International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: SJIF: 5.995
Available Online at www.journalijcar.org
Volume 7; Issue 2(H); February 2018; Page No. 10149-10151
DOI: http://dx.doi.org/10.24327/ijcar.2018.10151.1706

Research Article

PREVALENCE OF BALANCE IMPAIRMENT IN CHILDREN WITH HEARING LOSS - AN OBSERVATIONAL STUDY

Diksha Lalasaheb Jadhav., Suchit Shetty* and Ajay Kumar

DPO'S NETT College of Physiotherapy

A R T I C L E I N F O

Article History:

Received 7th November, 2017
Received in revised form 13th December, 2017
Accepted 3rd January, 2018
Published online 28th February, 2018

Key words:

Balance impaired, Hearing loss children.

A B S T R A C T

Objective: To find out prevalence of balance impairment in hearing loss children.

Backgound: Hearing loss is also known as hearing impairment is a partial or total inability to hear. Hearing impairment in childhood is a common chronic condition that may have an impact on acquisition of speech, social and physical development. Moreover, it is estimated that about 440 million children world wilde have hearing loss above 85 decibels, and this is increase to about 800 million when the threshold is reduced to 50 Db. Motor development is a common sensori-motor impairment in profoundly deaf children.

Methodology: 50 sample were taken by convenient sampling. Consent form and detail information about the study was taken in form of sign language through their attender,. Each subject administred with PBBS, which performed twicely for better performance.

Result and Conculsion: Data was collected and analysed. Pie diagram used, where there is high prevalence of balance impaired in hearing loss children.

INTRODUCTION

Hearing loss is also known as hearing impairment, is a partial or total inability to hear. Hearing impairment in childhood is a common chronic condition that may have an impact on acquisition of speech, social and physical devlopment.[1]The prevalence of moderate to profound hearing impairment in children, including sensori-neural hearing loss and conductive hearing loss is 1to 6 of 1000, of which, 10% have hearing levels that fall in profound range. Moreover, it is estimated that about 440 million children worldwide have hearing loss above 85 decibels, and this has increase to about 800 million when the threshold is reduced to 50 dB.[1] The vestibular end-organ and cochlea are closely related both anatomically and functionally. Maturation of vestibular system is responsible for stabilization of eyes, head and body in space that helps to maintain an upright posture. Delayed postural development and motor development is acommon sensori-motor impairment in profoundly deaf children.[2] Moreover, damage to portion of the vestibule-cochlear nerve is a presumed cause of sensori-neural hearing loss, may include damage to both cochlear apparatus as well as the vestibular afferents. Thus injury to the vestibular organ may result in accompanying balance and motor development disorder.[2]

MATERIAL AND METHOD

Study Design

Type of study: Observetional study.
Duration of study: 1 year.

Corresponding author:* **Suchit Shetty
DPO'S NETT College of Physiotherapy

Place of study: Schools of children with hearing loss.

Study Design

Sample size: 50
Sample population: Children with hearing loss.
Sampling: Convenient.

Selection Criteria

Inclusion Criteria

i. Child with congenital hearing loss within the age ranging from 7 to15 years.
ii. Participant who are willingly to participate in study.
iii. Participant should understand sign language of

Exclusion Criteria

1. Congenital unstable
2. Non-co-operative.
3. History of lower limb impairment.

Material Used

1. Chair with back support and arm rest
2. Stopwatch
3. Masking tape
4. Chalkboard eraser
5. Ruler.

Procedure

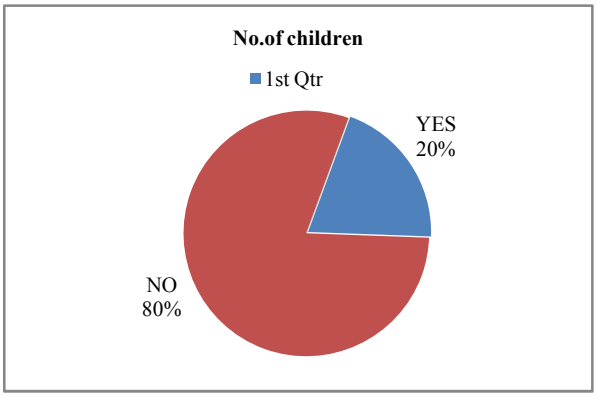
- Subject will be selected on basis of inclusion and exclusion criteria.

- Prior to study a written consent will be taken from all children with hearing loss and the participants will be recruited convenient sampling and following data will be recorded.
- Then they will given detail information about the study in form of sign language through their attender or bystander.
- Procedure for the PBBS is relatively simple.
- PBBS scale.
- No physical assistant is given.
- Usually the task is performed twice. shorter times indicate better performance .
- PBBS is administrated to all subject. Score may be noted down for each domain.
- The data collection will be analyzed.

RESULTS

Graph Showing prevalence of balance impaired.

No.of children	50	40	10
Balance impaired	-------	NO	YES



Interpretatoin: Pie diagram shows that 20% of children with hearing loss have balance impaired & 80% of children with hearing loss do not have balance impairment.

DISCUSSION

The present study had assessed the prevalence of balance impairment in children with hearing loss. And the result of the study showed that, there are 10% of children having balance impairment in the given population, which may be due to sensori-neural hearing impairment, which implied that their vestibular system was affected. As it was examined by Wong *et al*. Damage due to vestibular structures early in life result in morphological alteration in the vestibular system, result in consequent deficiency of balance and motor performance.[4,5]

The following points of the result should be taken into consideration, as 40 participants were not showing any balance deficit which may be due to unilateral hearing loss and less affected. It was observed in previous literature which confirms that balance deficit is common sensori-motor impairment in children with severe to profound hearing impairment.[6]

Balance may be affected normal motor development & postural control, and it has been postulated as the primary cause of motor impairment.[7] In addition, absent & inaccurate visual input and somato-sensory input also upset postural stability and balance performance of hearing impaired children. By contrast, accurate visual and somato-sensory inputs can compensate for balance problems, even when the vestibular system is impaired, leading to adequate balance.

Therefore, this type of children should be advised to seek for accurate visual and somato-sensory inputs in balance demanding environment. They should seek information from the environment proactively that is, they should be more alert to the texture and level of the supporting surface. These recommendations may be given to the hearing impaired children, if the balance problem is identified early.[1]

These children may also have difficulty riding a bicycle & experience disorientation when swimming with eyes closed.[8] Therefore; they may tend to avoid participation in these activities. Parents should understand their problems and be aware of this phenomenon & encourage proactively the hearing impaired children to take part in this extracurricular activities.[8]

Hence, balance assessments should be includes as a routine procedure for early detection of dysfunction in hearing impaired children, so as to provide them with appropriate training and recommendation to be incorporated into their daily lives.[9]

CONCLUSION

Thus our study concludes that there is high prevalence of balance impairment in hearing loss children.

Aknowledgment

It's my great pleasure and privilege to express my deep-felt gratitude to our respected Principal Sir Dr. Ajay Kumar and Guide-Dr. Suchit Shetty who immensely helped me and rendered their advice, precious time, constant encouragement, knowledge and relevant information regarding my study and whose suggestions and guidance has enlightened me on this subject.

References

1. Rajendran V, Roy FG, Jeevananthm D. Effects of exercise intervention on vestibular related impairments in hearing-impaired children. *Alexander Journal of medicine*.2013 Mar 31; 49(1):7-12.
2. Pinquart M, Teubert D, 2011. Academic, physical, and, social functioning of children and adolescents with chronic physical illness:ameta-analysis. *Journal of pediatric psychology*.2011 Dec 15:jst 106.
3. Varni J W, Seid M, Kurtin P S.PedsQL 4.0: Reliability and validity of the pediatric Quality of life inventory version 4.0 Generic core scales in health & patient population. *Medical care*, 2001, vol.39 (pg.800-812).
4. F.B.Horak, A Shumway-Cook, T.K.Crowe, *et al*, Vestibular function and motor proficiency of children with impaired hearing or with hearing disability and motor impairments.
5. J.C. Siegel, M. Marchetti, J.S. Tecklin, *et al*, Age related balance changes in hearing-impaired children.
6. S.A. Butterfield, W.F. Ersing *et al*, Influence of age, sex, etiology, and hearing loss on balance performance by deaf children.
7. R.M.Rine, *et al*. Evidence of progressive delay of motor development in children with sensorineural hearing loss and concurrent vestibular dysfunction.
8. Boys Town National Research Hospital. Information on hearing loss- genetic and deafness- how the balance system works.

9. Walicka-Cuprys K, Prazygoda L, CZenczek E, Truszcynska A, Drzal-Grabiec J, Zbigniew T, Tarnowski A. Balance assessment in hearing-impaired children. Research in developmental disability. 2014 Nov 30; 35 (11):2728-34V.
10. Malekabadizadeh Z, Barati A, Khorashadizadeh M. The effect of hearing impairment and intellectual disability on children's static and dynamic balance.
11. Wiegersma PH, Velde AV, Motor development of deaf children. *Journal of child psychology and psychiatry.*1983 Jan 1; 24(1):103-11.
12. Horak FB, Shumway- Cook A, Crowe TK. Black FO. Vestibular function and motor proficiency of children with impaired hearing or with learning disability and motor impairments. *Developmental Medicine and child Neurology*.1988 Feb 1; 30 (1):64-79.
13. Goodman J, Hopper C. Hearing impaired children and youth. A review of psychomotor behaviour. Adapted Physical *Activity Quarterly*. 1992 Jul;9(3):2143.
14. Wong TP, Leung EY, Poon CY, Leung CY, Lau BP. Balance performance in children with unilateral and bilateral sever-to-profound-grade hearing impairment. *Hong Kong Physiotherapy Journal*. 2013 Dec 31;31(2);81-7
15. Leigh G, Ching TY, Crowek, CuppleL, Marnane V, Srrto M. Factors affecting psychology and motor development in 3- year-old children who are deaf or hard of hearing. *Journal of deaf studies and deaf education.*2015 Oct 1;20(4):331-42
16. Fernandes R, Hariprasad S, Kumar VK. Physical therapy management for balance deficits in children with hearing impairments. A systematic review. *Journal of paediatric and child health*. 2015 Aug 1;51 (8):753-8

How to cite this article:

Diksha Lalasaheb Jadhav *et al* (2018) 'Prevalence of Balance Impairment in Children with Hearing Loss - An Observational Study ', *International Journal of Current Advanced Research,* 07(2), pp. 10149-10151.
DOI: http://dx.doi.org/10.24327/ijcar.2018.10151.1706

****