



Division of Otorhinolaryngology, Department of Surgery,
the University of Hong Kong



The Hong Kong Society
for the Deaf



Hong Kong Playground
Association.

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Press Release

A Study on “The Impact of MP3 Players on Hearing amongst Young People”

The issue of hearing damage among young people caused by MP3 music player has sparked concern in recent times. It is highly concerned because these music players can produce volume level that can be hazardous to hearing. To raise the awareness among young people on the importance of hearing conservation, a research project was jointly organized by the Hong Kong Society for the Deaf, Division of Otorhinolaryngology, Department of Surgery, the University of Hong Kong and Hong Kong Playground Association. Over 1,000 youth people were interviewed and the result indicated that nearly 25% would feel that their hearing sensitivity was not as good as before listening to music player and around one-fifth of the respondents experiencing tinnitus after using music players.

Conducted from November to December last year, the study has collected data from 1,025 young people aged between 12 and 24 via questionnaire. Tests were also conducted among 57 subjects to examine their hearing and their volume level of listening to MP3 players in different environments.

399 respondents (38.9%) have already used music players for less than one year, 224 (21.9%) for one to two years, 255 (24.9%) have used for two to four years, and 97 (9.5%) for more than four years.

It is found that more than half of the total respondents, 564 (55%) listened to music players on an average of one hour or fewer per day. 301(29.4%) respondents would listen for two to three hours. 89 respondents (8.7%) would listen for more than 4 hours. The remaining were those on an average of three to four hours (44 respondents, 4.3%).

Respondents were also asked to indicate in what circumstances they used their music players. 780 respondents (76.1%) stated that they would use music players when traveling in public transportation. 492 respondents (48%) would do so while strolling around the street. The list of various circumstances included library (206 respondents, 20.1%), home (171 respondents, 16.7%), classroom (157 respondents, 15.3%), playing sports(119 respondents, 11.6%) and office(55 respondents, 5.4%) .

Respondents were asked which level they would usually turn to if the volume level of their music player was ranged from 1 to 10 (10 is the maximum loudness output). Most (448 respondents, 43.7%) would turn to the level 6-7. 325 respondents (31.7%) would maintain level 5 or lower, 171(16.7%) would turn to 8-9. 51 respondents (5%) would turn to 10, the full level.

Listening habit in noisy surroundings

The result showed that 70% of respondents would turn their volume of music player higher in noisy surroundings. Over half (579 respondents, 56.5%) would turn the volume slightly over the background noise and 147 (14.3%) would turn the volume high enough to mask out the background noise completely. Only 256 respondents (25%) would turn the volume level similar to the loudness level of the surroundings.

13.4% (137 respondents) of all reported that they received complaints about the output level produced by their music players.

Self-perception on hearing

Around 30% of the young people perceived that their hearing sensitivity was worsened since they have started using music players. 2.8% perceived their hearing sensitivity had become much worsened. 24.2% perceived their hearing sensitivity was slightly worsened than before.

23.7% of respondents reported that their hearing became less sensitive within a short period of time after turning off their music players, as compared with the sensitivity before listening.

Nearly one-fifth (19.8%) of all respondents experienced tinnitus or ringing in their ears within a short period of time after turning off their music players. 1.6% have found it very serious, 1.7% found it serious, 5.8% found it not quite serious and 10.8% perceived it not serious.

The characteristics of those with “very serious tinnitus”

As compared with those experiencing less severity of tinnitus, the present study found that those with more serious tinnitus tended to have the following characteristics or habits:

- Higher proportion of respondents perceived a “much worsened” situation in hearing than the other groups since they have started using music players.
- Higher proportion of respondents reported that their hearing was not as sensitive as before listening, within a short period of time after turning off their music players.
- More tended to turn their music players at higher level or maximum level.
- More tended to turn their music players at higher level to mask out all background noise in noisy surroundings
- More tended to listen to music players for longer duration of time
- More received complaints from others about the output level produced by their music players

Tinnitus is a warning signal indicating that the volume level is too high and may cause damage to hair cells of inner ear. Long term over-exposure to loud noise will cause damage to hearing.

MP3 volume level test

Part two of the study comprised two tests: Hearing screening test and MP3 volume level measurement. The result indicated that 57 subjects receiving the tests were within ordinary hearing level.

In another test for MP3 level measurement, subjects were asked to listen to three pop songs in two settings: in quiet and against background noise. The first song was assigned and the other songs (one fast tempo and one slow tempo) were selected by the subjects from a given list. Listening with the same set of earphones, subjects were told to turn the volume level they preferred and using every day. Researcher then recorded the output level (in dBA) for each song.

The experiment in quiet setting was conducted in a silent room, while the noisy setting was

conducted in the same room with two amplifiers producing a level of 85dBA background noise. The noise was simulating the noise level inside a moving MTR Train. An average noise level of 85dBA was recorded inside the MTR train of Kwun Tong Line (except the journey between Tiu Keng Leng and Yau Tong recorded with a level of 92dBA).

The result revealed that all subjects turned up the volume when listening in the noisy environment. Subjects would increase the music players output level on an average from 11 dBA to 13.4 dBA more in noisy environment.

47.4% of the test subjects would turn the volume up to 90dBA or above at different circumstances. When subjects were in quiet environment, only 7% to 12.3% of them turned volume level up to 90dBA or above. However, the percentage increased dramatically in noisy environment and 33.3% to 38.6% will increased the output over 90 dBA or above. Around 10% would increase to 100 dBA or above. The loudness of 100dBA is equivalent to the sound level produced by a drill or jackhammer.

Considering the volume level and the length of exposure time to MP3 players, some subjects are at the risk of hearing loss. The analysis of listening time indicated that around 7% of the test subjects would turn the volume at risky levels in their everyday listening.

Conclusion and Recommendation

International Consumer Research and Testing has conducted a test to examine MP3 and MP4 sold in Hong Kong. Nearly half of the samples can produce sound level up to 101 dB. Prolonged use of these devices at high volume level can cause hearing loss.

Mrs. Winnie Wong, Director of the Hong Kong Society for the Deaf urged the need for more education on hearing conservation for young people. Young people enjoy listening to music and this enjoyment would reduce their awareness of the risks brought by high level of sound output. Their favorite music may damage their hearing. Hearing loss is a gradual and painless process but once occurred, it will be permanent. Misconception that hearing loss is an aging process of the age would cause delay in hearing conservation among young people. Misunderstanding and ignorance are the causes for hearing loss over time.

Mr. Wan Lap Man, Chief Development Officer (Strategy & Research) of Hong Kong Playground Association said some youth people were borrowing a loan that they can never repay. They gave priority to sensational enjoyment of music, ignoring the danger of potential hearing loss.

From the result of the questionnaire, many young people loved to listen to music players when traveling in public transportation (76% of all respondents) and strolling around the street (43.3%). One should be aware that the noise level of some of these places reach 85 dB or above. Meanwhile, over 70% of all respondents reported they would turn their music volume higher than the background noise. In other words, they are at potential risks of hearing loss when they are in these places. All these urge our young people to seek safety instruction of using music players. Particularly, they should be aware of the volume level in noisy environment.

Tinnitus is definitely a warning of potential hearing problem. Though this study reported around one-fifth of respondents experiencing tinnitus, no more than half of these respondents joined the part two study to examine their hearing. Dr. Dennis Au, Assistant Professor of the Division of Otorhinolaryngology, Department of Surgery, the University of Hong Kong said this reflected a low priority or lacking in knowledge of hearing conservation among our young generations.

The organizers of this study therefore urged to **raise the awareness among young people on hearing conservation and to offer them more knowledge or guidelines to protect hearing.** If one does not take care of one's ears, hearing loss may start to occur in younger ages.

The MP3 player manufacturers should offer information of the highest volume output of their products to their customers. Warnings statements should be included on the package in order to aware customers of the risks. Government also has a responsibility to control of sales of commodities with excessive output level of 100 dBA or above in the market.

If one wants to enjoy music life long, one must act now. The followings are the recommendations to young people on the use of music players:

Build up a safe music listening habit :

- Not to listen to music at noisy environment via earphones as you may unconsciously turn up the volume
- Do not listen in noisy street or public transportation; so that you do not need to increase the volume level to mask out the background noise
- If you think you would lower the volume when listening to slow tempo song, you are wrong! No matter of the tempo of the music, one will turn up the volume in noisy environment.
- If you experience tinnitus or your hearing becomes dull for a short time after switching off your music players, you should aware your listening habits and make some changes. You should lower the volume level of your music player and; shorten the time you listen or take regular breaks. A good and safe listening habit would not worsen your hearing after turning off the player.

Use your device wisely

- Check your music players to see how high the volume output is, and to see whether your player contains “safety function” or volume control function and use it!
- Keep your volume to 60% of full level and do not listen to music for over one hour each time
- Headphones are better choice than earphones for protecting your ears. It is because headphones could block out the background noise to avoid turning up the volume in nosier surroundings.

“Listen” to the warning of your ears & take action!

If you have frequent tinnitus, or require others repeating conversation, or are being complained about excessive TV or music volume, your hearing may have a problem. Take action at once and seek help from professionals.