

Impact Of Yoga On Wellbeing Of Deaf Adolescents: A Narrative Review

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Abstract

This narrative review primarily aimed at finding the number of studies published so far on assessing the outcomes of yoga based interventions on hearing challenged children. The secondary aim of the study was to find the area of work addressed like physical, emotional, physiological potentialities of subjects and the improvement of these parameters with yoga. On a farther view, the study aimed at the outcomes of yoga intervention on deaf adolescents. The search for research articles were done in online sources like Pubmed, Google scholar and Cochrane library. Yoga intervention based Randomized control trial and reviews on deaf were included in the review whereas, case studies, cross-sectional and cross over studies were excluded from the review. The keywords used in the search were Yoga and deaf, hearing loss, exercise and hearing impairment. 8 papers were obtained and included in the current review. The review resulted in an understanding that practice of yoga benefits physical (body balance and stability), mental, learning skills, emotional wellbeing, feeling insecure and social anxiety and stress in individuals with hearing challenge. The review concluded that there is a requirement for extensive yoga based interventional research studies to improve motor skills and social wellbeing and quality of life of adolescents with hearing loss.

Key words: Hearing loss; Deaf; Yoga; Hearing impairment; Adolescents.

I. INTRODUCTION

Hearing is one of the most important senses crucial for verbal communication, social and safe living. Hearing impairment and loss are the most commonly known disabilities among children and adults. Noise pollution, mobile phone, electromagnetic field due to mobile towers, ototoxic drugs and drug toxicity increases the incidence of deafness in adolescents and adults. Whereas, disorders like hypothyroidism, uncontrolled diabetes mellitus, infectious diseases like rhinitis and sinusitis, anatomical deformities of Eustachian tube are found to be a cause for deafness among vulnerable population. WHO estimates 360 million (more than 30 dB hearing loss in 9% of children below 15 years of age and with more than 40 dB hearing loss among 91% of population above 15 years of age) individuals in the world are reported with disabling hearing loss (Ther & Taneja, 2015). The different types

of hearing loss includes sensorineural, congenital, anatomical and idiopathic. Congenital deafness which is found at the time of birth can be due to lack of folic acid supplement during pregnancy and defective pregnancy and child birth, premature birth, birth asphyxia, jaundice and other untreated infections.

Noise induced hearing loss is preventable and cured at early stages of detection, whereas when the cause is due to sensory-neural issues, structural deformities and aftereffects of untreated infections and reactions of drugs, the chances for cure is almost impossible. Physical, motor and physiological deficits among subjects with hearing loss by all means lower the quality of life indicating a need for therapeutic applications. Communication barriers and low ability to express needs and demands slow down the mental wellbeing leading to depression

tightening the mental health(Rostami, Mohammad & Bahmani, Bahman & Bakhtyari, Vahid & Movallali, 2014). Research also investigated attitude issues, attention and behavioral difficulties(Hintermair, 2013), low self esteem(Bigler et al., 2019), emotional suppression(Hosie, J. A., Russell, P. A., Gray, C. D., Scott, C., Hunter, N., Banks, J. S., 2000), low general health outcomes in deaf and the results of the study concretizes the findings that deaf individuals undergo high psychological distress(Hosie, J. A., Russell, P. A., Gray, C. D., Scott, C., Hunter, N., Banks, J. S., 2000)and social anxiety(Knutson & Lansing, 1990). Mental health observation done by one of the research studies by Marit H Kyam et al, showed that individuals with hearing loss showed moderate to high symptoms of anxiety and depression compared to healthy hearing individuals (Smit, Knoors, Hermans, Verhoeven, & Vissers, 2019).

II. RESEARCH OBJECTIVES

1. The purpose of this narrative review was to provide an overview of the many parameters that have been studied in deaf subjects and to investigate the impact that interventions such as yoga and exercise have had on those parameters.

III.METHOD OF RESEARCH

All the available research studies of both interventional and non-interventional forms were included in the review. Case studies, cross sectional and cross over designs were excluded. The search for papers in online sources like Pubmed, and Google scholar was using key words “hearing loss, deaf, hearing impairment, yoga, exercise” which resulted in obtaining 8 published manuscripts, out of which seven of the studies were yoga based interventional studies held on deaf adolescents and one of the articles examined the impact of exercise intervention on balancing skills of deaf individuals.

IV. RESEARCH RESULTS

Improved hearing performance through yoga

Application of yoga as a means of therapeutic intervention has also been tried in India as well as abroad. Yoga has been beneficial to the people without disabilities; however, there is very little knowledge about its utility in the physically challenged people. The various yoga asana may increase the practitioner's physical flexibility, coordination, and strength, while the breathing practices and meditation may calm and focus the mind to develop greater awareness and decrease

anxiety, and thereby resulting in better quality of life. In spite of a growing body of clinical research studies on the therapeutic effects of yoga, there is still a lack of concrete evidence regarding its relevance for improving the physical fitness of the physically challenged children like those with hearing impairment. In this study, we summarize the results of a focused investigation on the effects of yoga practice on various components of motor development in the physically challenged children(Asieh Sanjari1, 2017).

Yoga for postural and motor function in deaf adolescents

Yoga interventional study was conducted on fifty (n=50) deaf adolescents aimed at assessing potential effects of yoga on motor function development and eye body coordination in disabled children. Yoga intervention module included practices like practiced Yoga asanas (postures) and Pranayama (breathing techniques). Standing asana included ArdhaChakrasana, Pada Hastasana, Trikonasana and Tadasana. The sitting position asana were Vajrasana, JanuShirasana, Ushtrasana and Vakrasana and breathing exercises for experimental group participants were Bhastrika, dirghaswasana, and Bhramari pranayama. 1 hr in the evening for a total period of 12 weeks was given to experiment group for twelve weeks for one hour a day for 12 weeks. Assessments included reaction ability, agility and body balance. The within group comparison results showed that there is statistically significant results. It is widely known and accepted the world over that the practice of yoga is beneficial for improving general health of an individual. However, largely, the knowledge is of qualitative type and to become a regular physical fitness improvement, one needs a more in-depth understanding of such effects(Melo, Lemos, Macky, Raposo, & Ferraz, 2015).

Postural control and quality of life

A quasi experimental study was done on 32 female deaf adolescents of 15 to 17 years of age. Subjects were allocated to experimental group (n=13) and control group (n=15) based on convenient sampling. Yoga group practiced an elaborate yoga module for three times a week for eight weeks whereas, control group continued their activities as usual. The research tools of this study includes stork balance stand test- static and dynamic balance, Y teat, quality of life (hearing

impaired youth related QOL). There was a statistically significant improvement in the mean scores of yoga group in static and dynamic balance tests (lateral, medial and anterior) in within group analysis. Between group test reported a considerable improvement in the physical, social and emotional dimensions in terms of quality of life. This study concludes yoga as one of the best complementary therapy improving physical, social and emotional wellbeing in adolescents with hearing loss (Sanjari & Qasemi, 2016).

Another study conducted on physically disadvantaged deaf adolescents (group 1) compared to socially disadvantaged community home girls (group 2) with normal hearing. Comparison one speculates symptomatically high anxiety, lower skill resistance and mental arousal among subjects of group two whereas group 1 was with high values of heart rate and diastolic blood pressure, indicating cardiac autonomic irregularities among deaf adolescents in the baseline. Yoga intervention including relaxation and awareness was found with considerable improvement in the parameters like reduction in breath rate, balance over autonomic arousal and improved autonomic variables in the subgroups in this study (Patil, Education, & Karnataka, 2014).

Emotional stability and mental health

Random sampling procedure recruited 100 deaf and dumb subjects (age range 14 to 20 years) in a research study in Haryana. The subjects of experiment group (n=50) practiced yoga for nine weeks and saw significant improvement in psychological wellbeing when compared with control group (n=50). Yoga group received theory classes on practice of yoga, importance of diet, concentration and meditation followed by practical sessions on pranayama and five yoga asanas including Tadasana and Savasana. The components of pranayama included Bhastrika, Kapalbhata, Anulom vilom, Bhramari and OM kar recitation. Pre and post the intervention, participants were subjects for assessments on psychological parameters at pre and post the intervention. Assessments included physical stamina test and mental health. The result summarizes a statistically significant mean score differences in all the parameters in the subjects of yoga group much better than the subjects of control group (Gahlawat & July, 2014).

The asana or physical postures experimented on one another study on deaf adolescents included Uttanpadasana (double legs raising). Sarvangasana (The shoulder stand) Halasana (The Plough pose). Matsyasana (The Fish posture). Chakrasana (The Wheel pose). Ustrasana (The Kneeling Wheel pose). Suptavajrasana (The Kneeling Pose). Ardha Matsyendrasana (The half Spinal Twist). Padmasana (Lotus posture). Vajrasana (Kneeling pose). Breathing practices known as Pranayama included Anulom Vilom, Surya Bhedana. Chandra Bhedana and Cooling pranayama's like Shitali and Sitkari. The results of this study showed a considerable improvement in emotional wellbeing along with physical and motor skills in the practitioners of yoga when compared to non yoga group (Singh, 2014).

Exergame versus balance training for deaf adolescents

Twenty deaf adolescents were recruited randomly into exergame group 1 (n=10) and traditional physical education group 2 (n=10). Specific balance programs were performed by subjects of group 2. Traditional physical education group practiced 3 yoga poses like yoga tree pose, standing knee pose and king of dance pose, for 15 minutes duration for two times a week for a total of eight weeks. The primary aim of the intervention was to improve the static balance of the subjects. The intervention program which was named as Flaming balance test illustrated both the group with an improved body balance based on the mean scores extracted from pre and post intervention data. The study results highlight that balancing postures improve physical function with an improved body balance. The baseline reading of the study data reports the need for interventions that can improve body balance which is found to be considerably low in deaf children (Vernadakis, Papastergiou, Giannousi, & Panagiotis, n.d.).

Improved status of hematological variables

Hematological variables like hemoglobin and blood clotting time were checked in a yoga intervention study on deaf and dumb students (N=24) in Sivkasi. The age range of the recruited subjects was 12 to 15 years. The subjects were randomly allotted to experimental group who underwent yoga intervention which included practices like Tadasana, vrukshanasana, padmasana, Matsyasana, Vajrasana,

suptaVajrasana, Shashankasana, paschimottanasana, sirshasana, Salabhasana, Dhanurasana, Bhujangasana, sarvangasana, halasana, charaksana, Shavasana for eight weeks and control group who were on wait list. There was a significant improvement in both the parameters in the yoga group when compared to control which could let the authors declare yoga as one of the best effective complementary alternative therapies (Kumar, 2019).

researchers analyzed data from secondary-level documents in accordance with Scott's guidelines. The criteria for selecting relevant documents consisted of: Accuracy, i.e., documents from reliable sources; It has to be accurate, complete, consistent with the context of the situation that occurred during the publication period; It is reliable, i.e., the document is free from errors and misrepresentation; Can show details instead of documents of the same type. The details can be representative of the sample population, and the meaning is clear, i.e., it is a document that is easily understood, clear, consistent with the objectives and significance of the research. (Scott, J. 1990).

V. DISCUSSION

In overall search for number of studies on deaf nationally and internationally, 2,10,000 studies were found from google scholar, 1,40,000 from PubMed, 140 from Embase and 65 from Cochrane library. Around 95 of the studies examined various domains pre and post cochlear implantation in deaf. The variables studied include learning skills, verbal communication, intellectual and cognitive skills and behavioral changes. Pubmed search on number of studies done so far on deaf and hearing impaired resulted in finding 1,40,000 studies on various disciplines added on to the same domains. However, the search for complementary alternative therapies in hearing impaired/ deaf showed no many results. Eventhough, there is one study found to have examined the cost of expenditure and availing insurance (Ostevik et al., 2019) for naturopathy based interventions like chiropractic therapy, body massage, acupressure, acupuncture, nutritional therapies for improving skills in people who are deaf. The search also resulted in finding a meta analysis addressing the global burden (Haile et al., 2021) induced by the treatment and mode of management of deaf, elaborating the need for attention and action plans to handle health associated factors in people who are with hearing impairment and loss. Interestingly, one research study even

showed the application of nutrition (Puga, Pajares, Varela-Moreiras, & Partearroyo, 2019) in hearing loss, which opens up hope for the application of naturopathy in improving nutritional hearing betterment in deaf. World congress of health assembled in 2017 reported Osteopathy as an alternative medicine for managing hearing skills in individuals with hearing loss (Brinkhaus et al., 2017).

The current review done on yoga and non yoga research on deaf subjects observed the impact of different forms of yoga on wellbeing of deaf. Research reports that different yoga modules explored are shown to be effective with the mean scores and statistical significant probability value outcomes notified by the reported studies. Starting with the social insecurity and anxiety checked by two studies summarized the significant effect of yoga in improving the mean scores at post intervention indicating the impact of yoga in improving secure feeling. Three studies examined the influence of yoga on emotional outcomes in connection to physical dimensions and quality of life. The results of these studies however took a uniform twist with an improved physical strength with improved emotional wellbeing. Improved skill resistance and motor abilities were correlated with body balance, agility and neuromuscular coordination in few interventional studies pointing at direct and indirect mediation effect by which yoga and exercise interventions work on outcomes of life and wellbeing in deaf adolescents.

The results also evaluates the prevalence of mental health problems among deaf individuals is high (40%) and low quality of life linked with emotional and behavioral problems are also prevailing among deaf (Hindley, 2005) when compared to those with normal hearing. The outcomes extends the focus on the requirement for extra attention and care to tackle the issues to improve safe and secure feeling for individuals who are deaf. Yoga improves blood flow to the ears, help relax the muscle tissues and by the release of feel good hormones (Joshi, 2019) like dopamine, serotonin, endorphins and thus this therapy is found to have a drastic effect on people with hearing loss, which is in fact a motivational factor for conducting yoga interventional studies on larger basis. Even if there are eight interventional studies published on yoga for deaf, the parameters found to have assessed are with broader aspects and adherence to yoga and other adoptable complementary

alternative therapies with extensive examination on areas which are not studied which includes mindfulness, holistic wellbeing, attention, coping mechanism, use of sign language, grasping power and cognition among subjects with hearing loss is awaited.

VI. SUMMARY / SUGGESTIONS

To sum up, the lack of studies in the field of complementary and alternative medicine highlights the need for promoting various therapies like Naturopathy, Ayurveda, Unani, Siddha and Homeopathy to find the effect of each on physical, mental and social wellbeing in hearing impaired. Even if there are eight studies on yoga as a mind body therapy under complementary alternative medicine in deaf, more of yoga-based studies are required to see the impact of yoga on physical, mental, sensorial, and cognitive factors for overall improvement in the health of individuals with hearing loss. Yoga as a multipurpose therapy works at the cause and symptoms in order to bring up its effect on improving wellbeing of individuals with hearing loss. With the high prevalence of deafness among youngsters notified by health department of developed as well as developing countries, the need for attention and therapeutic apprehension of the problem is highlighted.

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