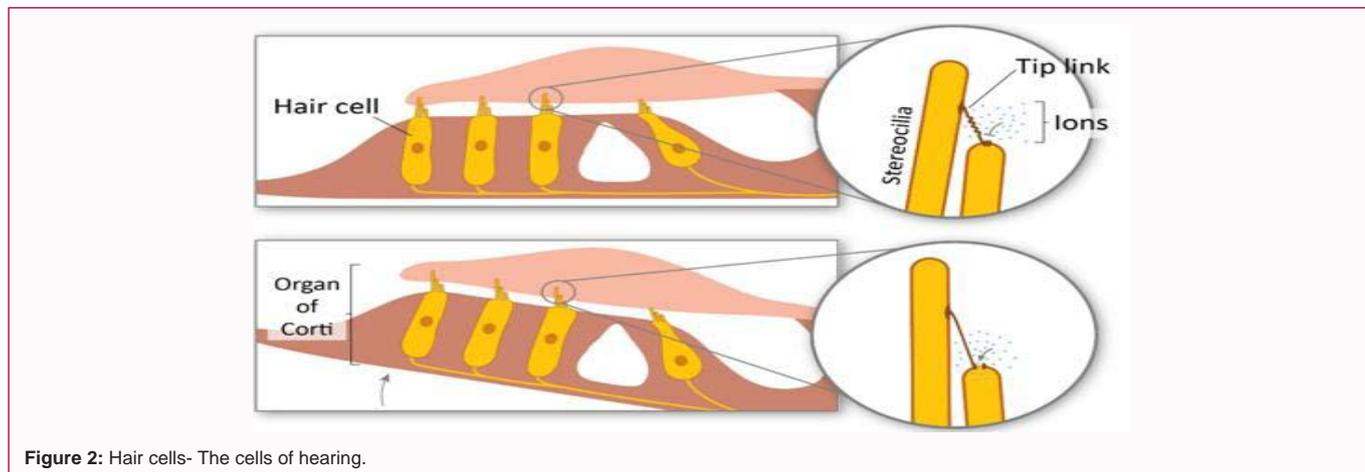


Figure 2: Hair cells- The cells of hearing.

## Here Are Two Ways on How Cochlea/Hair Cell Is Damaged

1. Intense metabolic activity at cellular level. A lot of energy is required by sensory cells during the intense exposure to loud sounds. The resulting elevation of oxygen consumption prompts raised levels of free radicals in the cochlea. The ear's antioxidant defense mechanism is inadequate to deal with these raised levels and the free radicals completely damage the sensory cells.

2. Mechanical destruction. Continuous exposure to dangerous volume of sounds causes the hair cells inflexible and thus their ability to work effectively. This process is gradual until the hair cells are completely destroyed (Figure 2).

## Preventing Noise-Induced Hearing Loss

- Hearing loss caused by exposure to loud sound can be avoided.
- Identify sources of loud sounds that can contribute to hearing loss and try to reduce exposure.
- Avoid or limit exposure to dangerous loud sounds.
- Turn down the volume of music systems example, portable music devices: iPods and mp3 players.

Avoid the source of loud sounds or use hearing protection devices.