



ASATMYAINDRIYARTH SAMYOGA: AYURVEDIC PROSPECT OF USING HEADPHONE

Renu Rao¹, Priyanka Dubey²

¹Associate Professor, P.G. Dept. of Shalaky Tantra, Rishikul Campus, Uttarakhand Ayurved University, Dehradun, Uttarakhand, India

²P.G Scholar, P.G. Dept. of Shalaky Tantra, Rishikul Campus, Uttarakhand Ayurved University, Dehradun, Uttarakhand, India

Corresponding Author: dubepriyanka.pd@gmail.com

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ABSTRACT

Ayurveda, had given an admirable explanation of *Indriyas* and perception of knowledge through them. According to *Ayurveda satmya indriyarth sannikarsha* (proper confluence of sense organs with their objects) is required for the correct perception of knowledge. For this, it is necessary for *Indriya* (senses), *Indriyarth* (object of senses), *Manas* (mind), *Budhi* (intellect) and *Atma* (soul) to work together in coordination and they should be healthy and intact. Hence, any kind of improper bondage with sense and its object adversely affects that *Indriya* and cause disease. *Shrotrendriya* is one among five *Indriyas* and hearing is the main function of it. *Sabda* is the *Artha* of *Shrotrendriya*. At present, because of adaptation advancement of technology and devices, usage of personal listening devices and mobile phones with earphone or headphones has increased in people at varying volumes and for prolonged periods. The use of these devices in such manner poses a serious threat of irreversible changes like tinnitus and hearing loss. The waster uses of *Shrotrendriya* because of such habits which affects the hearing capacity can be considered as *Asatmyaindriyarth samyoga*.

Keyword: *Asatmyaindriyarth Samyoga, Shrotrendriya, Hearing loss*

INTRODUCTION

Asatmyaindriyarth Samyoga, *Pragyapradha* and *Parinama* are the three liable factors of ailment¹. *Asatmyaindriyarth Samyoga*, is the root cause of aggravation of *Tridosha*² in *Indriyas*. There is a very complex, multidimensional relationship between the various characteristics of the sound (*Shabda*) and the effects on people. The World Health Organization (WHO) estimates that billions young people worldwide could be at risk of hearing loss due to unsafe listening practices, among them 50% are exposed to unsafe levels of sound from the use of personal audio devices. The National Health and Nutrition Examination Survey (NHANES) data from the United States suggests that between 1994 and 2006, the prevalence of hearing loss among teenagers 12 to 19 years old rose significantly from 3.5% to 5.3%. In India, from 2001 to 2008, personal music player use rose fourfold, from 18.3% to 76.4% and High-frequency hearing loss increased from 12.4% to 19.2%. The study on usage pattern of PLDs in population in Gujarat, evaluated that the PLD users with earphones have significantly higher hearing thresholds than Nonusers and high frequencies are affected more³. In another study, in Trivandrum, South Kerala India on, chronic PLD user students shows total prevalence of sensor-neural hearing loss was 5% with high frequency hearing loss and 18.3% for low frequency hearing loss⁴. Study in Karnataka concluded that prolonged use of loud earphone music is harmful to the ear and a simple way of pass time by hearing to ear phone music might causes hearing loss⁵. This increased accessibility and use of personal audio devices for listening to music is coupled with their use at high volume and for long durations. In present time, some measures have been prescribed for safe listening.

Aim and Objectives

1. To study the increasing uses of Headphone or personal music devices in present time.
2. To highlight the *Asatmyaindriyarth Samyoga* in reference to *Shrotrendriya*.
3. To understand the role of *Vata* in hearing
4. To understand the role and significance of *Asatmyaindriyarth Samyoga* in *Karnabadhriya*.

Material and Methods

This analysis consisted of a literature review, which encompassed data from books and published sources, related to hearing loss traditional and modern precepts.

Asatmyaindriyarth Samyoga

Satmya means that which suits the self while, which does not suit to person is known as *Asatmya*⁶. Diet, food products, regimen or drugs, when utilized by a person, do not harm physiology or mental functions. *Indriyas* include both *Gyanendriya* (sense organs) and *Karmendriya* (motor organs)⁷. *Artha* of *Indriya* signifies subject of appreciation like- *Shabda*, *Roop*, *Ras*, *Gandha*, *Sparsha*⁸. Therefore, the *Asatmyaindriyarth samyog* reveals bondage of object with *Indriya* which is not suitable for them and may causes harmful effects. *Asatmyaindriyarth samyog* can differentiate in three types⁹- *Heenayoga* of *Indriyarth* means less perception by sense organ of its object (*Indriyarth*), *Mithyayoga* of *Indriyarth* means improper contact of sense organs with its objects and *Atiyoga* of *Indriyarth*, excessive contact of sense organs with its objects. All the three types of *Asatmyaindriyarth samyog* are responsible for vitiation of *Doshas*¹⁰ and diseases which occur due to these factors are called *Andrayak Roga*⁹.

ASATMYAINDRIYARTH SAMYOG IN CONTEXT OF SHROTRENDRIYA

According to *Ayurveda* *Indriyas* are *Panchabhautika*, but in a particular *Indriya* there is a dominance of a particular *Mahabhoot* according to their *Artha*¹¹. *Sabda* is perceived through *Shrotrendriya*, because the predominance of *Akasa Mahabhuta* in both and *Karna* is the *Adhishtana* of *Shrotrendriya* and act of interpretation is done by the *Shrotrobudhi*. *Heenayoga*, *Atiyoga*, *Mithyayoga* of *Indriya* are the main cause of *Dukha* (Disease)¹² hence any kind of abnormal liaison of sense and perceptive subject will act as a pathological factor. Excessive loud sound and not hearing anything at all or insufficient contact with sound considered as *Atiyoga* and *Heenayoga* of *Shrotrendriya* while auditory contact with rough, horrific, terror, inauspiciousness related to *Mithyayoga* (wrong utilization)¹³.

VAYU - AN ALLIANCE FACTOR OF SHROTRENDRIYA

Vata is predominant among three *Doshas*¹⁴. Vata is responsible for dissemination of *Indriyas* to their *Vishaya* and also for the movement of their *Artha*¹⁵. *Shrotra* is the seat of *Vata* and *Vata* is mainly responsible for *Shrotra* (hearing). *Murdha* is the main seat of *pranavata* hence *Pranavayu* is mainly related to *shrotrendriya*. Hence, vitiated *Vata* can harm the *Shrotrendriya*. All the three types of *Asatmyaindriyarthi samyog* are responsible for vitiation of *Doshas*.

KARNABADHIRYA AND ASATMYAINDRIYARTH SAMYOGA

The principle of knowledge depends on the collaboration of *gyanendriyas* and respective *indriyarthi* with the involvement of *mana* and *atma*. In the context of *shrotrendriya* which evolved from *akash mahabhoot*, *shabda* comes in contact with *shrotrendriya adishtha* (*karna*) carried by *shrottendriya* to the *shravana budhi* then gives the meticulous perception of sound. The *vata* that has been vitiated can destroy the *indriyas*.

The 2 *shabdavahi siras* related to *karna*¹⁶ are responsible to complete their respective work viz. transmis-

sion and interpretation of hearing; and this is accompanied by *Pranavaayu*. *Atiyog*, *mithyayoga* and *ayoga* of *shabda* causes vitiation of *vata* which further interfere in the normal functioning of *shabdavahi siras*. The vitiated *vata dosha* separately or accompanying with other *doshas* resides in *shabdavahisira* and causing *badhirya*, *karnanada* and *karnakshweda*.

From the above explanation, here the functional field of *shrotrendriya* and *shabdavahisira* simulates with the function of organ of corti and auditory nerve. Organ of corti is the special receptors for hearing and allows for transduction of auditory signals into nerve impulses.

Physical Properties of Sound

The effects of sound depend on three characters of sound: amplitude, frequency, and duration¹⁷. Sound pressure level (SPL), expressed in decibels, is a measure of the amplitude of the pressure change that produces sound. The frequency of a sound represents the number of cycles in 1 sec expressed in Hz and determines the pitch of sound. The human ear is most sensitive around 4000 Hz frequency and least sensitive in the low frequencies. Intensity is the strength of sound and determines the loudness.

Table 1: Intensity at distance of 1 m are¹⁸

Whisper	30 dB
Normal conversation	60 dB
Shout	90 dB
Discomfort of the ear	120 dB
Pain in the ear	130 dB

CONNOTATION OF NOISY SOUND

Sound is a form of energy produced by pressure variations which is transmitted from the source through the surrounding media in the form of pressure waves¹⁹. In other word, the sound is the sensation perceived by the sense of hearing²⁰. The hearing threshold is the smallest intensity of a sound that a person needs to detect its presence.

There is not much distinction between sound and noise physically. Noise can define as annoying tone of sound that causes mild to major irritation or discomfort. Variation of sound levels with time and the fre-

quency can express in term of overall sound pressure levels. The intensity of sound is expressed in dB. Person is able to hear frequencies from 16 to 20kHz. Sound levels below 80 dB are unlikely to cause hearing damage²¹, while 90-150 dB is considered as loudness discomfort level²². Noise can be divided into 4 types²³. 1. Continuous noise – noise that produced continuously like machinery. 2. Intermittent noise-noise level which increases and decreases rapidly. 3. Impulsive noise – associated with sudden bursts. 4. Low frequency noise – related to fabric of our daily sounds cape.

Noise Induced Hearing Loss

Noise-Inductive Hearing Loss (NIHL) is defined as a sensorineural hearing disorder due to permanent damage of hair cells caused by the noise, resulting in a decreasing of the amplification ability of the cochlea²⁴.

Safe Listening

Safe listening levels depend on the intensity (loudness) and duration of exposure²⁵ and distance from the sound source.

Table 2: Daily permissible noise level exposure²⁶

Time per day	Sound level, Db
25 hours	80
8 hours	85
2 hours 30 minutes	90
47 minutes	95
15 minutes	100
4 minutes	105
1 minute 30 seconds	110
28 seconds	115
9 seconds	120

ALTERATION OF EAR MECHANISM BY MEAN OF NOISE

Exposure to excessive noise causes reduction in auditory acuity²⁷. According to exposure, this state may be temporary as temporary threshold shift (TTS) or permanent as permanent threshold shift (PTS). The sound of 130 dB or greater will causes hearing damage after even short time exposure in the human ear. Acoustic overstimulation could potentially lead to the excessive release of neurotransmitters and causes metabolic and structural changes of the cochlea. Animal studies show stimulation with moderate intensity sound increases cochlear blood flow, and high intensity decreases cochlear blood flow. A 5 minutes exposure to impulse noise causes apoptotic changes (nuclear condensation and cell body shrinkage), whereas necrotic change appeared 30 minutes following exposure²⁸. First of all, high frequency range affects inconspicuously, and ceaseless exposure convinces hearing loss. Excessive noise also affects spiral ganglion cells. Certain individuals may be more susceptible to noise-induced hearing loss than others, meaning that who experience identical noise exposure may develop different degrees of hearing damage.

OTHER ADVERSE IMPACT

The output of personal audio devices may range from 75 dB to as high as 136 dB. Studies also showed that

children who listened to music with headphones had significantly poorer hearing thresholds and 50% of had hearing thresholds >20 dB HL at one or more frequencies²⁹. The use of such type of ear devices for 2–3 years leads to a slight hearing damage resulting in inability to understand of whisper or quiet voice and tinnitus. A very loud music at a level of approximately 100 dB SPL, causes permanent hearing damage within 4 years³⁰.

LISTENING DEVICES: MUSIC PLAYERS AND HEADPHONES

A music player is a device which plays music and produces sound signal while headphones are the transducers which convert the output signal in sound pressure level²⁴.

DISCUSSION

The use of personal music devices has risen exponentially among people. Devices are not only used for long periods of time, but also at higher sound levels. NIHL is caused due to an over stimulation of the auditory system produced by repeated exposure to sounds at various loudness levels over an extended period of time. The entire effects are noticed after more than ten years of noise exposure and affects people of irrespective of age and demographics²⁴. The temporary or permanent tinnitus problem is reported due to long-

term exposure to high sound levels when listening to personal musical devices.

Vata dosha has got more concern in compare to other two *doshas*. The normal functioning of *indriyas* are depended on *vata*. *Vata* dominates the *Shrotrendriya* and also liable for appreciation of hearing. In *Ayurveda*, *Acharyas* mentioned a number of causes responsible for ear diseases, among them most of the causes first affect the *Indriya Adhishthan* which is *Karna* then consequently affect the *Shrotrendriya* means of hearing capacity. *Asatmyaindriyarth samyog* or unwholesome confluence of *artha* with its *indriya* is a factor which ultimately vitiates the *doshas*. *Heena*, *Ati* and *Mithya Yog* of *Shabda* (sound) considered *Asatmyaindriyarth samyoga* of *Shrotrendriya* leads to vitiation of *Vata Dosha* and harm its function of hearing. The contact of abnormal sound or *shabda* is a factor which directly vitiates the *pranavata* of *shrotrendriya* and causes damaging effect on vital function of *shabdavahisiras*.

CONCLUSION

On over viewing the collected data from studies shows that, Headphone or personal music devices are the most commonly used stratagem that also causes inappropriate sound level. Three factors, intensity (loudness), duration (length of time) and frequency are interrelated and contribute to the sound energy level. Loud volume and high frequencies are affects more. Long term use of PLDs and headphones can significantly impair hearing function as tinnitus and leads to hearing loss. The inauspicious effect of listening in unworthy manner with PLDs and headphones can be considered as *Atiyoga* and *Mithyayoga* of *Shrotrendriya*. In ancient *Ayurved* literature, *Acharyas* mentioned adverse effect of improper bondage of *indriya artha* with *indriyas* under the concept of *Asatmyaindriyarth samyoga* and it's far reaching effect is aggravation of *doshas*. The confluence of *shabda* or sound in unwholesome nature, duration or distance, with *Shrotrendriya* causes vitiation of *vata doshas* and the adverse effects manifest as tinnitus (*karnanada* and *karnakshweda*) or *karnabadhriya*.

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