Vol 6 Issue 1 Feb 2016

ISSN No : 2230-7850

International Multidisciplinary Research Journal

Indian Streams Research Journal

Welcome to ISRJ

RNI MAHMUL/2011/38595 **ISSN No.2230-7850**

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board.Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.oldisrj.lbp.world

Indian Streams Research Journal
International Recognized Multidisciplinary Research Journal

ISSN: 2230-7850 Impact Factor : 4.1625(UIF) Volume - 6 | Issue - 1 | Feb - 2016

A COMPARATIVE STUDY ON EARLY LITERACY SKILLS IN CHILDREN WITH AND WITHOUT HEARING IMPAIRMENT

Chaitali Roychoudhury[1], Mr. Indranil Chatterjee[2], Mr. Dipak Kumar Aich[3] and Mr. Kishore Kumar Saha[4]

[1]Student M.Ed (HI) 2015
[2]Department of Audiology, Lecturer (Speech & Hearing)
[3]Department of Education, Lecturer (Special Education)
[4]Department of Education, Teacher Supervisor
AYJNIHH, ERC, KOLKATA.

ABSTRACT

Reading is very important part of a child's schooling. Identifying students with literacy difficulties early in the academic process can provide them with early intervention Services. Early literacy is founded on the acquisition of oral language, phonological processing, print awareness, knowledge, and comprehension skills acquired before school entry. Assessing the development of early literacy skills is necessary in order to identify children with delays, provide appropriate intervention, and monitor progress.

The main aim of the study was to check and compare the level of early literacy skills in children with normal hearing sensitivity and the children with hearing impairment using cochlear implant and hearing aid. A descriptive study was conducted with thirty normal hearing children aged three to five years and thirty children with hearing impairment (using hearing aid and cochlear implant) age matched with hearing peers. They were administered a teacher made test through questionnaire. Final tool was consisted with three domains named print concept, pre math concept and writing vocabulary. Z test were used to analyze the data. Test re test reliability was checked. The major finding was that the children with hearing impairment performed similar to their hearing peers.

KEYWORDS: *Children with hearing impairment, Children using hearing aid, Children using cochlear implant, Early literacy, Print concept, Pre math concept, Writing vocabulary.*

INTRODUCTION

Literacy represents the process of gaining meaning from a critical interpretation of written or printed text. The key to all literacy is reading development. Reading development involves a range of complex language including awareness of speech sounds (phonology), spelling patterns (orthography), word meaning (semantics), grammar (syntax) and patterns of word formation (morphology), all of which provide a necessary platform for reading fluency and comprehension. Once acquiring these skills, the reader can attain full language literacy, which includes the abilities to apply printed material to critical analysis, inference and synthesis; to write with accuracy and coherence; and to use information and insights from text as the basis for informed decisions and creative thought. The inability to do so is called illiteracy .

It is not easy to define early literacy. There are many unresolved questions about literacy that how it develops. Central to many recent discussions of literacy is the notion that writing and reading are ways of making, interpreting, and communicating meaning. Reading is defined as the ability to "take meaning from print," (Heath, 1982) and writing as the ability to use print to communicate with others. According to these definitions, reading and writing are more than simply decoding and encoding print: they are ways of constructing and conveying meaning with written language.

Becoming literate, then, is a multifaceted phenomenon that involves more than learning a set of technical skills (such as learning the alphabet, learning how to form letters and spell words, and learning how to decode print) that are typically taught in elementary school; becoming literate also includes mastering a complex set of understandings, attitudes, expectations and behaviours, as well as specific skills, related to written language (Erickson, 1984).

Before starting the elementary school, many young children begin to learn about writing and reading well. It is a question that what happens in the early years of literacy learning as these experiences have been shown to be critical to future success. Early literacy is the primary understanding of text and the strategies that can make sense of print, including the principles of how an alphabetic writing system works. (Early Literacy, 2003)

The components of literacy are – Vocabulary and language, Phonological awareness, Print knowledge, Oral language, Letters and words comprehension. The present study discusses about three domains - print concept, pre math concept and writing vocabulary.

Print knowledge is an umbrella term that encompasses children's concepts of print and their alphabet knowledge (Justice, Bowles, & Skibbe, 2006). It is important in learning to read because it strongly supports learning how the words in our language are represented in print. When children learn to read, they must acquire two different kinds of skills. They must learn how to identify printed words, and they must learn how to comprehend written material. It helps children understand the alphabetic principle, notice the regular ways that letter represent sounds in words.

Prior to learning mathematics, preschoolers and kindergarten students learn pre-math skills. They include learning to count numbers, learning the proper sequencing of numbers (1 comes before 2 and so on), learning to determine which shapes are bigger or smaller, and learning to count objects on a screen or book. Pre-math skills are also tied into literacy skills to learn the correct pronunciations of numbers as well as larger numbers. These skills are essential for life because most careers require a decent background in math and science. Even jobs like a clerk, a secretary, or a homemaker require math or science skills. Studies suggest that these early mathematical concepts, informal in nature, seem to be important for the further development of more complex skills and understandings present in the higher grades of the educational system (Mix, Huttenlocher & Levine, 2002).

NEED

The early literacy skills are required for later scholastic performance which helps in development of life. The Early Literacy Profile can be a useful guide for teachers, students, and their families to the literacy behaviours, skills, and dispositions that comprise the continuum of literacy learning. It can be a tool for teaching and an ongoing measure of student progress, as well as an early indicator of student need for extra support.

The profile can also be used by schools and districts to keep track of overall students performance trends so that resources and interventions can be appropriately allocated. Because the Literacy Profile articulates clear standards and includes multiple forms of evidence, it is an instrument that can meet the assessment requirements of federal programs.

For all children, and especially for those who have special needs or disabilities, information from the Early Literacy Profile should be used as only one of many indictors of student progress when making decisions about educational futures. The profile can reveal to teachers areas of student progress that require further investigation or additional support, but it should not be used as the sole indicator of a student's need for referral to special services.

There is no Bangla material available to assess the early literacy skill in children with and without hearing impaired using cochlear implant or hearing aid. To see the Indian scenario of early literacy skills in children with and without hearing impaired the present study entitled "A comparative study on early literacy skill in children with and without hearing impairment" has been undertaken.

OBJECTIVE

i)To assess the early literacy skills of the children with normal hearing sensitivity.
ii)To assess the early literacy skills of the children with hearing impairment using cochlear implant.
iii)To assess the early literacy skills of the children with hearing impairment using hearing aid.

EXPLANATION OF KEY TERMS

1. Children with hearing impairment: Children with hearing impairment are those who have hearing loss more than 60dB in the better ear, having no other additional impairment.
2. Children using hearing aid: A child using hearing aid refers to those children who uses hearing aid. Hearing aid is an amplification device that helps persons with hearing impairment to hear better.
3. Children using cochlear implant: Children using cochlear implant refer to children who use cochlear implant. Cochlear implant is an electronic device that is designed to provide enhanced sound perception to severe to profound hearing impairment.
4. Early literacy: Early literacy means the ability to understand print concept, to identify word from sentence, basic concept of mathematics, ability to write vocabulary etc.
5. Print concept: Print concept includes awareness that print carries a message; print is read from left to right & top to down, handling of books, turning pages etc.
6. Pre math concept: Pre math concept is the ability to understand mathematics using symbols, signs, counting, concept of small-big, measurement, directional words.
7. Writing vocabulary: Writing vocabulary means the ability to write a set of words within a language that are familiar to the child.

HYPOTHESES

1. There will be a significant difference in performance in early literacy skill of children with normal hearing sensitivity and hearing impairment using cochlear implant.

2. There will be a significant difference in performance in early literacy skill of children with normal hearing sensitivity and hearing impairment using hearing aid.
3.There will be a significant difference in performance in early literacy skill of children with hearing impairment using hearing aid and cochlear implant.

METHOD

Research Design: Descriptive and ex post facto research designs were followed for present study.

SAMPLE

The random sampling technique was followed for the study. The participants were the children with normal hearing sensitivity age matched the children with hearing impairment using cochlear implant or hearing aid attending regular or special schools in Kolkata and its adjacent districts. Each group was consisted of 30 participants. They were divided into two groups.

Group A was comprised of 30 children with normal hearing sensitivity aged 3 to 5 years (mean age= 4.81 years and standard deviation age=0.71 years).

Group B was consisted of 30 children with hearing impairment.15 children using unilateral cochlear implant (mean age=4.46 years and standard deviation age=0.90years) and 15 children using digitally programmable multi channel hearing aid fitted in both ear (mean age=4.10 years and standard deviation age=0.78 years).

To select the participants for this study, the criteria were following:

Group A

i)Age range between 3 to 5 years
ii)Bengali was the medium of instruction.
iii)No known history of any sensory impairment.
iv)No known psychological and behavioral problem.
v)No known history of cognition failure.
vi)Were selected based on random sampling technique.

Group B

i)Age range between 3 to 5 years
ii)Bengali was the medium of instruction.
iii)No known other neurological disorder except hearing impairment.
iv)No known history of cognition failure.
v)Both were using unilateral cochlear implant or digital programmable multichannel binaural hearing aids for last six months.

TOOLS

For the present study the investigator developed a standardized test in Bangla for measurement of early literacy skills. The tool was finalized by following steps –

From the review of literature, the researcher had experienced that early literacy skills could be measured by three domains - Print Concept, Pre math Concept, Writing Vocabulary.

Weightage given to areas and types of questions

Areas	Weightage	Marks
Print concept	pppPrint concept 30%	9
Writing vocabulary	40%	12
Pre math concept	30%	9
Total	100%	30

Marks distribution according to type of questions:

Areas	Print Concept		Writing Vocabulary		Pre math Concept		Total Marks
Topics	Multiple Choice	Total	Multiple Choice	Total	Multiple Choice	Total	
	9	9	12	12	9	9	30

The proposed tool was given to check the face validity with the help of experienced persons. The tool was validated by five special educators. They were requested to read the tool properly and to comment whether each item of the tool were in appropriate, appropriate and most appropriate, with reference to objectives and areas selected for the study.

All responses obtained from five judges were tabulated for percentage calculation. Item scored most appropriate by 80% of judges were selected to form final test containing items in each category.

Both the group of participants (with hearing impairment and without hearing impairment) and the schools were selected from Kolkata and its surrounding.

Participants were made clear about what they have to do. Each child was tested over a period of approximately 45 minutes. The responses provided by the children during all tasks were collected for later analysis.

SCORING

Each participant was got one mark for given right answer and zero mark for given wrong answer for each item in all areas.

RESULTS

Based on the objectives, the 1st hypothesis formulated was ‘there will be a significant difference in performance in early literacy skills of Children with normal hearing sensitivity and children with Hearing Impairment using cochlear implant” (H1) . As per H1, Ho was “there will be no significant difference in performance in early literacy skills of Children with normal hearing sensitivity and children with Hearing Impairment using cochlear implant .The scores obtained by the normal hearing children and hearing impaired children with cochlear implant consist of three domains based on Teacher Made Test were taken into consideration.

Z-test scores in early literacy skills of normal hearing children and children with hearing impairment using cochlear implant

Domains	Groups	n	Proportional score	Z- value	P -value
Print concept	Children with normal hearing sensitivity	30	0.8925	1.37	0.17068
	Children with Hearing impairment using cochlear implant	15	0.7333		
Pre math concept	Children with normal hearing sensitivity	30	0.9185	1.83	0.06724
	Children with Hearing impairment using cochlear implant	15	0.7111		
Writing vocabulary	Children with normal hearing sensitivity	30	0.825	1.64	0.101
	Children with hearing impairment using cochlear implant	15	0.6		
Total	Children with normal hearing sensitivity	30	0.8733	1.60	0.1096
	Children with hearing impairment using cochlear implant	15	0.6733		

The proportional score of total performance in early literacy skills of hearing children was 0.8733. In case of children with hearing impairment using cochlear implant the proportional score in total performance was 0.6733. The Z value of obtained score in total performance of normal hearing children and cochlear implant children was 1.60. The corresponding P value was 0.1096.since the value was <0.05, it failed to reject the null hypothesis (Ho).

The result clearly indicates that there is no significant difference in performance of print concept, pre math concept, writing vocabulary and in total performance in early literacy skills of normal hearing children and children with Hearing Impairment using cochlear implant as Z –score lied under -1.96 to 1.96 which is the value of Alfa (α) 0.05 level.

The results confirmed this finding and indicated unequivocally that children with CIs can demonstrate age-appropriate print knowledge skills (Sophie E. Ambrose, Marc E. Fey, and Laurie S. Eisenberg, 2012). In their study twenty-six children with normal hearing and twenty-four children in the cochlear implant group were participated .The Test of Preschool Early Literacy (TOPEL) was utilized to assess phonological awareness and print knowledge. Findings were that there no significant between-group differences for print knowledge scores (p = .705), with over half the children in the CI group scoring above the mean of the NH group. Emergent literacy skills include children's development of oral language, phonological awareness, and print knowledge (Whitehurst & Lonigan, 1998).These findings supports the findings of present study that there is no significant difference in the performance in early literacy skills between normal hearing peers and cochlear implant users.

Based on the objectives, the 2nd hypothesis formulated was 'there will be a significant difference in performance in early literacy skills of Children with normal hearing sensitivity and children with Hearing Impairment using hearing aid" (H1) . As per H1,Ho was "there will be no significant difference in performance in early literacy skills of Children with normal hearing sensitivity

and children with Hearing Impairment using hearing aid .The scores obtained by the normal hearing children and hearing impaired children with hearing aid consist of three domains based on Teacher Made Test were taken into consideration.

Z-test scores in early literacy skills of hearing children and children with hearing impairment using hearing aid

Domains	Groups	n	Proportional score	Z - score	P - value
Print concept	Children with normal hearing sensitivity	30	0.8925	1.15	0.2501
	hearing impairment using hearing aid	15	0.7629		
Pre math concept	Children with normal hearing sensitivity	30	0.9185	2.143	0.0323
	hearing impairment using hearing aid	15	0.6666		
Writing vocabulary	Children with normal hearing sensitivity	30	0.825	1.35	0.1770
	Hearing impairment using hearing aid	15	0.6444		
Total	Children with normal hearing sensitivity	30	0.8733	1.51	0.1310
	Hearing impairment using hearing aid	15	0.6866		

The proportional score of total performance in early literacy skills of hearing children was 0.8733. In case of children with hearing impairment using hearing aid the proportional score in total performance was 0.6866. The Z value of obtained score in total performance of normal hearing children and children using hearing aid was 1.51. The corresponding P value was 0.1310.since the value was <0.05, it failed to reject the null hypothesis (Ho).

The result clearly indicates that there was no significant difference in performance of print concept, writing vocabulary and total performance in early literacy skills of hearing children and children with Hearing Impairment using hearing aid as Z –score lied under -1.96 to 1.96 which is the value of Alfa (α) 0.05 level. But in pre math concept result indicates that there was a significant difference in performance in early literacy skills of hearing children and children with Hearing Impairment using hearing aid.

This is consistent with the findings of previous studies. Traxler (2000) analyze the performance of deaf students according to their appropriate level. He found a much below average performance on the subtests of Mathematical Procedures and Mathematical Problem Solving. The performance levels of deaf students indicated a delay of two years at the age of 8 years (with a performance equivalent to that of 1st graders). This delay increases from three to four years at the age of 11 years (with a performance equivalent to that of 3rd graders), and six to eight years at ages between 17 and 18 years (with a performance equivalent to that of 5th graders).The similar results supported by some recent studies. In another recent study of the visual representation of mathematical problems, the results of Blatto-Vallee et al. (2007) showed that deaf secondary and college students use very little visual

representation, compared to hearing secondary and college students. When using visual representation, deaf students create representations of pictorial and iconic aspects, which are, however, irrelevant to the solution of the problem.

Based on the objectives, the 3rd hypothesis formulated was 'there will be a significant difference in performance in early literacy skills of Children with Hearing Impairment using hearing aid and children with hearing impairment using cochlear implant" (H1) . As per H1, Ho was "there will be no significant difference in performance in early literacy skills of Children with Hearing Impairment using hearing aid and children with Hearing Impairment using cochlear implant .The scores obtained by the normal hearing children and hearing impaired children with cochlear implant consist of three domains based on Teacher Made Test were taken into consideration.

Z-test scores of in early literacy skills of children with hearing impairment using hearing aid and using cochlear implant

Domains	Groups	n	Proportional score	Z score	P value
Print concept	Children with hearing impairment using hearing aid	15	0.7629	0.19	0.8493
	Children with hearing impairment using cochlear implant	15	0.7333		
Pre math concept	Children with hearing impairment using hearing aid	15	0.6666	-0.26	0.7948
	Children with hearing impairment using cochlear implant	15	0.7111		
Writing vocabulary	Children with hearing impairment using hearing aid	15	0.6444	0.25	0.8025
	Children with hearing impairment using cochlear implant	15	0.6		
Total	Children with hearing impairment using hearing aid	15	0.6866	0.08	0.9362
	Children with hearing impairment using cochlear implant	15	0.6733		

The proportional score of total performance in early literacy skills of children with hearing impairment using hearing aid was 0.6866. In case of children with hearing impairment using cochlear implant the proportional score in writing vocabulary was 0.6733. The Z value of obtained score in total performance of children using hearing aid and children using cochlear implant was 0.08. The corresponding P value was 0.9362.since the value was <0.05, it failed to reject the null hypothesis (Ho).

The result clearly indicates that there was no significant difference in performance of print concept, pre math concept, writing vocabulary and total performance in early literacy skills of children with Hearing Impairment using hearing aid and children with Hearing Impairment using cochlear implant as Z score lied under -1.96 to 1.96 which is the value of Alfa (α) 0.05 level.

This observation is similar to the findings of Pennsylvania System of School Assessment (PSSA). PSSA includes subtests for mathematics, reading, and writing since 2002 to 2006. The results revealed that none of the 4 years evaluated has there been any significant difference between the implant group and the matched comparison group on any of the seven subtests. What trends have been observed is

just as likely to favour the non-implanted group as the implanted group (Marschark et al., 2014)

CONCLUSION

The participant of the present study comprised of two groups, one group comprised of 30 children with normal hearing sensitivity aged from 3-5 years, and group B consisted of 30 (3-5 years) children with hearing impairment (15 using cochlear implant and 15 using hearing aid). A questionnaire was developed under three domains namely Print concept, Pre math concept, writing vocabulary in early literacy skills. The learner was instructed by the investigator to execute and answer the questions in the questionnaire. Then the retest were followed after 1 month of the first test. Statistical was completed using r'' console software and Pearsons correlation coefficient test was applied for measuring internal consistency and test retest reliability. This study also concludes that there were no significant difference in performance in early literacy skill of children with normal hearing sensitivity and hearing impairment using cochlear implant in all the domains (Print concept, Pre math concept ,Writing vocabulary) .There were no significant difference in performance in early literacy skills of children with normal hearing sensitivity and hearing impairment using hearing aids in the Print concept and Writing vocabulary). But in Pre math concept hearing aid user children are lag behind the normal child. There was no significant difference in performance in early literacy skills of children with hearing impairment using hearing aids and cochlear implant in all the domains (Print concept, Pre math concept, Writing vocabulary) of the developed test. The developed test may use as a tool of early literacy measurement.

REFERENCES

1. Heath, S. B. (1982). Ways with words: language, life, and work in communities and classrooms. Cambridge, MA: Cambridge University Press

2.Ericsson, K. A. (1984). Long-term working memory. Psychological Review, 102, 211–245.

3.Early Literacy (2003) Retrieved July 16, 2015 from www.zerotothree.org/BrainWonders

4.Justice, L. M., Bowles, R. P. & Skibbe, L. E. (2006) Measuring preschool attainment of print concept knowledge: A study of typical and at-risk 3- to 5-year-old children using item response theory. Language, Speech, and Hearing Services in Schools. 37(3):224–235.PubMed

5.Mix, K.S., Huttenlocher, J., & Levine, S.C. (2002) Quantitative development in infancy and early childhood. New York: Oxford University Press.

6.Sophie E. A.,Marc, E. F.,& Laurie S. Eisenberg (2012).Phonological Awareness and Print Knowledge of Preschool Children with Cochlear Implants;. J Speech Lang Hear Res. 2012 Jun; 55(3): 811–823.Published online 2012 Jan 5.

7.Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. Child Development, 69,

8.Traxler, C. B. (2000). Measuring up to performance standards in reading and mathematics: Achievement of selected deaf and hard-of-hearing students in the national norming of the 9th Edition Stanford Achievement Test. Journal of Deaf Studies and Deaf Education, 5, 337–348.

9.Blatto-Vallee & Gary Et Al. (2007) Visual-Spatial Representation In Mathematical Problem Solving By Deaf And Hearing Students. Journal Of Deaf Studies And Deaf Education, 12, 4, 432-448.

10.Marschark, M., Rhoten, C. & Fabich, M. (2014). Effects of Cochlear Implants on Children's Reading and Academic Achievement. Retrieved from http://jdsde.oxfordjournals.org/

Publish Research Article
International Level Multidisciplinary Research Journal
For All Subjects

Dear Sir/Mam,

We invite unpublished Research Paper,Summary of Research Project,Theses,Books and Book Review for publication,you will be pleased to know that our journals are

Associated and Indexed,India

- International Scientific Journal Consortium
- OPEN J-GATE

Associated and Indexed,USA

- Google Scholar
- EBSCO
- DOAJ
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Databse
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database
- Directory Of Research Journal Indexing

Indian Streams Research Journal
258/34 Raviwar Peth Solapur-413005,Maharashtra
Contact-9595359435
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com
Website : www.oldisrj.lbp.world