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भारतीय पुनर्वास परिषद्

REHABILITATION COUNCIL OF INDIA

(A Statutory Body under the Ministry of Social Justice & Empowerment)
Department of Empowerment of Persons with Disabilities (Divyangjan)

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Dear Readers,

This is for the information of our valued readers and subscribers that we are publishing a combined issue of Volume 13, No. 1 & 2 (January to December 2022) due to certain technical reasons.

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From Chairperson's Desk

From 2005 onwards, twelve editions of Journal of Rehabilitation Council of India (JRCI) have been published. Due to Covid, there has been a gap of three years in publishing this Journal. RCI is committed to bring out this Journal every 6 months (i.e. biannually). I am happy to note that Journal of Rehabilitation Council of India (JRCI) has been revived now. Hopefully next edition (Jan.- June 2023) will be published by July 2023.

Research is very important for development of any field, particularly in the area of disability, rehabilitation and special education which is an emerging area. Rehabilitation Council of India is giving special attention to this through publication of scientific literature.

The success of any Journal depends upon its acceptance and usefulness by the stakeholders. It is a matter of satisfaction that JRCI has received national and international recognition for its quality articles published from time to time.

I hope that this edition of the Journal, which contains a collection of varied articles will be useful for students, researchers, academicians, professionals and other stakeholders. I thank all the authors for contributing valuable articles to this issue. I would also like to express my sincere thanks to the reviewers and members of the Editorial Board, as publication of this issue would not have been possible without their support. This Journal is being released in fully accessible format(s).



(Rajesh Aggarwal, IAS)

Secretary, DEPwD (Divyangjan) &
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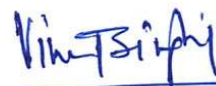
From Chief Editor's Desk

Rehabilitation Council of India brings out a peer reviewed Journal of Rehabilitation Council of India (JRCI) and publishes research articles in the field of disability rehabilitation and special education contributed by eminent experts in the field. Articles on different disabilities like Autism, Learning Disability, Visual Impairment, Mental Retardation/ Intellectual Disability and Hearing Impairment, etc. are published in the Journal.

This issue carries seven articles on Effect of Tangram on the Geometrical Learning of Low Achievers in Mathematics; Women Education without Discrimination: A Step Towards Equality; Phonological Working Memory in Children with Normal Non-Fluency; Efforts Taken by Families for Economic Empowerment of their Adult Family Members with Intellectual Disability; Application of Motor Learning Principles in Management of Ataxic Dysarthria Secondary to "Cerebellar Infarct": A Case Study; Position of the Implementation of Inclusive Education for Children with Special Needs in Primary Schools of Haryana; Vestibular Problems in Individuals with Auditory Neuropathy Spectrum Disorders: Review

I hope the current issue of the Journal would be useful to the researchers, rehabilitation experts, students and others and help to promote scientific research in the area of disability rehabilitation and special education, benefitting the persons with disabilities for utilization of their full potential leading to their empowerment.

I would also like to compliment and express my gratitude to all the authors who have contributed to this Journal and also place on record my appreciation to the reviewers for their prompt response to review the manuscripts and the editorial team in bringing out this issue. I would also invite all the experts, professionals and other interested in the area of disability rehabilitation and special education to make their contribution to JRCI for making it more comprehensive and publication ensure timely.



(Vineet Singh)

Member Secretary &
Chief Editor, JRCI

CONTENTS

Sl. No.	Articles	Page No.
	From Chairperson's Desk	V
	From Chief Editor's Desk	VII
1.	Effect of Tangram on the Geometrical Learning of Low Achievers in Mathematics <i>Kritika Mishra</i>	1
2.	Women Education without Discrimination: A Step Towards Equality <i>Preetam Pyari</i>	7
3.	Phonological Working Memory in Children with Normal Non-Fluency <i>Theaja Kuriakose and Nayana Benny</i>	17
4.	Efforts Taken by Families for Economic Empowerment of their Adult Family Members with Intellectual Disability <i>R. V. Desetty and V. N. Patnam</i>	25
5.	Application of Motor Learning Principles in Management of Ataxic Dysarthria Secondary to "Cerebellar Infarct": A Case Study <i>Joyanta Chandra Mandal, Auroshree Mohapatra and Indranil Chatterjee</i>	33
6.	Position of the Implementation of Inclusive Education for Children with Special Needs in Primary Schools of Haryana <i>Sandeep Berwal and Renu Bala</i>	40
7.	Vestibular Problems in Individuals with Auditory Neuropathy Spectrum Disorders: Review <i>Sujeet Kumar Sinha, Anuj Kumar Neupane and Abhishek Ranjan</i>	57
	JRCI – Call for Papers	67
	Subscription Form	72

Effect of Tangram on the Geometrical Learning of Low Achievers in Mathematics

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ABSTRACT

Low achievers in mathematics are found at every level of school education. In this research low achievers in mathematics are those who at the end of class V were low scorers as compared to their classmates in mathematics. The aim of this study is to see the effectiveness of tangram for learning geometry. A quasi experimental control group design was employed in this research. For the experimental group, the fundamental knowledge of geometry was delivered with the help of tangrams. The findings of the study were analysed by t- test. The results indicated that tangram based learning has a positive impact on the learning of low achievers.

Introduction

Mathematics is an essential subject in the curriculum. The knowledge of mathematics is essential for everyone to lead a productive life. Mathematics being a compulsory subject of study, every child has the right to access quality learning in this subject. Mathematics plays an important role in human life because it helps in solving problems in a scientific manner and leads to a productive way of living. The National Council for Educational Research and Training (NCERT, 2006) defines the main goal of mathematics education in schools is to promote critical thinking. Clarity of thought and pursuing assumptions to logical conclusions is central to the mathematical enterprise. There are many ways of thinking, and mathematics promotes the ability to handle abstractions, and an approach to problem solving". Elementary education is the first stage of the educational ladder. At this level it is necessary to build a positive attitude towards mathematics. There are many factors which are responsible for developing negative attitude towards mathematics and low achievement in mathematics is one major contributor. Low achievers in mathematics are found at each grade level. Low achievement leads to disinterest, failure, stress, anxiety, fatigue and phobia towards mathematics. Wilson (2009) described the five building blocks of mathematics: number sense, place value, fraction and decimal, geometry and problem solving. Some children usually are not able to grasp the concepts of these building blocks and thus they score low marks and develop math anxiety and fear towards mathematics.

Geometry is one of the building blocks of mathematics, and students at times are not able to understand some underlying concepts. Elementary stage geometry lays the foundation of learning which plays a significant role in children's future life. Geometrical learning also enhances the numerical skill of the children: as the children count the sides of two dimensional or three dimensional shapes and learn the number relationship. In order to teach geometry, teachers need to develop an understanding regarding the properties of shapes and classification of shapes based on their properties. The learning of

geometry helps children to discover patterns, find length, area, volume, angles and better understanding of the world. Teachers need to help children to develop “a variety of spatial understandings: direction (which way?), distance (how far?), location (where?), and representation (what objects?)” (NCTM 2000, 98). According to National Council of Teachers of Mathematics (NCTM) standards for the early grades the important aspect of geometry and spatial sense are (as cited in Copley, 2000);

- analyzing characteristics and properties of two- and three-dimensional geometric shapes and considering geometric relationships,
- specifying locations and describing spatial relationships using coordinate geometry and other representational systems,
- applying transformations by recognizing and applying slides, flips, and turns as well as recognizing and creating shapes containing symmetry,
- using visualizations to create mental images of geometric shapes using spatial memory; to recognize and represent shapes from different perspectives; and to recognize geometric shapes and structures in the environment and specify their location (p. 97).

To overcome math anxiety, the teaching method involves the use of educational game i.e. Tangram. A tangram is the oldest Chinese puzzle that consists of seven geometric pieces of shapes, called tans (Tian, 2012). These seven pieces include one square, one parallelogram and five triangles. These pieces are used to form the different shapes. Teaching with tangram provides an activity based environment that allows children to develop geometrical concepts by focusing on categorizing, comparing and working out the puzzle. It helps the students in developing geometrical thinking from visualization (Initial stage) to analysis level (final stage). Students learning at elementary level are the predictor of future success and students will be able to apply this knowledge at higher level grades. Many researches indicate that game based learning enhances learning gains in the some extent. Learning with tangram helps in familiarity with shape, structure, location, and transformations and development of spatial reasoning that enable children to understand the spatial world and better. With the tangram pieces, children can create original designs or follow pictures from tangram shape and books.

Literature Review

There are many researchers conducted on low achievers in mathematics. Several researches were reviewed for conducting this study. Suan (2014) studied the factors responsible for underachievement in mathematics. He identified three factors: First is teacher factor: mastery of the subject matter, instructional techniques and strategies, communication skills. Second is student factor: study habits, time management, and attitude and interests towards mathematics. Third is environmental factor: parents’ values attitudes, classroom settings, and peer group. Mishra & Vasanta (2016) studied the effect of mathematical games upon the mathematics achievement of low achievers and found that there was a significant improvement seen in the experimental group which is taught by using the mathematical games. Way (2011) studied the development of spatial and geometrical learning by the use of tangram. She describes the Van Hiele theory of

geometrical instruction. Van Hiele emphasized that in order to develop geometrical thinking there is a strong need to deliberate instruction for moving children through several levels of geometric understanding and reasoning skill. Siew et al. (2013) studied the effect of Van Hiele's phases of learning using tangram on primary school students and the result showed that low achieving students gain geometrical knowledge and develop the required thinking skills. They suggested that tangram should be used as a teaching tool to teach the elementary level geometry. Liu (2014) studied the effect of tangram race mathematical games upon the elementary geometry learning of children and found that this game based approach enhances the geometrical learning of the children.

Objective

To study the effect of tangram on geometrical learning of low achievers at elementary level.

Methodology

The researcher used quasi-experimental method and selected two groups viz. control and experimental groups randomly. The control group was taught using traditional teaching methods while experimental group was taught the geometrical concepts using tangrams.

Sample of the study

A sample consisting of 40 low achievers in mathematics studying in class V were chosen by random sampling. Low achievers in mathematics are identified on the basis of the marks in mathematics from the school records by the teachers. Out of the population of 200 students, 40 low achievers in mathematics were identified in class V. These 40 students were divided into two groups (20 control and 20 experimental group). To measure geometrical learning a self-made test was constructed by the researchers to collect the data. t- test was applied to find the significant difference between the groups.

Data Collection

The data was collected by self-constructed test in geometry. In the first phase pre-test in geometry was administered on control and experimental groups. During the second phase teaching sessions of one month with tangram were organized for the experimental group by the researcher while the control group was taught by the traditional method. In the last phase a geometry test was administered on both the experimental and control group. During the experimentation phase the rules for using the tangram were explained— all seven parts of tangram must be used at the time for creating any desired shape and there should be no overlapping of parts. The layout of tasks performed during teaching included:

- Introduction to the shapes
- Grouping similar shapes

- Making different shapes by joining smaller pieces
- Tangram: shape making

Illustration of the shapes are made with the help of tangram are depicting in Figure 1.1.

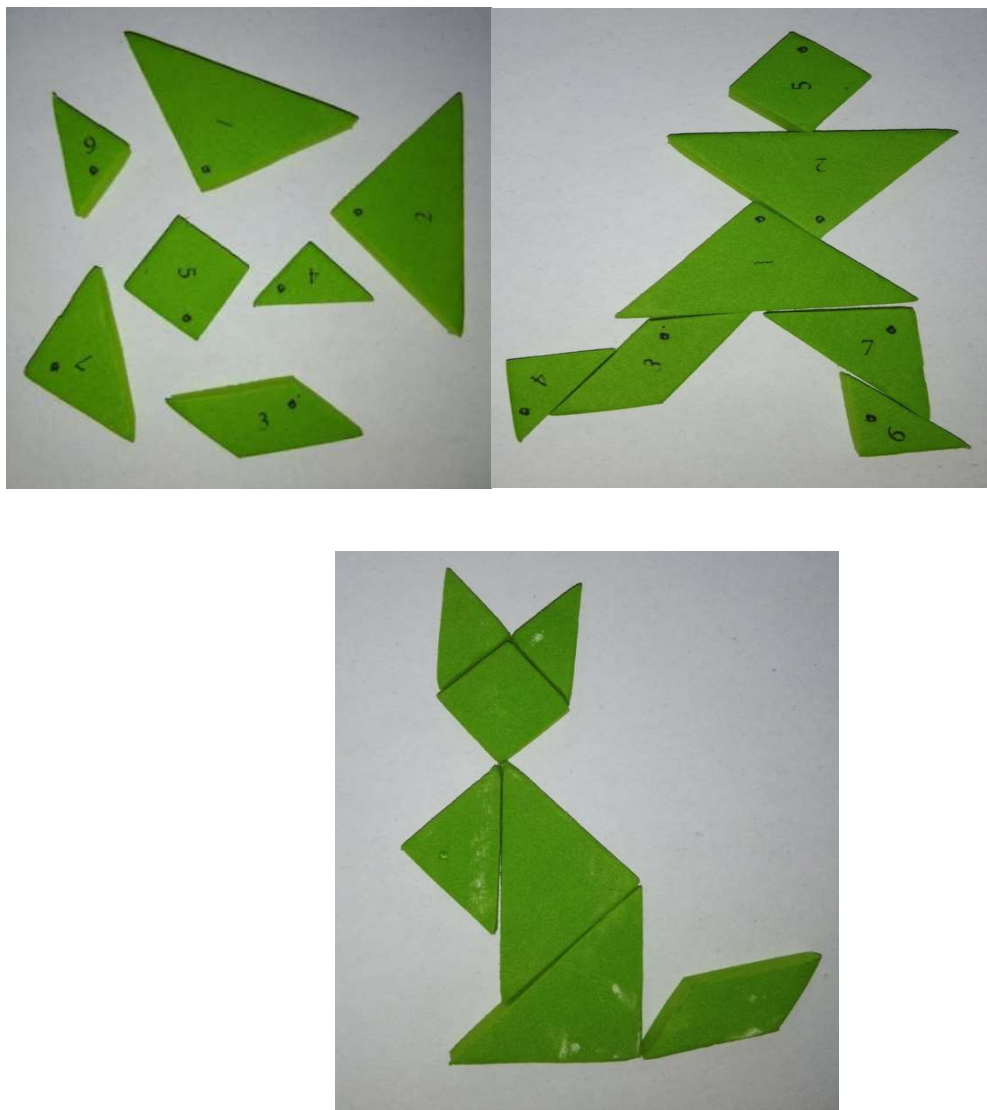


Figure 1.1: Shapes formed by tangram

Analysis and Interpretation of Results

Descriptive (Mean and S.D.) and inferential statistics (t-test) was used for analysing the data. In addition one sample Kolmogorov–Smirnov test was used to test the normality of data. The obtained value of K–S test was found to be significant at 0.05 level which assured that the data is normal.

Major Findings

Table 1.1 depict the means of pre-test of experiment group viz. 2.65 and the control group viz. 2.15 are nearly same. The calculated t value was found to be 1.86 which is insignificant ($P > 0.05$). This implies that no significant difference was found between the pre-test of experimental and control group.

Table 1.1: Mean, S.D. and t-test value of pre-test scores of Experimental and Control group

Groups	N	Mean	S.D.	t-test	Significance
Experimental	20	2.65	1.49	1.86	0.077
Control	20	2.15	1.18		

After teaching geometry with tangram to the experimental group for one month and using the traditional teaching method with the control group, the achievement test in geometry is administered on both the groups. The results obtained are presented in Table 1.2.

Table 1.2: Mean, S.D. and t-test value of experimental and control group after the experimentation phase

Groups	N	Mean	S.D.	t-test	Significance
Experimental	20	8.4	2.39	3.404	0.003
Control	20	5.9	2.17		

The Mean and S.D. of experimental group was found to be 8.4 and 2.39 respectively. The Mean and S.D. of control group was found to be 5.9 and 2.17 respectively. The calculated t-value was found to be 3.404 which is significant ($P < 0.05$). This shows that there are significant difference between the experimental and control group. This indicates that teaching geometry with tangram has positive impact on the performance of students.

The results clearly reveal that teaching geometrical concepts through tangram have a positive effect on geometrical learning and performance of low achievers in mathematics. The scores in geometrical test are higher in the experimental group as compared to the control group.

Conclusion

At the elementary level mathematics teaching should be activity oriented which encourages students to learn mathematics. Tangram based games are useful to provide opportunities for building self-concept, increases reasoning and develop spatial ability among students. It provides the space for students to operate at different levels of thinking. Tangram is found to be an innovative method for enhancing student interest in

geometry. Geometry teaching should not be limited to the single orientation of geometrical shapes but emphasis should also be laid on activities that help the student in recognition of shapes along with their properties.

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Women Education without Discrimination: A Step Towards Equality

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ABSTRACT

Women Empowerment is global issue. Education is foundation for every child. So with the help of education every child has their own view about themselves and for others. Schools have responsibilities that provide the education without discrimination where all students can learn in safe environment. We are in 21 century but women and girls have serious obstacles remain based on sex, education, employment, human rights, socioeconomic development, training, pay, promotion etc. This paper presents some problems that faced by women and girls with disability. For achieving Millennium Development Goals this paper provides insights that why women's with disability education and equity is important in society.

Introduction

Education plays a pivotal role in improving the lifestyle of people irrespective of caste, creed, religion etc. Education provides opportunities to individuals to live comfortable, convenient life with higher earning, better health and longer life important to individual well-being and the nation's economic growth. It is especially important for women and girls. Women educational achievements have multiple flow effects within the family and across the generations. Goldman Sachs analysts, "the impact of educating girls is not only felt in her lifetimes, but also in the health, education and productivity of future generations. "In modern era big challenge is improving equity in education and preventing school failure in the context of the current economic system.

Disability is a complex, contested, evolving concept (World report on disability, 2011). Disability is a developmental issue that can directly affect the lives of children with disabilities. "Disability is seen as such an overriding factor that students with disabilities are perceived as genderless" (Rousso, 1997). The World Health Report on disability estimate that people with disability are 15% about world population (i.e. more than one billion people) and about 80% people with disability live in developing countries (World report on disability, 2011).

After the Second World War (1940-45) most of the nations recognized the right for all people should be included and they should be treated as equal citizens. In 1981 after the UN'S international year for disabled which specially focused upon the conditions of Persons with disability. The purpose of this to secure the legal rights of them "Full participation and Equality" but not passing the separate law for Person with disability. Many definitions define disability within country and across the country but World Health Organization (WHO) currently gave a new international definition that considers many factors. Rousso (2003) mentioned in his paper entitled as "Education for All Global

Monitoring Report” about international definition of disability. The definition includes girls with physical, sensory, emotional, intellectual, learning, health, or other disabilities that may be visible or invisible, stable or progressive, occurring at birth or during childhood. Two important federal laws- The Individuals with Disabilities Education Act (IDEA) and Title IX of the Education Amendments of 1972-provide the legal prohibitions of discrimination on the basis of sex and disability that are the starting place for efforts to transform our schools into equitable learning environments for all students. In addition, in the late 1970s and early 1980s, the federal Women's Educational Equity Act (WEEA) Program in the US Department of Education established the first funding priority for Model Programs to promote educational equity for women and girls with disabilities (Barbara Waxman Fiduccia, Leslie R. Wolfe, 1999).

Major elements of any education system such as the teaching learning process, school organization, climate, policies etc. can influence disabled children. Each of these elements and actors (Teachers) are conceptually distinct, and each serves a different role in the education system. Natalie Nielsen (2013) mentioned that each actor and element in any complex system connected in a nonlinear way (much like nodes in a web or network), and they are mutually dependent on each other. In addition, the interactions among different actors and between people and the other elements of the system are constantly changing over time, and they are determined by the individuals and their goals for the interactions. In any educational system major actor is a teacher and their capacity to teach disabled children in Schools can offer learning experiences that a child may not obtain at home, particularly if he or she is living in a disadvantaged environment (Heckman, 2008; Heckman, 2011). Clearly, for schools to meet the needs of girls and young women with disabilities, they must incorporate the self-defined needs of disabled women into every aspect of curriculum, pedagogy, administration employment, counselling and school management (Frosch and Sprung, 1988).

The World report on disability provides a guide to improving the health and well-being of persons with disabilities. It seeks to provide clear concepts and the best available evidence, to highlight gaps in knowledge and stress the need for further research and policy (World Report on Disability, 2011). In line with the CRPD (Convention on the Rights of Persons with Disabilities), this Report shows how the capabilities of people with disabilities can be expanded with the help of agencies to improve their well-being so as to protect them and realize their human rights against their insecurity (World report on disability, 2011).

Equality is not equity. The idea of equality is defining element of social organization. It is not a mere tally of resources or something that arises from contract between the individual and the state. It applies most profoundly at the level of that which makes human beings human, namely the inherent dignity of the human being along with self-respect, honour and dignity. The recognition of this equality provides ethical foundation for inequalities (Addressing inequalities, 2012). Equality is the state of being equal in rights, freedom, socioeconomic status and opportunities. There cannot be achieved without protection of the right not to be discriminated on any grounds, such as

“race, colour, sex, language, religion or political or other opinion, national or social origin, property, birth or other status (Addressing inequalities, 2012).

Inequalities play a major role in social, economic, political, and material arenas of the human life which act as a barrier to human development. In order to achieve a holistic right based education we have to fundamentally focus on equality, equity and inclusive participation that must be empowered and beneficial to all groups. Discrimination and prejudice related to race, gender, nationality and ethnicity deny this fundamental equality, in turn affecting not only those people being discriminated but also the society as a whole (Addressing inequalities, 2012).

Disabled women and girls live at the corner of disability and womanhood-with two "minority" identities, a double dose of discrimination and stereotyping and multiple barriers to achieving their life goals (Fine and Asch, 1988). Gender inequality in education affects girls and boys, women and men alike, in which girls and women are more disadvantaged and more personalized. According to CEDAW (Convention on the Elimination of Discrimination Against Women, 2014) committee highlighted that only 41.7% of women with disabilities have completed primary school, compared with 52.9% for other women and approximately 20 million women become disabled each year as a result of complications during pregnancy or childbirth. Estimated literacy rate mentioned for women with disabilities is low about 1% and less than 20% girls and women and girls with disabilities received rehabilitation services. UN Women global champion who is working for women and girls empowerment reported that prevalence of disability (World Bank, 2011) in women is higher than men (19.2 versus 12%) and one woman in five is live with disabilities (World report on disability, 2011). Although discrimination on the basis of gender and disabilities are two combined factors that are disadvantageous to women more than men. In this way education is both cause and consequence of broader forms of gender inequality in society development.

“Education is one of the most important means of empowering women with the knowledge, skills and self-confidence necessary to participate fully in the development process - (ICPD)”

Two major barriers to the education of girls and young women are especially those with disabilities: gender inequality and the burden of disability. In the light of UNESCO is also promoting equality in and through education systems.

“We have a collective responsibility to uphold the principles of humandignity, equality and equity at the global level. As leaders we have a duty therefore to all the world’s people, especially therefore to all the word’s people, especially the most vulnerable and, in particular, the children of the world, to whom the future belongs.”
-United Nations Millennium Declaration, Paragraph 2, 2000

The Millennium Development Goals (MDGs)–agreed on by the international community in 2000 and endorsed by 189 countries–are a unified set of development objectives addressing the needs of the world’s poorest and most marginalized people, and

are supposed to be achieved by 2015. The goals are: 1. eradicate extreme poverty and hunger 2. Achieve universal primary education 3. Promote gender equality and empower women 4. Reduce child mortality 5. Improve maternal health 6. Combat HIV/AIDS, malaria, and other diseases 7. Ensure environmental sustainability 8. Develop a global partnership for development (World report on disability). In which three of the Millennium Development Goals (MDGs) focus on gender. The Millennium Development Goals Directly affected by poverty and injustice. The Progress report (UN Secretariat, 2005), however, fairly strongly states that it is unlikely, that any of these three MDGs can be met, if women lack the education, influence and resources to care for their families, and to fully participate in the development process (Okkolin, Mari-Anne; Lehtomäki, Elina 2005). A positive correlation exists between female enrolment in school and the gross national product and increase of life expectancy. In the words of Charles Malik, “The fastest way to change any society is to mobilize the women of the world. Now it widely accepted that one of the biggest shortcomings of MDGs was its lack of a rigorous focus on inequality, equity and incentives to address the needs of the poorest and most marginalized. These inequalities lagged in meeting the minimal requirements to achieve sustainable development and create a problems such as increase social tension, political in sustainability and environmental problems etc. UN Women deputy executive director Lakshmi Puri on the International day of persons with disabilities (3 December 2015) point out that both gender equality perspectives and disability are mainstreamed in the goals and targets of the 2030 agenda. CSW62 (Commission on the Status of Women) organized a session on Empowering Rural Women and Girls (March 2018) draws attention to the gender equality and the empowerment of rural women and girls. So we must narrow the gaps in access, opportunity and outcomes between disabled men and women. Present scenario of the society and the recent researches exhibit the following problems for the Girls with disability:

- 1- Girls with disability are less interested to attend school so they may lead to worse situation of social and economic wellbeing. This affects the employment, health, earing, increased expenditures related to disabilities and their families also.
- 2- The wages gap exists between girls with disability and boys with disability so girls are unemployed or whether employed they earn less. Wage gap is as marked in developing countries. Recent studies in India have produced mixed results, with a significant wage gap found for males in rural labor markets in Uttar Pradesh but not for similar workers in Tamil Nadu (Mitra, Sambamoorthi, 2007 & 2009).
For example- women with work disabilities tend to have lower incomes than men with work disabilities and disabled women earn 85 cents for every \$1.00 earned by disabled men with similar work characteristics (Berkeley Planning Associates, 1996).
- 3- Disability has bidirectional link to poverty: disability may increase the risk of poverty, and poverty may increase the risk of disability. Poverty may increase the Girls with disability inaccessible environment or lack of access to appropriate health rehabilitation services. Girls with disabilities required personal assistance, medical care or assistive devices etc. so these additional costs increase their risk of being poorer than others as depicting in figure1.1.



Figure 1.1: This diagram represents in a circular way the negative cycle linking disability, poverty and vulnerability.

Source: DFID, Poverty, Disability and Development, p.4.

- 4- If we reduce and eliminate poverty than only the effective way is to take people with disabilities into account that is most vulnerable group, among all the groups. More effective way is to reduce poverty to invest more in girl's education. There is no tool for development more effective than the education of girls (Kofi Annan, Former Secretary-General of the United Nations).
- 5- Both employment and income outcomes appear to worsen with the severity of the disability (Grammenos, 2003; Emmett, 2005). It is harder for people with disabilities to benefit from development and escape from poverty (Thomas, 2010) due to discrimination in employment, limited access to transport, and lack of access to resources to promote self-employment and livelihood activities (Coleridge, 2005). The employment rates for men with disabilities (53%) and women with disabilities (20%) are lower than men (65%) and women (30%) without disabilities.
- 6- Inequitable education policies have a negative impact on Girls with disability. If the government policies not planned according to needs of women with disability then whole system fail. Without empowerment of women's with disability societies will not able to achieve the millennium development goals.
- 7- It also affects the achievement of Girls with disability. Researchers have suggested both that boys are more salient and central in the classroom because they demand and therefore benefit from-teachers' attention and that boy are punished for it. Girls, on the other hand, are rewarded for stereotypically good girl behavior—neatness passivity, following instructions, good grades, and silence—but are denigrated as less capable, for

example in the highly valued math and science classes (Wolfe and deNys, 1985; Sadker and Sadker, 1994).

- 8- It increases the dropout rates of girls with disability and school failure. Dropping out large number of students from their school is worldwide phenomenon. Many researches describes the reasons for increase in dropout rates of girls with disability due to lack of interest in studies, poverty, poor quality of education, failure in examinations, health issues, physical harassment, poor parental literacy, family issues, perception of teachers towards disability, lack of motivation, problems at school, infrastructure problems at school, early age marriage, long term sickness, parental socioeconomic position etc.
- 9- Girls with disability life are strongly influenced by the quality of imparting education. According to Millennium Development Goal which seeks to achieve universal primary education for all girls and boys by 2015 and the Dakar Framework for Action (2000) which specifies its second education goal as, “ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality” (Richler, 2005). Girls with disability get less attention from their families and society also. Due to limited support from their families and lack of understanding about their needs, unconducive school environment, learning resources, lack and facilities and teacher training not to get good quality of education.
- 10- Girls with disability belong to poor socio economic status has personal or social circumstances are obstacles in achieving their educational goals. According to the World Report on Disability approximately one billion people in the world are living with a disability, with at least 1 in 10 being children and 80% living in developing countries. Among marginalized groups, children with disabilities remain the most excluded, discriminated not only because of their disability but also because of lack of understanding and knowledge about its causes, implications and stigma. Due to gender and their disability girls faced double disadvantage. The WHO World Report on Disability estimate that disabled girls faced more discrimination and exclusion than males. Due to this they are deprived to get education, health care, vocational training, find employment, forced to get early marriage and benefit from full inclusion in their families.
- 11- Improve their self-esteem. Self-esteem is used to describe how you view yourself. It may be more positive means good opinion of ourselves and more negative means bad opinion of ourselves. Good or bad opinion comes from self-images. Self-esteem is keystone for positive attitude towards living. It affects our thinking, relation to others, potential etc.
- 12- This has a negative impact on social, emotional and personal development of Girls with disability. Disabled women and girls are at very high risk for depression. They do not access public spaces because of physical barriers and cannot participate in political

decision making so women or girl with disability have to face social exclusion as depicting in figure1.2.

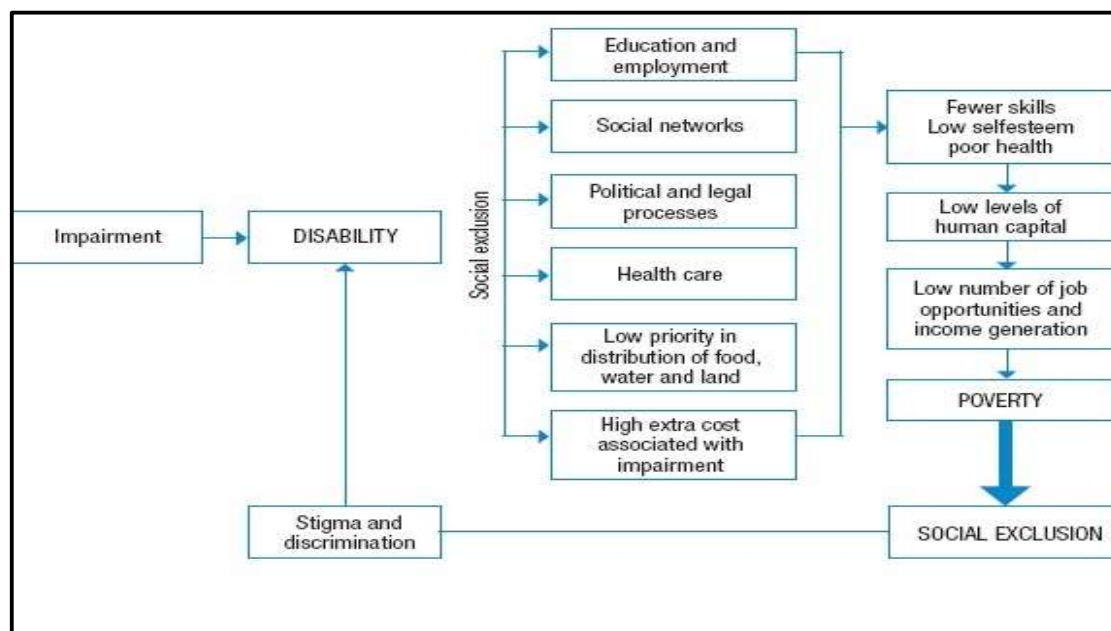


Figure 1.2: Diagram represents Disability to poverty & Social Exclusion: Adaptation from R. Yeo (2001)

The onset of disability may lead to the worsening of social and economic well-being and poverty through a multitude of channels including the adverse impact on education, employment, earnings, and increased expenditures related to disability (Jenkins and Rigg, 2003). So they also face low rates of employment, low wages, low educational levels, high rates of sexual and physical violence and limited access to health services, including reproductive health care.

A person with disabilities is approximately 15% of the world population represents a significant proportion so they cannot be excluded from developmental efforts. To achieve our goals most effective intervention is to invest upon girl's education. For equality there is a need to adopt women with disability in mainstreaming approach to provide equal treatment and to secure independence, autonomy, participation and social integration. Educating women, taking care of their family planning, skilled care at birth, health services etc. Women participation in health and well-being creates the conditions for stronger economic growth and good governance. This underlines an important point that if strengthen and improve the participation of women and girls with disability leads to improve the world.

Today's need is that world in which we want to live where the inherent value, dignity and equality of every individual irrespective of gender and disability where all people are able to enjoy an adequate standard of living. Education is attainable standard of health where all can benefit from physical and social security and participate equally and

free of violence in economic, social and political life without discrimination (Addressing inequalities, 2012).

In conclusion, Government needs to take proactive measures to eliminate discrimination, reduce barriers and allocate resources in this way to promote equality of both access and opportunities. Marginalized groups such as women, girls, children and people with disabilities, ethnic minorities etc. required to participate in decision making is a key human rights principle and it is a critical element of a right based approach to development. These marginalized groups supported to in policy making, including through representations in parliaments that affect them and their communities. To further progress in our path of development requires a structural change that shift in mindset and attitude that puts at its core a commitment to equality of all: minorities and majorities, men and women, marginalized and underprivileged. It is only then that we will come closer to our vision of the world we want for all. All individual have not only a right but responsibilities to play their role in the processes of constructing a world that is more just, more peaceful, more sustainable and one that yields greater happiness for all people. We have much to learn one another and much to contribute in these efforts. We must come to see ourselves as one “we” (Addressing inequalities, 2012). If members of society is treated to be differently and discriminated against their disabilities than society cannot develops in a cohesive way. To progress in our path of development requires a structural change that shifts mindset and attitude. We will not require only structural change in our hearts and mind but mind first. We have to motivate our actions, vision and sustaining commitment to a more just world for all where all the disadvantaged, disabled or marginalized people breath fresh air in a liberal, flexible, inclusive conscious and conducive environment so that the gap between disadvantaged and advantaged vanish forever to join hands. As one young woman from the United States said: “I may be a girl who’s disabled, handicapped, crippled—whatever you call it—but I’m tough and I can fight for my rights”-(Rousso, 2001b)

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Phonological Working Memory in Children with Normal Non-Fluency

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ABSTRACT

Clinically, it is very important to predict the development of stuttering at an early age of life because stuttering has an impact on academic, social, emotional and vocational achievements in life. Identifying the relationship between phonological short term memory and NNF may help speech language pathologist for the identification of development of stuttering in its early stage. Hence the purpose of the study was to explore the possible relationship between phonological short term memory and NNF. Two groups of children in the age range of 2.5 to 3.5 years were taken up for the study. Group 1 consisted subjects with percentage of disfluency more than 5 and Group 2 consisted subjects with percentage of disfluency less than 5. The result indicated that children in Group 1 performed significantly poorer than that of children in Group 2.

Keywords: Normal Non-Fluency, Stuttering, Phonological Working Memory

Introduction

Linguistic issues are reported as one of the most important factors in the etiology of stuttering in the past few decades (Vahab, Zandiyan, Falahi and Howell, 2013). Recently various studies have been carried out in working memory and have contributed the role of working memory in the development of stuttering (Aboul, Hossam, Dessouky, Shohdi and Aisha, 2010). Working memory is recognized as a neurocognitive system which gives temporary storage and processing of incoming information. Working memory is critical to phonological encoding (Gathercole and Baddley, 1990). Numerous researchers (Smith, 1999; Van Riper, 1992) have suggested that the components that add to the onset and advancement of stammering shift crosswise over people, and hence, a given language skill may be a solid factor in child's etiological history. Recently, a language-related area that has claimed attention from researches of stuttering is phonological working memory.

Many studies have reported that children with stuttering show poorer in their phonological working memory. Prior, it has been accounted that youngsters who stammer have a higher rate of phonological issue relative to general population (Paden, Yairi and Ambrose, 1999; Yaruss, Lasalle and Conture, 1998) suggesting an existence of relation between phonological skills and stuttering. Anderson and Wagovich (2010) reported that children with stuttering performed significantly poorer than children without stuttering on non- word repetition and focused attention skill.

Dhatri, Kumar and Santosh (2017) investigated working memory abilities of adult with stuttering and compared with age and gender matched individuals using n-back test. The results revealed significant difference between two groups during 2-back task which indicated poorer auditory working memory for individual with stuttering. A study assessing recall accuracy and rate of novel word learning using two multisyllabic non-words in adult with stuttering indicated significantly poorer recall accuracy and a slower rate of learning when compared to fluently speaking individuals in non-word repetition task (Ludlow, Siren K. and Zikria, 1997). Courtney, Megann Julie and Harvey (2012) explored the phonological working memory of adults who stutter through the use of a non-word repetition and a phoneme elision task. The results showed that adults who stutter were significantly less accurate than adults who do not stutter in their initial attempts to produce the longest non-words. Adults who stutter also required a significantly higher mean number of attempts to accurately produce 7-syllable non-words than adults who do not stutter.

Few researchers like Bakhtiyar, Soleymani and Mahmoud (2006) in Persian language examined phonological encoding in twelve children who stutter and twelve children who do not stutter through non word repetition task. Their results indicated that children with stuttering showed slightly poorer performance than non-stuttering children but the difference was not significant. Anderson, Wagovich and Hall (2006) compared non word repetition in children who do and do not stutter and found that children with stuttering produced fewer two, three syllable word repetition and made significantly more phonemic errors compared to that of children who do not stutter. Spencer and Fox (2014) reported that phonological and articulation abilities in preschool children are important predictor for the development of chronic stuttering.

Phonological short term memory in Normal Non-Fluency (NNF) is one of the aspects of cognition. It has been proven to be an important predicting factor for the development of stuttering. Phonological working memory can be assessed using various tasks. One such task is non-word repetition task. In children non-word repetition tasks have been broadly used to explore the phonological working memory skills (e.g., Dollaghan, Biber and Campbell, 1993, 1995; Dollaghan and Campbell, 1998). These tasks basically depend on retrieval and the response gives information about storage capacity and rehearsal abilities. That is, a person who can retrieve a non-word stimulus precisely have depended upon sufficient rehearsal and storage capacity to achieve that point. According to Anderson, Wagovich and Hall (2006) Non-word repetition is appropriate for measuring phonological working memory in people with typical and atypical speech and language disorders. Hence, non-word repetition task would appear to be an appropriate assessment tool for investigating phonological working memory capacities of children with stuttering. Magimairaj and O'Malley(2008) have utilized non-word repetition task to check phonological short term memory and reported it to be a useful measure to assess phonological short term memory in typically developing children. It is hypothesized that non word repetition tasks remarkably evaluate phonological working memory by making the listener to store the phonemes listened, recover them from memory, and deliver the nonsense word (Gathercole and Baddeley, 1990). Not just does non-word repetition evaluates phonological memory abilities, yet it additionally provides information on

phonological representation speech motor planning and execution (Gathercole, 2006; Rispen and Bakers, 2012).

Clinically, it is very important to predict the development of stuttering at an early age of life because stuttering has an impact on academic, social, emotional and vocational achievements in life. It is not monetarily or practically feasible to treat each child who starts to stammer, yet early intervention has reliably been shown to profit the youngster, both by enhancing fluency strategies and giving passionate support (Subramanian, Yairi, and Amir, 2003). Normal dysfluency commonly happens in kids between ages two and seven, with an uplifted event between 2.5-4 years. During this period the dysfluencies are episodic and cyclic in nature without any typical pattern. According to Guitar (2007), frequency of dysfluencies are less than ten per hundred words in children with normal non-fluency and most of the repetitions are simple with no significant features of tension or struggle. The commonly seen normal disfluencies are interjections, revisions and whole word repetitions. As age increases, they will show a decline in these disfluencies. Most of the time they are unaware of the disfluencies and they keep talking without interferences.

Identifying the relationship between phonological short term memory and NNF may help speech language pathologist for the identification of development of stuttering in its early stage. It is clear from the literature that many researchers have attempted to find the relationship between phonological working memory and stuttering. However studies focusing on phonological working memory in children with NNF are scanty.

Aim of the Study

To explore the possible relationship between phonological short term memory and NNF by comparing the performance on non word repetition task between children with more NNF and less NNF.

Method

A total of 16 subjects in the age range of 2.5 to 3.5 years were taken up for the study. All the subjects were native speaker of Kannada language. None of the subjects had any history of speech, language, hearing and other medical related problems. Speech samples were taken from each of the subject by using general conversation and story narration. Speech sample consisted of minimum of 250 syllables. None of the subjects exhibited stuttering like dysfluencies. Percentage of disfluency was calculated from each of the subject. Based on percentage of disfluency the subjects were further grouped into two. Group I consisted of 8 subjects (M=6, F=2) with percentage of disfluency more than 5 and group II consisted of 8 subjects (M=5, F=3) with percentage of disfluency less than 5.

Stimuli used

The stimuli consisted of 15 non-words with varying syllable length from two syllables to four syllables. The non-words had various combinations of consonants and

vowels like CVCV, CVCCV, and CVCVCCV that followed the Kannada phonotactic rules.

Procedure

Each subject was seated comfortably on a chair facing the investigator across the table in a quiet and distraction free room. In order to get the co-operation from the subject for testing, rapport was built by talking about the daily activities of the child and games played by the child etc. After that the subject was instructed as follows “now I will read out to you certain meaningless words. You will have to immediately repeat each one as you hear it”. The non-words were presented in a random order, and the subject had to repeat the non-words. Online scoring was adopted. For every correct answer a score of 1 was awarded.

Results

The scores obtained by children in group one and group two on non-word repetition task were subjected to statistical analysis using SPSS version 17 software. The mean scores obtained by children in group one was 9.63 (SD=2.13) and for children in group 2 was 12.25 (SD=1.83). The figure 1 represents the mean scores obtained by children with more and less normal non-fluency.

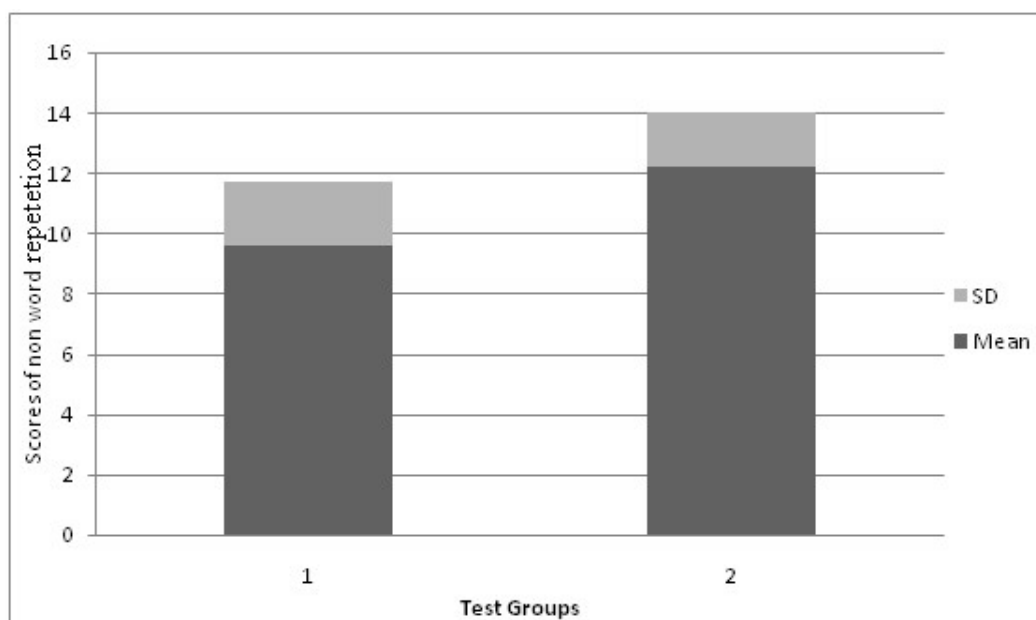


Figure 1: Mean scores obtained by children in Group one and two

The mean scores obtained by children in group 1 and 2 were compared using independent sample t-test and results revealed significant differences between the groups

[$p < 0.05$] i.e. children who were more fluent performed significantly better than that of children who were less fluent.

Table 1: Results of t-test

Test Groups	Mean	SD	P Value	Significance
Group I	9.63	2.13	$p < 0.05$	Significant
Group II	12.25	1.83		

Discussions

Studies have reported that children having delay in the development of phonological working memory can have stuttering in their later period of life (Vehab, Shojaei, Ahmadi and Nasiri; 2014). Anderson and Wagovich (2010) investigated the conceivable connections between measures of linguistic processing speed and two aspects of cognition: phonological working memory and attention in children who stutter. The results indicated the children with stuttering were less proficient in consonant production and repetition of novel phonological sequences. They also concluded that, along with other predictive factors, the phonological and speech articulation abilities also should be considered in pre-school children as a part of comprehensive risk assessment for the development of chronic stuttering.

According to Kolk, Conture, E., Postmark and Louk (1991) stuttering occurs as a result of inefficient or slow phonological encoding that may be leading to an increase in covert repairs to the phonological plan, particularly when the individual is endeavouring to talk at a faster rate that may be exceeding the capacity of the phonological encoding mechanism. By comparing phonological working memory using non word repetition task between children with stuttering and typically developing school age children, Krishnan, Alcock, Mercure, Leech, Barker and Smith (2013) indicated a significant portion of variance (24%) in performance of a standard non word repetition task for children with stuttering.

In the present study children with more number of disfluencies performed poorer in non word repetition task which may be because of the developmental delay in phonological working memory. The findings of the present study is similar to the findings of Vehab, Shojaei, Ahmadi and Nasiri (2014) who compared phonological working memory in 4-8 year-old Persian Children with stuttering and found that, mean percentage of error was higher in children who stutter than normal children, but the difference was not statistically significant. They also support the view that children with stuttering may have some degree of delay and slow in phonological working memory abilities when compared to normal children. Spencer and Fox (2014) reported that children with stuttering who performed better in non word repetition had recovered eventually better than that of children who had a poorer performance.

Conclusion

Studies have proven that children from mild to severe stuttering also exhibit poorer performance on non word repetition task. Hence it can be concluded that probability of occurrence of stuttering is high in children who performed poorer on phonological short term memory task compared to that of children who performed better. The non-word repetition task can be used with children who have mild and severe NNF to trace the involvement of developmental stuttering in them.

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Efforts Taken by Families for Economic Empowerment of their Adult Family Members with Intellectual Disability

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ABSTRACT

Randomly selected one hundred and two Intellectual disabled adults (IDA) and their parents were personally interviewed based on the interview schedule for knowing the efforts taken by their families for their social rehabilitation and economic empowerment. Thirty three percent of the sample adults with Intellectual disability (ID) were trained and guided to become economically empowered by their families, while 67 percent of their families were not found to train & guide ID adults to become economically empowered. Forty four–fifty percent of the economically empowered ID adults were found to work as helpers in farm associated activities and as helpers in tea stalls/ snacks/ garages. Sixty eight percent of the economically empowered ID adults were found to earn Rs.500-Rs.1000/- per month by performing income (Salary) giving activities. All the families of economically empowered ID adults and the economically non-empowered ID adults took appropriate efforts for enabling their ID adults right from childhood to become economically empowered and they had given seven suggestions for helping ID adults to lead happy and economically independent life.

Keywords: Intellectual disability (ID), Economically Empowered Adults (EEPA), Economically Not Empowered Adults (ENEPA)

Introduction

John F. Kennedy rightly said that "It is just as important to integrate the intellectually disabled individuals within our modern society and make full use of their abilities as it is to make a special effort to do this for the physically handicapped. The grim struggle for survival does not allow us the luxury of wasting our human resources". "Mental retardation" does not mean that the person's total being is retarded. Only a person's intellectual capacity is retarded—not necessarily the rest of him. Some studies have shown intellectually disabled persons with high degrees of clerical aptitude, mechanical aptitude, dexterity, and other types of skills. He/ She may have other skills and aptitudes in which he/she conceivably could excel other workers. Those skills and aptitudes can make him/ her a valued employee. In increasing numbers, the intellectually disabled are demonstrating that they not only can help themselves, but they can work; and in some jobs, they can work better than those who are not so disabled.

The intellectually disabled come from all walks of life. Some are born to brilliant parents, some to average and some to less than average. Retardation knows no bounds. Some people with intellectual disability live independently in the community but most live with family or in staffed supported accommodation facilities. As per Brenda Scottsdale (2017), people challenged by developmental delay can find meaningful jobs to foster a sense of independence and meaning in their lives. Training, career coaching, making appropriate referrals, and providing support are some ways to overcome disabilities that prevent many people with intellectually disability from finding out suitable jobs for maintaining gainful employment. Because everyone is different, there are no specific types of jobs that suit intellectually disabled people, so matching the right person with the right situation is key.

Methodology

Randomly selected one hundred and two Intellectually Disabled Adults (IDA) and their parents were personally interviewed based on a structured cum open ended interview schedule was developed to elicit the information about personal background and family background of intellectually disabled adults, economic activities being taken up by them and their earnings and the efforts taken by their families for their social rehabilitation and economic empowerment. The IQ levels of these ID adults were assessed by administering suitable IQ tests. The information thus collected from all the selected IDA and their families was later pooled, analyzed by using frequency, percentages and Z test, tabulated and discussed.

Findings

Table 1 indicates that, 33 percent of the sample Intellectual Disabled (ID) adults were trained & guided to become economically empowered by their families, while 67 percent of their families were not found to train and guide ID adults to become economically empowered. Irrespective of the status of their economic empowerment, it is found that relatively a higher percentage of the ID adults belonged to nuclear families (41%-68%) followed by extended families (16%-35%). A majority of them belonged to medium size families and reported to have below Rs.5,000/- family monthly income. Majority of their parents were either non-literates or school educated. Majority of their mothers were either exclusively home makers or daily wage agri labourers who were preoccupied with it during day time. Significantly a higher percentage of the economically non empowered MC adults were found to have the low level family monthly income of Rs.5000/- as compared to their counterparts.

Table 1: Family background of the adults with Intellectual Disability

Background of the teachers	Percentages of adults with intellectual disability (n=102)		Z values
	Economically empowered adults (34)	Economically non empowered adults (68)	
Types of family			

Nuclear	41.18 (14)			67.64 (46)		2.55*
Extended	35.30 (12)			16.18 (11)		2.04*
Joint	23.52 (8)			16.18 (11)		0.82 ^{NS}
Sizes of family						
Small (4)	14.70 (5)			07.35 (5)		1.04 ^{NS}
Medium (5-8)	67.65 (23)			82.36 (56)		1.61 ^{NS}
Large (>8)	17.65 (56)			10.29 (7)		0.94 ^{NS}
Family monthly income (Rs)						
Below 5000	67.65 (23)			95.59 (65)		3.29**
5000–10,000	23.53 (8)			04.41 (3)		--
10000–15000	08.82 (3)			--		--
Parental educational level	Mothers	Fathers	Z values	Mothers	Fathers	
Non-literates	52.95 (18)	35.30 (12)		88.23 (60)	29.41 (20)	8.71**
School educated	41.17 (14)	50.00 (17)	1.43 ^{NS}	11.77 (8)	64.70 (44)	7.62**
H.Sc. educated	05.88 (2)	14.70 (5)	0.74 ^{NS}	---	05.89 (4)	--
			--			
Parental occupation						
Home makers	70.58 (24)	--	--	17.64(12)	--	--
Home makers	29.42 (10)	70.60 (24)	3.70**	82.36(56)	92.65 (63)	1.75 ^{NS}
Daily wage agri labourers	--	14.70 (5)	--	--	---	--
Less hand holding farmers	--	14.70 (5)	--	--	07.35 (5)	--
Clerk / Vendors						

NS-Non-significant * - P <.0.05 level ** - P <.0.01 level

From table 2, irrespective of the economic empowerment, it is seen that majority of the ID adults' age was between 20 and 30 yrs (88%–94%), were male members (63–94%), normal school drop outs (51%–52%), and were integrated to community activities (48%–53%). None of the economically non-empowered ID adults and 35 percent of the economically empowered ID adults received special education by attending special schools and also received special coaching for 3R's at home (12%). With regard to their IQ ranges, 62 percent of the economically empowered ID adults were assessed to have 55–65 IQ range followed by 65–75 IQ range (38%) which indicates that they were trainable ID adults, while the corresponding percentages of economically non-empowered MC adults were 35, 13. Fifty one percent of the economically empowered MC adults' IQ range was 45–55 which indicates the difficulty of training such low caliber ID adults, which posed limitations on them for economic activities without specialized staff & materials. None of the economically empowered ID adults and 10 percent of the economically non-empowered ID adults had one or the other physical disabilities.

Table 2: Personal information of the adults with Intellectual Disability

Personal information	Percentages of adults with intellectual disability (n=102)		Z values
	Economically empowered adults (34)	Economically non empowered adults (68)	
Age (yrs)			
20- 25	47.05 (16)	48.52 (33)	0.09 ^{NS}
25-30	47.05 (16)	39.70 (27)	0.76 ^{NS}
30-35	05.88 (2)	11.76 (8)	1.12 ^{NS}
Gender			
Female	05.88 (2)	36.76 (25)	4.48 ^{**}
Male	94.11 (32)	63.23 (43)	4.34 ^{**}
Tried to integrated them to the community activities	52.94 (18)	48.52 (33)	--
Normal school drop outs	52.94 (18)	51.47(35)	0.09 ^{NS}
Received special education by attending special schools	35.29 (12)	--	--
Given special coaching for 3 R's at home	11.76 (4)	--	--
IQ ranges			
60-75	38.23 (13)	13.23 (9)	2.69 ^{**}
55-65	61.76 (21)	35.29 (24)	2.55 [*]
45-55	--	51.47 (35)	--
Had physical disabilities	--	10.29 (7)	--

NS-Non-significant * - P <.05 level ** - P <.01 level

Table 3 shows that, 44–50 percent of the economically empowered ID adults were found to work as helpers in farm associated activities and as helpers in tea stalls/ snacks/ garages. Give an Opportunity–Gain An Asset, is stated by National Association for Retarded Citizens, (1974). A meager (5%) percent of the economically empowered ID adults were garbage collectors. All the economically empowered ID adults and 63 percent economically non-empowered ID adults were found to do simple household chores at home, which were unpaid tasks. Sixty eight percent of the economically empowered ID adults were found to earn Rs.500- Rs.1000/- per month by performing income (salary) giving activities enlisted in the table followed by Rs.1000 to Rs.1500/- (24%) and Rs.1500 to Rs.2000 (9%). As per the collected data analyzed by NIMH (19) the low wages of mentally challenged adults found were Rs.1000/ (80%). followed by Rs.1000/ to Rs. 2000 (12%) and Rs. 2000 (6%). None of the economically non-empowered MC adults could earn money as they were not involved in income (Salary) giving activities. Eighty two percent fathers of economically empowered ID adults tried to assist, guide and provided training to their ID adults right from the teenage for taking-up economic activities

followed by their special teachers (53%), older siblings (12%), spouses (9%) and mothers (6%). None of the economically non–empowered MC adults were trained for such jobs by their family and non–family members.

Table 3: Types of economic activities being taken up by the adults with intellectual disability and their monthly earnings

Economic activities and earnings	Percentages of adults with intellectual disability (n-102)		Z values
	Economically empowered adults (34)	Economically non empowered adults (68)	
Helpers of farming associated Activities	44.11 (15)	--	--
Helpers in tea stalls / snacks centers/ garages	50.00 (17)	--	--
Garbage collectors	05.88 (2)	--	--
Unpaid tasks performed			
Simple household chores	100.00 (34)	63.23(43)	6.31**
Monthly earnings (Rs.)			
500- 1000	67.64 (23)	--	--
1000-1500	23.52 (8)	--	--
1500-2000	08.82 (3)	--	--
People provided training to take-up economic activities			
Mothers	05.88 (2)	--	--
Fathers	82.35 (28)	--	--
Older siblings	11.76 (4)	--	--
Spouses	08.82 (3)	--	--
Special school teachers	47.05 (16)	--	--

**** - P <.0.01 level**

Table 4 depicts that, all the families of economically empowered ID adults took various efforts right from their childhood for their food, clothing, health, and hygiene; developing self help and social self help skills; training for proper communication; involving them in appropriate household chores; training them for personal safety; exploring suitable jobs in home town and giving them apprenticeship specially from teenage before taking up a job for getting income and developing positive attitude towards self and in inculcating dignity of labour in them. On the other hand, all the family members of economically non–empowered MC adults paid special attention to food, clothing, health and hygiene and only 48 percent of them tried to take enlisted efforts of the table except exploring suitable jobs in home town and giving them apprenticeship prior to taking up a job which is essential. Similar trend of views were stated by of Lakin et al. (1985) that parents should be aware of how persons with mental retardation mild, moderate, severe can be productive on a job through a supported work model involving a proper job match, the use of systematic instruction and ongoing support. The results of this table i.e. all the families of economically empowered ID adults and the economically

non-empowered ID adults took appropriate efforts for enabling their ID adults right from childhood to become economically empowered as compared to the families for their food, clothing, health, and hygiene; developing self help and social self help skills; training for proper communication are similar with the results of Lakin et al. (1985), revealed that the vocational education for mentally challenged students includes the skills ranging from basic self care or survival to fairly complex work related interpersonal related skills of acceptable degree so that interaction with different people in varying social and vocational environments.

Table 4: Efforts taken by the families for economically empowering adults with Intellectual disability right from childhood

Efforts taken by the families	Percentages of adults with intellectual disability (n-102)		Z values
	Economically empowered adults (34)	Economically non empowered adults (68)	
Special attention to food, clothing, health and hygiene	100.00 (34)	100.00 (68)	--
Developing self help and social help skills	100.00 (34)	48.52 (33)	8.58**
Training for proper communication	100.00 (34)	48.52 (33)	8.58**
Involving them in appropriate household chores	100.00 (34)	48.52 (33)	8.58**
Training them for personal safety	100.00 (34)	48.52 (33)	8.58**
Developing positive attitude towards self in them and in inculcating dignity of labour	47.00 (16)	48.52 (33)	0.09 ^{NS}
Exploring suitable jobs in home town and giving them apprenticeship prior to taking up the job for earning money	100.00 (34)	--	--

NS-Non-significant , ** - P <.0.01 level

Table 5 depicts that, all the parents of economically empowered ID adults and economically non-empowered ID grown-up children (adults) gave useful suggestions for helping ID adults to lead happy and economically independent life were creating awareness in society to give suitable part time /full time jobs to mentally challenged grown up children; need for conducting specific trainings to educate family members on what all strategies and materials to be used for training MC grown up children; fellowships/ free-ships to mentally challenged grown up children for receiving quality training programmes focus on for economic empowerment; establishment of quality and well equipped vocational training units at every village or taluka level for the rehabilitation of ID grown up children; reservation in group D easy jobs for ID adults (18

and above) in Govt. schools, offices and projects etc.; free transport arrangement to ID children and adults to attend special schools and vocational trainings and bank loans to ID adults for establishing small business with support of their family members. The suggestions suggested by parents of ID adults in this present research are in line with the suggestions mentioned in the report of Govindrao and Thressia, Kutty T. (2000) and National Institute for Mentally Handicapped (2000).

Table 5: Suggestions given by parents for adults with Intellectual Disability to lead happy and economically independent life

Suggestions given by parents	Percentages of adults with intellectual disability (102)	
	Economically empowered adults (34)	Economically non empowered adults (68)
Creating awareness in society to give suitable part time /full time jobs to mentally challenged grown up children	100.00 (34)	100.00 (68)
Need for conducting specific trainings to educate family members on what all strategies and materials to be used for training MC grown up children	100.00 (34)	100.00 (68)
Fellowships/ freeships to mentally challenged grown up children for receiving quality training programmes focus on for economic empowerment	100.00 (34)	100.00 (68)
Establishment of quality and well equipped vocational training units at every village or taluka level for the rehabilitation of MC grown up children	100.00 (34)	100.00 (68)
Reservation in group D easy jobs for MC adults (18 and above) in Govt. schools, offices and projects etc.	100.00 (34)	100.00 (68)
Free transport arrangement to MC children and adults to attend special schools and vocational trainings	100.00 (34)	100.00 (68)
Bank loans to MC adults for establishing small business with support of their family members	100.00 (34)	100.00 (68)

Recommendation: The results of the study advocate that there is need

- To conduct mass education programmes for families and community for extending needed support as much as possible to intellectually disabled (ID) children's

mothers/ families and also to ID children as a social responsibility/ social work/ social support.

- To educate the rural parents for effective management of their time, energy, recourses and activities for properly managing ID children and themselves.
- To educating rural families/ community on the special training required by ID children for carrying out their routine activities independently.

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Application of Motor Learning Principles in Management of Ataxic Dysarthria Secondary to “Cerebellar Infarct”: A Case Study

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ABSTRACT

Lesions to cerebellar control circuit show perceptually distinct motor speech disorder. Ataxic dysarthria is characterized by a primary disruption in articulation and prosody. The disorder reflects slowness, inaccuracy in force, range, timing, and direction of speech movements. Motor learning refers to a set of process associated with practice or experience leading to relatively permanent changes in the capacity for movement. This case study documents application of motor learning principles into traditional therapeutic technique for ataxic dysarthria.

A subject aged 58yrs male reported with sudden onset of slurring of speech postcerebrovascular accident. Frenchy Dysarthria Assessment (FDA) showed mildly affected reflexes, respiration, lips, jaw, palate, with severely affected tongue and laryngeal section. Trigeminal, facial, accessory & hypoglossal nerves were affected. Mann Assessment of Swallowing Abilities (MASA) showed moderate oral dysphagia. The subject was diagnosed with ataxic dysarthria with dysphagia and advised for speech therapy. The framework of structure of pre-practice, practice and feedback system of the Schema theory was incorporated in the therapy plan.

The subject showed significant improvement after 10 sessions of therapy. Progress was noticed in respiration, laryngeal, and tongue movement. Overall speech intelligibility improved from 3 to 1 on speech intelligibility scale. MASA score improved from 146 to 179, i.e., no difficulty in swallowing.

Incorporation of motor learning practice therapy indicated considerable improvement in speech and non speech functions.

Keywords: Cerebellum, Ataxic dysarthria, Motor learning, Speech therapy, Frenchy Dysarthria Assessment, Speech Intelligibility.

Introduction

Neuronal actions that initiate and regulate muscle contractions for speech production is commonly known as speech motor control (Netsell, 1982). Motor-speech disorder is a subgroup of speech disorders characterised by affected functioning of speech motor system (Duffy, 2005). Cerebellar control circuit constitutes cerebellum and its connections. Three lobes of cerebellum are anterior, posterior and flocculonodular lobe. Any damage to these lobes can cause truncal ataxia, nystagmus, limb ataxia, and hypotonia. Hence, these lesions may be responsible for the production of ataxic type of dysarthria. Damage to vermis and/or cerebellar hemispheres has a serious speech problem. Therefore, in ataxic dysarthria the cerebellar lesion may include vermis and cerebellar

hemispheres. Lesions to the cerebellar control circuit shows perceptually distinct motor speech disorder ataxic dysarthria, which is characterized by a primary disruption to articulation and prosody. Slowness, inaccuracy of force, range, timing, direction of speech movements, staccato speech, articulatory errors and abnormal voice quality is observed in this disorder. This disorder witnesses deterioration in a variety of speaking tasks, including sustained phonation, diadochokinesis, and conversation (Brown, Darley and Aronson, 1970). In order to restore the lost function in ataxic dysarthria, principles of motor learning can be considered. The process of motor learning is essential for either learning new skills (e.g. a baby learning to walk) or re-learning the lost skill(s) (e.g. an adult re-learning to walk after a stroke). Motor learning refers to a set of processes associated with practice or experience leading to relatively permanent changes in the capacity for movement (Schmidt and Lee, 2005). Motor learning principle not only provide a framework for motor control and learning in reference to intact motor systems but also is applied to impaired systems (Aichert and Ziegler, 2004). Only the modification in the recall and recognition schemas has to be done to achieve the movement goal. The principles of motor learning are divided into those relating to the structure of practice and those relating to the nature of augmented feedback (Mass, Robin, Hula, Freedmann, Wulf, Ballard and Schmidt, 2008). The motor-skill-learning literature typically distinguishes between pre-practice and practice.

Need of the Study

Many treatments for MSDs aim to establish new motor routes or re-establish old ones and thus involve motor learning. Because speech production is a motor skill, the motor learning principle may provide important insights into how to enhance (re)learning/ organization of speech motor system and ultimately the quality of life of individual with MSDs. As being degenerative in nature, the management of ataxic dysarthria is quite challenging. For speakers having ataxic dysarthria it is unnecessary to work on to improve physiologic support by increasing muscle strength and reducing muscle tone. No evidence of successful generalized pharmacological treatment is reported in ataxic dysarthria. Hence, there is a need of modification in the traditional therapeutic process to bring out not only improvement but also to restrict further effect of degeneration.

Aim

This study aimed to renew interest on the part of speech language pathologists to comprehensively determine the motor learning principals in the treatment of ataxic dysarthria.

Objectives

This case study attempts to demonstrate the application of motor learning principles in to traditional therapeutic techniques for a case with ataxic dysarthria.

Method

Patient's Background

This study was based on a subject aged 58yrs/ male who reported sudden onset of slurring of speech postcerebro-vascular accident in 2017. He had complaint of unclear speech; rate of speech was affected and phonation duration was reduced. Subject also reported in coordination in various motor movements and right sided weakness. He had mild difficulty while swallowing solid food which was primarily due to restricted and uncoordinated oral mechanisms (Problem in mastication and manipulation of food particles due to restricted tongue movement).

Contrast Enhanced Computerized Tomography (CECT) scan of brain revealed non-enhancing hypodense lesion in right cerebellar hemisphere. MRI report showed large acute infarct with hemorrhagic components involving right cerebellum and cerebello pontine region. Small acute infarct was found in left cerebellum. The client was finally diagnosed as suffering from acute ischemic stroke (cerebellar infarct with hemorrhagic transformation). The subject was reported of having high vascular pressure. All the investigation reports have been taken into consideration from the discharge summary of the hospital.

The subject's mother tongue was Bangla and he also knew Hindi. The academic qualification was B.Com and was working in a Bank. Although he had stroke on 25/01/2017, he visited AYJNISHD (referred by NILD) on 29/08/2017 for speech therapy. He was taking some prescribed medicines (Ecospirin 750, Levera 500, Restyl 2.5, Rejunex 500 and Stugeron for high blood pressure, and vertigo) and Physiotherapy at NILD.

Assessment

The first step of assessment process included a detailed case history obtained by a speech language pathologist. Aphasia screening test showed absence of components of aphasia such as agrammatism, anomia, circumlocution, dysfluency, effortful speech, jargon, paraphasia, perseveration, telegraphic speech. Auditory verbal comprehension, repetition, naming, reading and fluency was assessed using Western Aphasia Battery (WAB) and was found as "No Aphasia". WAB findings are summarized in table-1.

Table 1: WAB Scoring

Skills	Scores
Spontaneous speech	20/20 = 100%
Auditory verbal comprehension	200/200 = 100%
Repetition	100/100 = 100%
Naming	100/100 = 100%
Reading	120/120 = 100%
Writing	Couldn't be assessed due to inadequate muscle control
Praxis	10/10 = 100%
Impression: No aphasia	

In the subsequent step dysarthria assessment was done. Functions of lips like puckering and retraction were affected while appearance was normal in rest position. Likewise, tongue protrusion,

lateralization, elevation, and retroflexion were affected. Teeth appearance and alignment was normal but chewing function was affected. High arched hard palate and normal structure of soft palate were observed. Movement of soft palate during production of /a/ was normal and symmetrical. Breathing pattern was abdominal. Verbal mode of communication was preferred for both comprehension and expression. Bengali Photo Articulation Test was done which showed substitution and distortion type of consonant error. Vowels production was unaffected. The client had difficulty in production of /p/, /t/, /dʱ/, /tʃ/, /gʱ/, /ʃ/, in initial, medial and final position of words. Blends were produced with omission and distortion type of errors. Deaspiration, deaffrication and devoicing were seen during consonant production. Frenchay Dysarthria Assessment (FDA) revealed cough and swallow reflex to be affected. Drooling was absent. Respiration was slightly uncoordinated at rest and during speaking. Appearance of lips at rest, spreading and seal was normal, but while lip alternation and function in speech was affected. Jaw function was near normal at rest and in speech. Function of palate was slightly affected. Laryngeal function and tongue function was severely affected. Cranial nerve assessment showed affected nerve functions like-trigeminal, facial, accessory & hypoglossal. Speech Intelligibility Rating was 3 (can be understood with concentration and effort especially by a sympathetic listener). Average phonation duration was 6 seconds.

Mann Assessment of Swallowing Abilities (MASA) showed moderate dysphagia (total score–146) but the symptoms were restricted to oral mechanism. Voice analysis was done using Dr. Speech (version 4.0) average habitual pitch was found to be 151. 67Hz and average objective voice rating showed breathy voice quality. Assessment of quality of life in the dysarthric speaker showed speech characteristic of the word: 32, situational difficulty: 34, compensatory strategies: 11 and perceived reaction of others: 29.

Based on the evaluations, the subject was diagnosed with Ataxic Dysarthria with oral dysphagia and was recommended for speech therapy and swallow advices.

Management

Management procedure consisted of long term goal to maximize the effectiveness, efficiency and naturalness of communication. Speech therapy had short term goals to increase the respiratory support, reduce the speech rate, to modify the prosody and to modify articulation. The duration of each therapy session was 45 minutes (total of 10 sessions) in clinic (SLP guided), and same amount of practice sessions were carried over at home which were video guided. All the activities were carried out using the motor learning approach. The framework of structure of pre-practice, practice and feedback system of the Schema theory was followed in the therapy plan.

As per motor learning principle, at beginning of therapy some pre-practice conditions were managed like- motivation of the subject, explanation of target response, focus of attention, establishment of reference of correctness and stimulability. Practice task amount was large, distributed, variability in practice and simple to complex hierarchy in target complexity.

To increase respiratory support, the techniques of inspiratory checking, speaking at onset of exhalation and controlled exhalation was used (Duffy, 2005). In order to achieve this goal, the subject was asked to take a deep breath and hold it in and then exhale in a slow and more controlled

manner to sustain speech and start speaking at the onset of exhalation. He was also instructed to terminate his speech before the exhalatory air ends.

To reduce the rate of speech, hand tapping (Hegde, 2001) was performed. The client was advised to speak at a slower rate. Hand tapping was introduced to the client as a self-monitoring skill to reduce the rate of speech. Outside the clinic the client was advised to maintain his rate of speech through finger/ hand tapping in a rhythmic pattern. The client was given feedback for this activity. Rhythmic cueing (Duffy, 2013) was also used to reduce and maintain rate of speech. The clinician demonstrated the activity where the clinician pointed to words in a rhythmic fashion, more time was given for prominent production of every word with increase in pauses. The client was instructed to imitate in the same order.

Working at the level of the breath group (Hegde, 2001) was used to modify the prosody. Dysarthric patients have reduced breath group length because of their physiologic limitations. Hence, the subject was asked to select the number of words he was able to utter in a single breath. It was made clear to him that he had to speak only that number of words that he would be able to produce per breath. The remaining portion of the sentence was to be carried through to the next breath. The subject was asked to terminate his utterance well before the end of exhalatory air. Referential task was also used. In this activity, the patient read out randomized phrases and sentences which contained pre-specified stress target which were unknown to the clinician. This facilitated evaluation of effectiveness of actively taught stress strategies.

Exercises for the strengthening of articulators and oromotor exercises were performed to modify articulation and also to improve swallowing. As the patient had weakness in tongue and masseter muscles especially towards the right side, oro-motor exercises were carried out. Tongue elevation and lateralization towards right side was facilitated. To achieve the same, food particle was applied to the fulcrum area and the subject was asked to attempt to lick the food particle using his tongue. Similarly, for lateralization the food particle was applied by the sides of the lips. Intelligibility drill (Duffy, 2013) was also done to improve articulation. The client was asked to read out randomized words and sentences as reported from the client's day to day life. The clinician provided verbal feedback for speech sound errors. This was aimed to create awareness to the client about his articulation errors and how his speech was intelligible to other persons. During the mentioned activity, the clinician's aim was not to improve articulation but to improve the overall speech intelligibility. Breakdown in intelligibility was noted of and taken into consideration in later therapeutic sessions.

Augmented feedback which is knowledge of performance provides information about the movement pattern made by the learner that led to the outcome which is driven through the change in the previous learning sessions. As there is a chance of the subject being dependant completely on the feedback, the frequency of the augmented feedback was kept low. The subject thoroughly understood how to perform the activity and the appropriate response of the activity. He monitored the activities in both clinical and home setup himself.

Similarly, post therapy, re-assessment was performed again to find therapeutic outcome.

Results

After 10 sessions of therapy the subject showed significant improvement. In pre therapy condition the FDA showed mild difficulty across all the components except laryngeal and tongue which was severely impaired. After therapy it improved to mild difficulty in only respiration, laryngeal, tongue and intelligibility. Functions of lips, tongue which were affected in pre therapy condition significantly improved and normal functioning was achieved after therapy.

The phonation duration improved from 6 seconds to 14 seconds. Overall speech intelligibility also improved from rating 3 to 1 (speech can be understood without difficulty but however feel speech is not normal). After 10 sessions of therapy, Assessment of quality of life in the dysarthric speaker showed good improvement, as speech characteristic of the word: 18, situational difficulty: 27, compensatory strategies: 6 and perceived reaction of others: 19. MASA score improved from 146 to 179 i.e. from moderate oral dysphagia to no dysphagia.

Discussion

The aim of this case study was to document the application and efficacy of speech therapy using motor learning principles in management of ataxic dysarthria in a client with cerebellar infarct. The improvement in ataxic dysarthria is quite challenging. The recovery was comparatively slow as the client reported for intervention about 7 months post CVA. The speech had worsened between the onset of difficulty and the onset of the intervention procedure. After incorporation of the principles, the client showed significant improvement in all aspects of both speech and non speech motor activities. Thus pre-practice and practice sessions can change the impaired characteristics vividly towards normal as close loop interaction within a session is optimum. In contrary, traditional approaches without these feedback driven system of motor learning did not pose any impact as patient motivation was poor. This happened because all the traditional approaches mostly put effort through passive or active assisted protocol where there was a limited scope of patient guided treatment system but schema theory based motor learning principle may improvise active protocol and it enhances both invivo and invitro therapy outcome.

Premorbid motor specifications will not produce the intended movement outcomes, nor will the actual sensory consequences match the sensory consequences predicted from the movement goal. As a result, the system must modify the recall and recognition schemas to reflect the new relations to achieve the movement goal (Mass, Robin, Hula, Freedmann, Wulf, Ballard and Schmidt, 2008).

Long-term treatment of severe dysarthria study was done by Simpson, Till and Goff in 1988. Treatment efforts were directed toward modifying speech respiration, velopharyngeal function, articulatory precision, speech intensity, and speech intelligibility. They found that the behavioral change resulting from each of the treatments was small. However, when combined, these small gains in conjunction with some neurological recovery resulted in significantly improved communication and quality of life.

Summary and Conclusion

In general acoustic and physiologic studies of ataxic dysarthria have provided quantitative supportive evidence for the clinical perceptual characteristics of the disorders. They have helped to specify more completely the loci and dynamics of abnormal movements underlying the perceived speech disturbances. They inferred that slowness of movement and problems with timing are predominant deficits. The therapeutic regime planned was seen to bring about significant improvement in all aspects of both speech and non speech motor activities. Hence, this case study was an attempt to draw and gather a better understanding of therapeutic outcome in ataxic dysarthria by incorporating the motor learning principles into conventional therapeutic techniques. However, before generalization, this study needs to be done in large numbers of subjects with ataxic dysarthria.

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Position of the Implementation of Inclusive Education for Children with Special Needs in Primary Schools of Haryana

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ABSTRACT

Inclusive education is of recent origin in India. The aim is to provide education and training to children with special needs alongside peers without disability in the same physical, social and emotional environment. This study presents an overview of position of the implementation of inclusive education in Haryana State taking into consideration 8 interventions for children with special needs. The sample comprised 28 inclusive primary schools selected randomly from nine educational blocks of four districts of the State. The descriptive survey method was employed to conduct the study. The data was collected through a self-developed observation schedule consisting 60 items, divided into 8 sections. Interactions with 28 head of the schools, 56 general teachers, 56 parents and 28 students with special needs were made during the data collection. Data was analyzed through frequency counts and percentage method. The findings indicate gloomy picture of the implementation status since only 27 standards out of 60 were fully met. The maximum achievement was recorded on the front of meeting the norms for the functional and formal assessment of children with special needs. The provisions on home-based education, identification, awareness generation, resource support, excursions and sports activities were yet to be fully implemented. The study has its implications for policymakers, school administrators, rehabilitation professionals, children with special needs and media personnel.

Keywords: Children with special needs, Implementation; Inclusive education, Primary schools.

Background

In India, there are two ways to educate children with special needs. One is to teach them in special schools and the other is to impart education in inclusive schools. The first special school in India was opened in Bombay in 1883 for the deaf (Thakur and Thakur, 2012) followed by the establishment of a first school for the blind at Amritsar in 1887. The Christian missionaries, parents of the disabled children and philanthropists were the first providers and the movement led gradually to the establishment of special schools for visually, mentally and hearing impaired children across the country. At the time of independence in 1947, India had a total of 32 such schools for the blind, 30 for the deaf, and 3 for the mentally retarded (Julka, 2007). The Second Five-Year Plan in 1956 reported 118 special schools in the country (Planning Commission, 1956). Presently, there are about 3200 special schools operating across the country.

Inclusive education as a new trend for educating children with special needs was launched in the year 2002 by the government of India through its flagship programme Sarva Shiksha Abhiyan (Education for all Movement). The Sarva Shiksha Abhiyan (S.S.A) uses the term ‘children with

special needs' to represent seven categories of students with disabilities namely 'the blind,' 'low vision,' 'leprosy cured,' 'hearing impaired,' 'locomotor disabled,' 'mentally retarded' and 'mentally ill'. Inclusive schooling has been referred as a mode of educating children with special needs in normal neighbourhood schools alongside peers without disability by providing requisite support in the form of specially trained teachers, special materials and other resources. In contrast to special schools which provide education to these children in a segregated environment, inclusive schools involve all children with special needs learning together with their peers in the same physical, social and emotional environment. Inclusive schooling being a new concept emerged from a statement released by U.N.E.S.C.O. in 1994 after concluding a conference on education in Salamanca, Spain. The statement (popularly known as Salamanca statement) recommends that 'school should accommodate all children regardless of their physical, intellectual, emotional, social, linguistic and other conditions'. This statement has been signed and adopted by 80 countries. India is also a signatory to it.

Inclusive Education in India: an evolutionary account

Inclusive education has roots in the concept of 'integrated education' which was evolved in the 1950s to address the shortcoming of special schools. According to Thakur and Thakur (2012), the Royal Commonwealth Society for the Blind and the Christopher Blind Mission took a lead by starting small experiments. The government of India introduced a scholarship scheme in 1952 for the education of students with disabilities. The Planning Commission in 1971 included a plan for integrated education, and a scheme of Integrated Education for the Disabled Children (I.E.D.C.) was launched in 1974. The scheme aimed at providing education to children with disabilities at regular schools. The Project Integrated Education for the Disabled (P.I.E.D.) was launched in 1987 with an aim to develop models for educating Children with Special Needs (CwSNs) in mainstream schools (U.N.E.S.C.O., 2005). In the meantime, the Parliament of India enacted Rehabilitation Council of India (R.C.I.) Act, 1992. The R.C.I. Act mandates that CwSNs are to be taught by trained teachers in an environment best suited to them. In 1994, the District Primary Education Programme (D.P.E.P.) was started to universalize elementary education and P.I.E.D. was merged into it. The Salamanca statement was released by U.N.E.S.C.O. in 1994, consequently the 'integrated model' of educating the disabled/CwSNs was converted into a new concept of 'inclusive education'. This concept of inclusive education was European and American in origin, taking a holistic approach to bring changes in the school system but India also adopted it. In 1995, the Parliament of India enacted the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act. The Act stipulates provisions for the education of the CwSNs in special and inclusive schools. The National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation, and Multiple Disabilities Act was passed in 1999 by Indian Parliament that made the services and support to severely disabled children an obligation of the government. The *Sarva Shiksha Abhiyan* (S.S.A.) was launched in the year 2002 to achieve the target of universal elementary education. The much debated and pragmatic 'the Right to Education Act-2010' also stipulates education for CwSNs in inclusive setups. The Rights of Persons with Disabilities (RPwD) Act came into being in 2016 mandating that accessible inclusive education should be provided to children with disabilities.

Inclusive Education in Sarva Shiksha Abhiyan

Inclusive education for CwSNs is an important intervention in *Sarva Shiksha Abhiyan* (S.S.A.). The following activities have been carried out in S.S.A as reported by Mishra and Bhaumik (2015):

- (i) *Identification*
Identification of Children with Special Needs (CwSNs) is done through household surveys by special teachers, educational volunteers or personnel employed for this assignment at primary health centers.
- (ii) *Assessment*
Functional and formal assessment of identified CwSNs is carried out with the help of the medical board, constituted by the Chief Medical Officer of the concerned district. The Board issues Disability Certificate to each child depending upon the degree of disability. Based upon these certificates, education, and placements of CwSNs are decided.
- (iii) *Aids and appliances*
All children requiring assistive devices are provided with aids and appliances.
- (iv) *Teacher training*
There are in-service training programmes of three, five, seven and 20 days duration for teachers. The training modules are supposed to give adequate coverage to the education of the CwSNs.
- (v) *Support services and barrier free access*
Support services like physical access, resource rooms at the cluster/block level, special equipment, reading materials, special educational techniques, remedial teaching, and curriculum adaptation or adapted teaching strategies are provided. Individualized Educational Plans are being developed by special and regular teachers in consultation with regular teachers. Home-based education has been provided to severely disabled children.
- (vi) *Parental counselling and community mobilization*
Parents of the CwSNs are receiving counselling on how to bring them up and teach them independent living skills.
- (vii) *Research*
Research in all areas of education of CwSNs including research for designing and developing new assistive devices, teaching aids, special teaching materials and other items necessary to give CwSNs equal opportunities in education are encouraged.
- (viii) *Miscellaneous activities and support services*
Miscellaneous activities, in the form of sports, cultural, arts and craft fairs, to support the implementation of inclusive education at State, district and block level are provided.

Despite these provisions, the inclusion in India has been viewed as resource constrained, internal alternative, urban-based and impairment specific (Mukhopadhyay and Mani, 2002).

Objective

The purpose of the study was to find out the position of the implementation of inclusive education in primary schools of Haryana State, India.

Method

Sample

The sample was drawn from four districts comprising 28 schools. The multistage random sampling technique was used first in the selection of districts, secondly for drawing schools and thirdly, in the selection of subjects for the study. The subject strength was confined to 28 school heads, 56 general teachers, 56 parents of CwSNs and 28 CwSNs.

Data Tool

A self-developed observation schedule was used for data collection. It had 60 items divided into eight sections/dimensions. The items were to be responded in 'Yes' or 'No'. The scoring was done by giving a score of '1' to each 'Yes' and '0' to each 'No' response. The 'Yes' response means that a standard set by the government for inclusive education was met/ implemented by the school. A tick to a 'No' response indicated that the implementation of the standard was not being done by the concerned school. A pilot study was conducted on a small group of 30 sample subjects to make sure that the content and language of the items was clear, understandable and free from errors. The reliability of the observation schedule was determined through Split-Half Method and Cronbach's Alpha. The reliability for Split-Half Method was found .72. The reliability coefficient for Cronbach's Alpha was found 0.77.

Results

The identification of CwSNs through household surveys is one of the interventions in inclusive education. The results on implementation of this aspect are presented in Table 1.

Table 1: Identification of Children with Special Needs (CwSNs)

S. No.	Items	Yes	No
1.	Are Children with Special Needs (CwSNs) identified by the teachers/volunteers in habitations covered by your school?	28 (100)	0 (0)
2.	Are prescribed guidelines followed by officials to identify CwSNs of different categories?	1 (3.57)	27 (96.43)
3.	Do teachers receive periodic training to identify Children with Special Needs/Disability?	4 (14.29)	24 (85.71)
4.	Do the administrators encourage teachers to identify Children with Special Needs/Disability during the survey?	4 (14.29)	24 (85.71)
5.	Is identification carried out at the beginning of the school's academic session?	28 (100)	0 (0)

6.	Is the identification process monitored by senior officials?	1 (3.57)	27 (96.43)
7.	Is the identification carried out on annual basis?	6 (21.43)	22 (78.57)
8.	Is the identification carried out without financial implications?	28 (100)	0 (0)
9.	Are all categories of CwSNs covered in the identification survey?	18 (64.29)	10 (35.71)
10.	Have all identified CwSNs been enrolled in neighborhood schools?	18 (64.29)	10 (35.71)
11.	Have the identified CwSNs been admitted in age-appropriate classes?	15 (53.57)	13 (46.43)

*The figures in brackets show percentage of scores

Table 1 shows that the CwSNs were identified by teachers/volunteers in all the 28 (100%) sample schools; however, the identification process was not carried out in accordance with the S.S.A. norms. The Table further reveals that while identifying the CwSNs, prescribed guidelines were not followed by 27 (96.43%) schools. The Table also reveals that teachers of 24 (85.71%) schools were yet to receive training on the identification process. The teachers were not encouraged by administrators in 24 (85.71%) schools to identify the CwSNs. It is important to note that despite a provision in S.S.A., the identification process was not monitored by senior officials in 27 (96.43%) schools. The Table shows that 22 (78.57%) schools did not adhere to the provision of conducting the identification on annual basis. However, all the 28 (100%) schools carried the identification process, as and when required, but not at the beginning of the academic session. It is in accordance with the policy of S.S.A. that in 15 (53.57%) schools, the CwSNs were admitted in age-appropriate classes. In 18 (64.29%) out of 28 schools, the CwSNs identified during the survey were admitted to nearby schools.

The second dimension on the implementation of inclusive education was a functional and formal assessment of CwSNs. The results obtained are presented in Table 2.

Table 2: Functional and formal assessment of CwSNs

S.No.	Items	Yes	No
1.	Are all CwSNs being assessed by a team of experts to ascertain the type, nature, and degree of disability?	28 (100)	0 (0)
2.	Is the team of experts constituted at the district level?	28 (100)	0 (0)
3.	Is this medical assessment done at the Block/district level?	28 (100)	0 (0)
4.	Is the information regarding medical assessment conveyed to parents well in time?	28 (100)	0 (0)
5.	Is the medical assessment assisted by the special teachers?	28 (100)	0 (0)
6.	Is medical assessment done free of cost?	28 (100)	0 (0)

7.	Do parents participate in medical assessment camps?	28 (100)	0 (0)
8.	Do the authorities receive any financial support from the government to organise these medical assessment camps?	28 (100)	0 (0)
9.	Is medical assessment of CwSNs conducted as per the policy of S.S.A?	28 (100)	0 (0)
10.	Do the parents support the medical assessment of their CwSNs?	28 (100)	0 (0)
11.	Is medical assessment done on the basis of categories of CwSNs given in S.S.A Framework?	28 (100)	0 (0)

*The figures in brackets show percentage of scores

Table 2 reveals that all the 28 (100%) schools were complying with the provisions of functional and formal assessment of CwSNs. The S.S.A. provides that a team of experts shall be constituted at the district level that can conduct medical camps at the block level to ascertain the type, nature, and degree of disability, this provision was met by all the 28 (100%) sample schools. It was noted that the CwSNs identified at the first stage by teachers and volunteers were admitted to nearby schools and thereafter the admitted students were called to attend the block /district camps along with their parents. In these camps, the functional and formal assessment of CwSNs was done free of cost by a team of experts' namely special teachers, psychologists and doctors with specialization in the concerned area. During this process, the status of cognitive development, vision, hearing, mobility etc. were assessed. These medical assessment reports were used for certification purpose, preparing individual educational programme, providing aids and appliances and awarding scholarships, escort and travelling allowances. It is also obligatory to convey information on camps to parents well in time and invite them to participate in the assessment process. The findings reveal that all the provisions/standards on formal and medical assessment prescribed in S.S.A. were fully met by all the 28 (100%) sample schools.

The next stage to support inclusive education is providing aids and appliances to the CwSNs to improve their functioning. The results of the survey on the implementation of this dimension are presented in Table 3.

Table 3: Provision of aids and appliances

S.No.	Items	Yes	No
1.	Are aids and appliances being provided to CwSNs under S.S.A?	28 (100)	0 (0)
2.	Are the aids and appliances provided through convergence with other departments of the government?	28 (100)	0 (0)
3.	Are aids and appliances provided well in time?	4 (14.29)	24 (85.71)
4.	Can the quality of aids and appliances provided be considered as good?	25 (89.28)	3 (10.71)
5.	Are the aids and appliances got repaired when required?	0	28

		(0)	(100)
6.	Do CwSNs have received aids and appliances during the current/ previous academic session?	6 (21.43)	22 (78.75)
	(i). If yes, tick the types of aids and appliances provided to CwSNs: Charts/maps Abacus Taylor frame material for drawing large print books Tri-cycles/ wheelchair hearing aids calipers/braces walking stick artificial limbs Braille slate/sheet & stylus Any other (specify)	1 3 1 4	

*The figures in brackets show percentage of scores

Table 3 shows that aids and appliances were received by all the 28 (100%) schools. These were provided in all the 28 (100%) schools through convergence with other departments of the government. It was noted that aids and appliances were provided in some schools in collaboration with N.G.Os. It is implied from the results that this dimension was implemented by every school. It is important to mention that the S.S.A framework provides that the aids and appliances must be procured and provided through convergence by different departments like Department of Social Justice and Empowerment, Red Cross, Artificial Limbs Manufacturing Corporation of India etc. This parameter was fully met by the schools.

The negative aspect on the implementation of this dimension was that the aids and appliances were not provided well in time in 24 (85.71%) schools. The quality of the aids was 'good' in 25 (89.28%) schools. There was no facility to repair the out-of-order aids and appliances locally or otherwise instead, new appliances were given to the same CwSNs second or third time, after a gap of two or three years. Only 6 (21.43 %) schools received the aids and appliances during the present or preceding academic session.

The in-service training programmes of three, five, seven and 20 days duration for general teachers for generating awareness about causes of disability, inclusive education, teaching methodologies, and curriculum adaptations are required to be conducted as per the policy. The survey results on the implementation of this aspect are presented in Table 4. A perusal of Table 4 reveals that teachers training programmes, by and large, has met the requirements of S.S.A. standards. Although, the participation of teachers in 20 days general orientation programme was very low i.e. 3.57% only, the teachers in all the 28 (100%) schools received three to five days special orientation. The analysis of the content of the training programmes indicated that not only they covered the topics namely girls' stipend, escort, and transport allowance etc. but areas like identification, orientation-mobility, curriculum adaptation and management of inclusive classrooms were also included. The teachers in all 28 (100%) schools found these programmes effective,

adequately funded and supported by qualified, competent and skilled trainers. The trainers in all the 28 (100%) sample schools were registered with the Rehabilitation Council of India, New Delhi. The training on attending behavioural problems of CwSNs was considered less effective by teachers of 10 (35.71%) schools.

Table 4: Training of teachers on inclusive education

S.No.	Items	Yes	No
1	Are regular teachers receiving training on inclusive education under general orientation programme of 20 days in-service training?	1 (3.57)	27 (96.43)
2	Is special orientation for 3-5 days provided to regular teachers exclusively on inclusive education to make them understand the problems, needs and effective classroom management of children with disabilities?	28 (100)	0 (0)
3.	Do these teacher training programmes cover provisions (Escort allowance, transport allowance, girls' stipend etc.) pertaining to CwSNs?	28 (100)	0 (0)
4.	Do these programmes cover training in curriculum adaptation for CwSNs?	28 (100)	0 (0)
5.	Do these programmes have a positive impact on classroom teaching-learning environment?	28 (100)	0 (0)
6.	Is the budget allocated for such training programmes sufficient?	28 (100)	0 (0)
7.	Are the trainers for such training programmes competent enough to deal with all the major features of inclusive education?	28 (100)	0 (0)
8.	Do these programmes train the teachers to effectively deal with the behavioral problems of CwSNs?	18 (64.29)	10 (35.71)
9.	Are the trainers registered with Rehabilitation Council of India?	28 (100)	0 (0)

*The figures in brackets show percentage of scores

There is a provision of providing resource support to CwSNs by special teachers. The survey results on the implementation of this dimension are presented in Table 5.

Table 5: Resource Support

S.No.	Items	Yes	No
1.	Are special teachers posted at schools for teaching CwSNs?	0 (0)	28 (100)
2.	Is the frequency of teachers visiting the school is inadequate if, in case the special teachers are working at Block level?	28 (100)	0 (0)
	(i). If yes, the special teachers visit the schools on: a. Daily basis b. Once a week c. Twice a month	4	

	d. Once a month e. Occasionally	12 12	
	(ii). How much time do special teachers devote per day/visit for teaching and learning of CwSNs in the school: a. Less than an hour b. One hour c. Two hours d. Three hours e. More than three hours	12 12 4	
3.	Is the Individual Education Programme (I.E.P) prepared for each CwSNs?	4 (14.29)	24 (85.71)
4.	Do regular teachers work in collaboration with the special teacher for preparing I.E.P?	0 (0)	28 (100)
5.	Do special teachers possess the required skills to deal with CwSNs?	28 (100)	0 (0)
6.	Do special teachers have access to support services such as paraprofessionals (e.g. speech therapist, physiotherapist, occupational therapist etc.)?	0 (0)	28 (100)
7.	Are special teachers competent/skilled to deal with bullying and harassment of disabled students in an inclusive classroom (in case of bullying and harassment is observed by the observer)?	12 (42.86)	16 (57.14)
8.	Do special teachers take into consideration any of the activities namely stimulus variation/ reinforcement/ recall of previous work/links to future work/clear instructions to support the needs of all learners in lesson planning?	28 (100)	0 (0)
9.	Do special teachers use appropriate teaching aids/ devices/appliances/modalities in the classroom?	0 (0)	28 (100)
10.	Do special teachers discourage discrimination between CwSNs and other students?	28 (100)	0 (0)
11.	Do special teachers have the skills to systematically deal with unexpected incidents (e.g. evacuation, fainting or fits, psychotic incidents, arguments, medical emergencies)?	0 (0)	28 (100)

*The figures in brackets show percentage of scores

The information in Table 5 seemed to indicate that the resource teachers were posted at the block level to cover a group of inclusive schools. No teacher was posted at the school level, therefore, the resource support was largely provided at the block level. The frequency of teachers visiting the school was found inadequate in all the 28 (100%) sample schools which raise a doubt on the adequacy of resource support. The visits were made either occasionally or once in a month in 24 (85.71%) schools. In the light of this result, the resource support to CwSNs appeared a 'sham'. The special teachers were found to be skilled and competent in all the 28 (100%) schools but Individual Education Programme (I.E.P.) was available in 4 (14.29%) schools only. These 4 schools were designated as Model Inclusive Schools by the State Government. It is a matter of concern that in none of the surveyed sample schools, the special teachers were collaborating with general teachers for development of I.E.P. The provisions namely use of paraprofessionals, teaching aids,

the ability of special teachers to deal with unexpected incidents, as cited in the S.S.A. framework, were not implemented in any of the sample schools. However, it was noted that special teachers were applying techniques like stimulus variation, reinforcement etc. to make their lesson interesting in accordance with the needs of all learners.

The Home-Based Education (H.B.E.) has a central place in S.S.A. It is provided to those CwSNs who have severe intellectual/physical disabilities. The objective is to enable them to achieve independent living skills (S.S.A, 2006). The survey results on the implementation of this provision are presented in Table 6.

Table 6: Provision of Home-Based Education (H.B.E.)

S. No.	Items	Yes	No
1.	Is there any practice of home-based education for CwSNs in the school?	4 (14.29)	24 (85.71)
2.	Are special teachers trained to provide home-based education?	4 (14.29)	24 (85.71)
3.	Is separate register maintained for the students under H.B.E. in every school for their coverage report/ attendance?	0 (0)	28 (100)
4.	Is there any scheme of incentives for special teachers to facilitate home-based education?	0 (0)	28 (100)

*The figures in brackets show percentage of scores

A perusal of Table 6 indicates that provision of H.B.E. was implemented by only 4 (14.29%) schools out of 28 (100%) sample schools. These four schools were those where resource teachers were posted. These schools were designated as Model Inclusive Schools by State Government. It is worthy to note that special teachers were not motivated in any of the sample schools to facilitate H.B.E. The reason is that they were not being provided with any kind of special assistance. It was observed that the H.B.E. was an imposed burden on special teachers as they were not getting any monetary or administrative support to complete the task. The separate register required to be maintained, as per the provisions of S.S.A., in every school, for students enrolled under H.B.E. was not found in any of the sample schools.

The S.S.A. documents envisage community members as the key player in meeting the goals of inclusive education. The survey results on the implementation of the provision of awareness and community mobilization by the sample schools are presented in Table 7.

Table 7: Awareness and community mobilization on inclusive education

S.No.	Items	Yes	No
1	Are awareness camps organised for parents to remove the myths and misconceptions about disabilities?	4 (14.29)	24 (85.71)
2	Is there any involvement of the School Management Committee in community mobilization activities?	4 (14.29)	24 (85.71)
3	Is there any positive impact of awareness and community	4	24

	mobilization activities on inclusive education?	(14.29)	(85.71)
4.	Are awareness programmes conducted for educational administrators on issues related to inclusive education?	0 (0)	28 (100)

*The figures in brackets show percentage of scores

A perusal of Table 7 indicates that awareness camps for parents of CwSNs to remove their myths and misconceptions about disabilities and inclusive education were organised in 4 (14.29 %) sample schools. These camps were organised in designated model schools where special teachers were posted. It was found that the School Management Committee (S.M.C.) was involved in these 4 (14.29%) sample schools regarding community mobilization activities. In all the 4 (14.29%) sample schools, where awareness camps were organised, positive impact on inclusive education was observed. It was disappointing that awareness programmes were not conducted for educational administrators on issues related to inclusive education.

The survey results on the implementation of miscellaneous provision on inclusive education are presented in Table 8.

Table 8. Miscellaneous provisions on inclusive education

S.No.	Items	Yes	No
1.	Are sports activities being organised in the school for CwSNs?	6 (21.43)	22 (78.57)
2.	Do CwSNs participate in sports activities organised for able-bodied peers during the present or previous academic session?	18 (64.29)	10 (35.71)
3.	Do cultural activities in the school ensure the participation of CwSNs along with peers without disability?	22 (78.57)	6 (21.43)
4.	Are tours/excursions organised in the school for CwSNs?	0 (0)	28 (100)

*The figures in brackets show percentage

Table 8 shows that sports activities for CwSNs were organised by 6 (21.43%) schools, the CwSNs of 18 (64.29%) schools did participate in sports activities organised for able-bodied peers, the participation of CwSNs in cultural activities was reported in 22 (78.57%) sample schools, however, none of the sample schools organised tours and excursions for CwSNs. It was found that certain schools sent their CwSNs for attending tours and excursions organised by State government. The results of this study got support from Haryana Govt. letter ref. no. 1/37-2013 I.E.D.S.S dated 6.2.2014 and letter ref. no. S.S.A/I.E.D/4078-4098 dated 20.5.2016 circulated across the State as a part of ensuring implementation of miscellaneous provisions on inclusive education.

Table 9 presents the overall status of implementation of eight dimensions of inclusive education across the four districts of State.

Table 9: Overall position of implementation of eight dimensions of inclusive education across four districts of Haryana State

S.No.	Dimension	Number of Standards Surveyed	Number of Standards Met
1.	Identification of Children with Special Needs (CwSNs).	11	03
2.	Functional and formal assessment of CwSNs.	11	11
3.	Provision of aids and appliances.	6	02
4.	Training of teachers on inclusive education.	9	07
5.	Resource support.	11	04
6.	Provision of Home-Based Education.	4	00
7.	Awareness and community mobilization on inclusive education.	4	00
8.	Miscellaneous provisions on inclusive education.	4	00
	Total	60	27

*The figures in brackets show percentage

It is evident from Table 9 that out of total 60 (100%) standards surveyed, 27 (45%) standards were met by the sample schools. The maximum achievement was recorded on meeting the norms for the functional and formal assessment of CwSNs. The implementation of the provision on training of teachers on inclusive education was found good. The positive picture illustrated by these findings sharply contrast the implementation results on Home-Based Education, awareness generation and community mobilization, resource support, identification of CwSNs and meeting the norms on miscellaneous provisions for CwSNs namely organisation of sports, sending CwSNs on tours and excursions, and conducting cultural activities for active participation of CwSNs since these provisions were least implemented or not at all implemented across the State.

Discussion

The goals of the study were to find out the position of the implementation of inclusive education for children with special needs in primary schools of Haryana State. Table 1 summarizes the results on identification dimension of inclusive education. It has been revealed that the identification process was carried out by all the 28 sample schools. The results are confirmatory to Govinda and Bandyopadhyay (2008) who noted that almost all Indian States had taken steps to identify children with disabilities at the elementary school level. One of the important findings is that the procedures adopted by school authorities to identify CwSNs were not free from discrepancies. This result is consistent with the findings of Singal (2009) who found great discrepancies in the number of CwSNs identified through Census data, school-based records (District Information System for Education), and Project Assessment Board survey used by the S.S.A. The discrepancies in identification procedures were due to different definitions, perceptions and incomplete or no training of the enumerators as reported by Singal. It appeared that the identification process was carried out just for the sake of implementing the policy provisions without bothering to adhere to the guidelines issued by the Government of India. The deficiencies in identification procedures may be due to the fact that the S.S.A. framework does not provide any clear definition of CwSNs and the guidelines followed by the enumerators for identification purpose were actually meant for Out-of-School Children or 'Special Focus Groups' which interalia include CwSNs, girls, Scheduled Caste (S.C.) and Scheduled Tribe (S.T.) children, urban deprived children,

children in difficult circumstances (street children, migrant children, etc.). The results are also consistent with Balasundaram (2005) who cited a lack of reliable statistics on disability as a hindrance to the implementation of inclusive education. Table 2 demonstrates the position of the implementation of functional and formal assessment dimension of inclusive education. As shown in the table, this provision was met by all the 28 (100%) sample schools. The results, by and large, correspond to the findings of a survey conducted by Kurukshetra University (2014 as cited in Yadav and Kumar, 2017) where medical assessment of CwSNs under S.S.A. was carried out in 89% schools of Sonipat district. In inclusive education, there is a provision of providing aids and appliances to CwSNs free of costs to improve their functioning. Table 3 presents the status of distribution of aids and appliances to CwSNs. It is evident from Table 3 that aids and appliances were received by all the 28 (100%) schools. The results contradict Pandey (2009) who found eighty-seven percent government schools did not receive educational aids and appliances. Table 4 shows the number of schools that sent their general education teachers to attend in-service training programmes on inclusive education. The table indicates that general education teachers of all the sample schools have participated in orientation programmes for 3-5 days to understand the problems, needs and effective classroom management of children with disabilities but the general orientation programme of 20 days in-service training was attended by 3.57 percent schools. The results correspond to the findings of World Bank (2007) according to which less than 0.2 percent of all S.S.A. teachers had attended large duration training programmes. The results of this research are congruent to a report published in 'The Hindu' in the year 2013 inter-alia stating that 'all teachers have undergone three to six-day training in special education, which is only an introductory session on the needs of CwSNs'. Berwal (2016) reported that in-service training on teaching the CwSNs was received by 39% inclusive school teacher which is contrastive to the findings of this research. According to Philpott, Furey and Penney (2010), the classroom activities of teachers are influenced by their knowledge of the learning characteristics of the students. The results of the present research that teachers of all the 28 (100%) sample schools have attended in-service training programmes are extremely significant in the light of observations of Philpott, Furey and Penney (2010). Sharma and Desai (2002) showed that teachers who have received training were more concerned about implementing inclusion. Therefore, it is fair to presume that the in-service training on inclusion as received by general teachers would facilitate the implementation of inclusive education. The studies conducted by Swaroop (2001), Sharma and Desai (2002), and Bindal and Sharma (2010) have shown that there is inadequacy of teacher training in India especially pertaining to inclusive education provisions, however, such claims have been refuted by the present study.

Table 5 demonstrates the frequency and type of resource support provided by special teachers at school level. The role of resource teachers in facilitating inclusion was highlighted in S.S.A. (2003) framework. It states that the special teacher not only provides remedial assistance to a child with special needs in inclusive schools but also provide it in the resource room located at the block level. The results of this survey revealed that the resource teachers were appointed at block level for a group of schools, rather than in every school. These results are congruent with Berwal (2016) who found that the resource teachers were engaged by the government of Haryana on a contract basis with a consolidated salary at the block level. The result of the present study was also confirmed by news published in 'The Tribune' (June 21, 2017) with title 'Resource Teachers Sans Salary for 3 Months' which inter-alia mentioned that resource teacher working on contract basis at block level in Haryana were without salaries for the past three months. The S.S.A. (2007) policy document noted that 'classroom practices and teaching methods adopted by teachers for effective classroom

management of CwSNs have remained neglected'; a similar practices have also been affirmed by the present research as 24 (85.71%) sample schools neither had an Individual Education Programmes (I.E.P.) for CwSNs nor appropriate teaching aids/ devices/ appliances/modalities were used by special teachers for effective classroom management. It has been argued that the provision of adequate support services is synonymous to the implementation of inclusion in regular schools (Sharma and Desai, 2002; Singal, 2006; Bindal and Sharma, 2010), however, the failure to meet this requirement indicates that inclusive education was not implemented in Haryana as envisaged in the policy document. The finding of this study has its implications for the government of Haryana to provide resource support at every school if the needs of CwSNs are to be met at every classroom level.

The S.S.A. policy document made the provision of H.B.E. for those children with special needs who are unable to respond to demands of the routine academic curriculum of the schools and require alternatives (Singal, 2009). The S.S.A. (2006) defined Home-Based Education as 'the education of children with severe intellectual/physical disabilities, who can be educated in the combination of home-based and alternate educational settings to enable them to achieve independent living skills'. In the light of this definition and arguments put forth for H.B.E., Table 7 reveals that H.B.E. was not adequately implemented rather it was at its initial stage. The results are confirmatory to Ali (2016) that implementation of H.B.E. is not sufficient. Since none of the schools reported that attendance record was maintained by teachers under H.B.E, the results of the present study show complete non-compliance to Govt. of Haryana, School Education Department Order No. 1/3-2015 I.E.D dated 10.06.2015, according to which maintenance of attendance record of students under H.B.E was mandatory.

The survey results on the implementation of the provision of awareness and community mobilization on inclusive education are summarized in Table 8. The role of the School Management Committee in building awareness among parents of CwSNs was highlighted in the World Bank report (2007). The same has been confirmed by this research study. It may be noted that the awareness among parents was solely generated by special education teachers and experts in the field of inclusive education through lecture and workshop mode. There was no involvement of N.G.Os. This result satisfies the concerns of Alur (2007) who reflected on the involvement of N.G.Os on awareness generation and observed that N.G.Os might act as barriers to inclusive education as their work is anchored in the field of special education, which is 'dominated by technique and mystique'. Table 9 shows that sports and cultural activities for CwSNs were organised by some schools. The results are consistent with Koul (2008) who suggested that field trips to museums, historical sites, and community locations were useful for CwSNs.

Conclusion

The inclusive education under S.S.A. was started with an aim to increase the enrollment of CwSNs by providing them accessible and quality education. This was in line with long-term policy to achieve the target of universal elementary education. However, the findings of this study indicate that the objectives set by the government 15 years ago have not been met so far. The position of the implementation of inclusive education has been found unsatisfactory and there are many areas where the implementation is yet to be initiated. The stakeholders must make concerted efforts to implement all the dimensions of inclusive education so that the most neglected and marginalized

segment of school education becomes skilled and competent to contribute in the development of the society, although in their own unique way.

It was experienced during the survey that only one head teacher was trained to execute the policy of inclusion in schools therefore it is suggested that the government must plan for in-service training of school heads to improve their understanding and working on inclusion. In order to improve physical access to school campus, it is recommended that measures for architectural audit be chalked out to check the deficiencies, gaps and inconsistencies in existing structures and to suggest universal design/s for upcoming civil works under S.S.A.

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Vestibular Problems in Individuals with Auditory Neuropathy Spectrum Disorders: Review

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ABSTRACT

Auditory neuropathy spectrum disorders is characterized by presence of otoacoustic emission, absence of auditory brainstem responses, absence of acoustic reflexes, puretone hearing threshold varying from normal hearing sensitivity to profound hearing loss and speech identification scores disproportionate to the degree of hearing loss. Etiologies of ANSD include neonatal illnesses such as prematurity, low birth weight, anoxia, and hyperbilirubinemia. Other possible causative factors include hydrocephalus, Charcot-Marie Tooth neuropathy syndrome, Friedreich's ataxia, ischemic-hypoxic neuropathy, and other hereditary sensory motor neuropathies. Along with auditory impairments, the signs of vestibular impairments such as dizziness, tinnitus, unsteadiness etc. have also been reported by the individuals with ANSD. In this review the studies related to vestibular dysfunction in auditory neuropathy spectrum have been incorporated.

Introduction

Auditory neuropathy spectrum disorder (ANSD) is a degenerative condition first termed by Starr et al. (1996), characterized by the presence of otoacoustic emissions (OAEs)/ cochlear microphonics (CM) indicating intact outer hair cell functioning and affected auditory brainstem responses (ABR) signifying abnormal auditory nerve firing. These individual with ANSD have stable, fluctuating or progressively worsening hearing sensitivity influenced by temperature sensitivity, auto-immune disorders etc. giving rise to the variable range of speech perception. Few of them have speech identification scores (SIS) correlating with the degree of hearing loss while others, its disproportionate with poor SIS percentage (Rance, Cone-Wesson, Wunderlich, and Dowell, 2002; Rance, McKay and Grayden, 2004) and even affected timing cues (Rance et al., 2004).

The prevalence of ANSD differs across the studies and age groups. Study by Davis and Hirsh (Davis and Hirsh, 1979) reported that 1 in every 200 children with hearing impairment are prone to have ANSD. However, only 4% of children with permanent hearing loss to have ANSD (Berlin, 1999). Similarly, it was reported that 0.02% of every infants kept in NICU are prone to have auditory neuropathy (Sininger and Starr, 2001). In Indian perspective, the prevalence of ANSD is

around 0.54% or 1 in every 183 individuals with sensorineural hearing loss (Kumar and Jayaram, 2006).

Along with auditory impairments, the signs of vestibular impairments such as dizziness, tinnitus, unsteadiness etc. have often been reported by the individuals with ANSD. The prevalence of vestibular impairment varies across the studies. In the retrospective study on 50 individuals with ANSD, 53% of them were found to have vestibular dysfunction with hypoactive caloric response (Samaha and Katsakas, 2000). Study by Fujikawa and Starr (2000) reported 64% (9 out of 14) of the individuals with ANSD to have abnormal vestibular response in caloric test. 22% of the individual with ANSD also have bilateral vestibular impairments (Zingler et al., 2007). Conversely, the other study by Sheykholeslami et al. (2000) reported the complete absence of cervical VEMP response in all of the 6 individuals with ANSD. Likewise Palla, Schmid-Priscoveanu, Studer, Hess, and Straumann (2009) reported the reduced vestibulo-ocular reflex in 81% of the individual with axonal ANSD and 63% of the individual with demyelinating ANSD. Kumar et al. (2007) reported around 80% of the ears with ANSD to have abnormal vestibular evoked myogenic response. Moreover higher incidence of vestibular abnormalities have been reported by Sinha, Shankar, and Sharanya (2013) where out of 11 individuals with ANSD, 100% of them had absent oVEMP response and 90.9% with absent cVEMP response. Another study by Sujeet, Niraj, Animesh, Rajeshwari, and Sharanya (2014) on 26 individuals with ANSD reported 96.15% of them with abnormal cVEMP response and 86.53% of them with bilateral hypoactive caloric response suggesting the involvement of both inferior and superior vestibular nerve branches in these individuals. Therefore, considering these vestibular impairments, one can predict the adverse consequences of getting imbalanced and falls, mostly with visual cues cut off in the individuals with ANSD.

The demyelinating changes at the level of vestibular branch of 8th cranial nerve brings the variation in functioning of sensory vestibular end organs such as saccule, utricle and semicircular canals which can result in adverse consequences. Therefore, to make the rehabilitation effective, the differential diagnosis of the condition and the precise detection of the lesion area should be done. Earlier studies have reported affected functioning of saccule (Akdogan, Selcuk, Ozcan and Dere, 2008; Kumar, Sinha, Singh, Bharti and Barman, 2007; Sheykholeslami et al., 2005) and utricle (Sinha, Barman, Singh, Rajeshwari and Sharanya, 2013) in the individual with ANSD. Also the caloric test resulted in affected horizontal semicircular canal functioning secondary to neuropathic changes in 8th cranial nerve (Abdel-Nasser, Elkhayat, Khalil and Mahmoud, 2006; Akdogan et al., 2008; Fujikawa and Starr, 2000; Kaga, 2009; Sheykholeslami et al., 2000; Starr et al., 2003; Starr et al., 1996). The present review examined the findings of vestibular tests in such individuals.

Vestibular test findings in individuals with ANSD

Preliminary studies on vestibular functioning in ANSD was reported by Starr et al. (1996) where out of 10 individuals studied, 3 of them had horizontal nystagmus on lateral gaze and 2 had no response in caloric test performed. Along with auditory related changes, these individuals had neuropathic changes in vestibular functioning also which led authors to conclude the generalized neuropathy condition where both the components of vestibulocochlear nerve are affected. Also, the study by Kaga et al. (1996) reported the slight engrossment of vestibular organs and brainstem in individuals with auditory nerve disease, where the two individuals were examined to have absence of nystagmus in ice water caloric test, normal results in positioning, positional and central tests.

Konráðsson (1996) assessed four children fulfilling the criteria of auditory neuropathy spectrum disorder (ANSD) without any complaint of vestibular dysfunction. These children underwent vestibular evaluations which included bithermal caloric test, smooth pursuit test, saccadic test and optokinetic test where it showed normal test results for all of them suggesting the presence of pure ANSD affecting auditory system only. Also Akdogan et al. (2008) reported normal caloric response in all 3 children with ANSD studied. In addition, Fujikawa and Starr (2000) studied vestibular functioning in 14 individuals with ANSD. Caloric tests in all these individuals revealed vestibular neuropathy as a late manifestation to the condition in individuals with ANSD.

Sheykholeslami et al. (2005) examined 3 individuals with ANSD having complaint of balance problem where it was found to have abnormal response for Romberg, stepping and Mann tests in eyes closed condition. Also there was absence of spontaneous nystagmus confirming no involvement of central vestibular tract. Ice water caloric test done in right ear revealed horizontal nystagmus without vertigo in only one individual. However, there was hypoactive response for other individuals. It was concluded that in case of isolated auditory neuropathy, both the vestibular portion of 8th cranial nerve and its innervations can be affected. In case of individuals with unprogressed isolated auditory neuropathy, there can be involvement of both auditory and vestibular system, hence concluding to use the term “cochlear neuropathy” for the condition with the involvement of auditory portion of 8th cranial nerve and its innervations.

Abdel-Nasser et al. (2006) reported the vestibular functioning in 50 individuals with ANSD where 30% of them had bilateral reduced caloric response, 14% had bilateral absent caloric response suggesting bilateral extensive vestibular lesion. Also out of 50 individuals with ANSD, only 18% of them revealed the presence of dizziness and other imbalance features. All the individuals showed lack of spontaneous, positional, positioning and gaze nystagmus in evaluation. Also normal saccade velocity, latency and accuracy were observed in oculomotor test. Optokinetic and eye tracking evaluations revealed normal test results. These detail inspection on peripheral and central portion of vestibular system revealed the presence of normal central vestibular connections thereby restricting the pathology within peripheral vestibular connections. Other study by Kaga (2009) reported hypoactive response on ice water stimulation used in caloric test, hence these individuals were identified as individuals with ‘auditory-vestibular neuropathy’. However three of

the individuals with ANSD were found to have normal vestibular findings, thus were termed as 'auditory neuropathy only'.

Starr et al. (2003) studied vestibular functioning in a family with ANSD type hearing loss comorbid with peripheral neuropathy. The study revealed histopathological alterations in vestibular nerves which were analogous to the clinical findings such as lack of eye movements and no sensation of imbalance in caloric test in two of the individuals of the family. These neurotic findings suggested the neural loss in the vestibular system joining lateral semicircular canals and Scarpa ganglion. Moreover distorted beaded appearing vestibular nerve due to the fragmentation of myelin sheath with gaps approximately the diameter of nerve fiber was seen signifying its incomplete remyelination. These histopathological features are suggestive of the hypoactive response in caloric test. Also, the beaded appearance observed in the distal than the proximal portion of the vestibular nerve may indicate the presence of pathology limited within the distal portion rather than invading central portion of the vestibular system. This can explain the reason behind normal functioning of individuals with ANSD in gaze, saccade and optokinetic tests (Abdel-Nasser et al., 2006; Sheykholeslami et al., 2000; Sheykholeslami et al., 2005; Starr et al., 2003). This suggests the presence of ANSD in absence of peripheral neuropathy with range of variability in vestibular functioning.

Fujikawa and Starr (2000) studied vestibular functioning in 14 individuals with auditory and peripheral neuropathies when symptoms related to vestibular dysfunction were absent. All the individuals were detected to have ANSD bilaterally and eight of them were found to have concomitant peripheral neuropathies too. Vestibular dysfunction was reported in 9 out of 14 subjects where 7 of them had concomitant peripheral neuropathies. In the vestibular abnormal group 5 had no response and 4 had asymmetrical response on ENG/VNG test. All these individuals were found to have normal saccadic response. The optokinetic test, gaze test and sinusoidal tracking test performed in 5 subjects revealed response within normal range. These results concluded that in some cases of degenerative peripheral neuropathies, there can be involvement of vestibular nerve as well. Out of two individuals with hypoactive caloric response without peripheral neuropathies, one of them had temperature sensitive auditory neuropathy resulting in demyelination of 8th cranial nerve and the other one was found to have isolated auditory neuropathy. Hence the study revealed the variation to the degree of neuropathic involvement of vestibular nerve in individuals with auditory neuropathy as well as peripheral neuropathies. Also, Jen, Baloh, Ishiyama, and Baloh (2005) reported a child with Dejerine-Sottas syndrome (HMSN type III) with canal paresis in caloric tests with complete absence of Vestibulo-ocular reflex suggesting bilateral vestibular dysfunction

Wang et al. (2013) described the vestibular function in individuals with auditory neuropathy and their ability to maintain balance. Vestibular function tests were performed on thirty two participants with auditory neuropathy and thirty six normal subjects including electronystagmography and static posturography. The results from the two groups were compared.

Caloric tests and equilibrium function tests in individuals with auditory neuropathy spectrum disorder was abnormal, compared to normal subjects.

Sujeet et al. (2014) studied vestibular functions in 26 individuals with ANSD who underwent cVEMP and caloric tests. Results of the study revealed absence of response in cVEMP and bilateral hypo-functional response in caloric tests in most of the individuals suggesting the involvement of both superior and inferior portion of vestibular nerve in individuals with ANSD. Results of the study also revealed no association between caloric test results with degree and configuration of hearing loss.

Ismail et al. (2014) evaluated vestibular functions in forty participants with auditory neuropathy using vestibular evoked myogenic potentials and videonystagmography test battery. Vestibular function tests results showed preservations of VEMP bilaterally in 15 participants, unilateral in 10 participants and absent in 15 patients. On the other side, VNG showed normal central vestibular system with unilateral weakness in 10 ears only. The authors concluded that patients with auditory neuropathy could also have vestibular neuropathy. The authors also classified Vestibular neuropathy into three groups: superior vestibular neuropathy, inferior vestibular neuropathy and superior/inferior vestibular neuropathy.

Sheykholeslami et al. (2000) recorded VEMP in 3 individuals with ANSD which was done to understand the effect of the pathology on the sacculo-collic pathway. Rectified VEMP recordings were obtained at 500Hz air conduction tone burst stimuli where there was absent VEMP response for all the individuals which was suggestive of dysfunction of inferior vestibular nerve along with auditory nerve in these individuals. Moreover, it was reported that the extent of inferior vestibular nerve dysfunction was as variable as the auditory related features and findings in these individuals with ANSD.

Sheykholeslami et al. (2005) reported the presence of cVEMP response in right ear and absent in left ear in one of the individual with ANSD. But the caloric test revealed normal test results for both the ears, suggesting unilateral sacculo-collic neuropathy with bilateral ANSD. The authors concluded that the vestibular involvement may vary from normal functioning to single portion of the vestibular apparatus (saccule/utricle and their innervations) dysfunction as well as complete vestibular areflexia.

Kumar et al. (2007) reported abnormal of absent VEMP in 16 out of ears in individuals with ANSD. The study revealed that out of 20 ears tested, 80% of them had either absent or prolonged response with reduced amplitude. Hence Kumar et al. (2007) came up with the term “acoustic neuropathy” for those individuals who had involvement of auditory nerve only and “vestibulo-acoustic neuropathy” for indicating those individuals who had involvement of vestibular nerve along with acoustic nerve. In this study, probable reason for the absence of VEMPs was ascribed to the fact that both the cochlear and vestibular portions are the division of same nerve fiber bundle known as

8th cranial nerve or vestibulocochlear nerve. Therefore, neuropathic condition in one of the branch (auditory branch) of the 8th cranial nerve resulting in other branch (vestibular branch) as well.

Akdogan et al. (2008) evaluated vestibular functions using cVEMP and caloric test in 3 children in the age range of 4-5 years with ANSD. There was an absence of replicable VEMP responses in 2 out of 3 children. However, the caloric tests revealed normal test results in all 3 individuals. Hence, author suggested the usage of detailed vestibular test battery so as to rehabilitate children for their deficits timely.

Sazgar, Yazdani, Rezazadeh, and Yazdi (2010) made an attempt to understand saccule and its neural functioning in individuals with ANSD. Sazgar et al. (2010) reported abnormal or absent cVEMP responses in 13 out of ears of individuals with ANSD. The study suggested the presence of bilateral manifestation of the neuropathy and its slow progression. Also, it was reported that central compensatory mechanism decreases in response of vestibular end organs that was linked with hearing loss.

Masuda and Kaga (2011) studied the influence of aging on hearing and vestibular function in patients with auditory neuropathy. Three female participants with auditory neuropathy were assessed for hearing and vestibular function by speech discrimination tests, ABR, ECoChG, DPOAE, caloric test, damped-rotational chair test, and VEMPs. In all three patients, speech discrimination ability and vestibular function markedly declined with aging. However, speech language understanding and higher brain function were less affected by aging.

Sinha et al. (2013) reported vestibular functions in three individuals with ANSD where there was hypo-functional caloric test result along with absent cVEMP response. 2 out of 3 individuals with ANSD had asymptomatic vestibular dysfunction. Two subjects were found to have deviations present in clinical tests of stability suggesting the presence of superior and inferior vestibular nerve dysfunction in these individuals. Also it was reported regarding the development of compensatory features over time to overcome the disability due to vestibular neuropathy.

Sinha, et al. (2013) assessed the functioning of vestibular nerve in individuals with ANSD. Eleven individuals with ANSD participated in the study, where cVEMP and oVEMP were administered on these individuals. The results of the study revealed absence of oVEMP in 100% of participants and absent cVEMP in 90.0% of the participants. The authors suggested a high incidence of vestibulopathy in individuals with ANSD and therefore the need to include vestibular test battery for assessing suspected ANSD candidates.

Emami and Farhani (2015) administered cVEMP in eleven children with unilateral auditory neuropathy and 2 children with bilateral auditory neuropathy. The results revealed prolonged cVEMP latencies in all the children with auditory neuropathy compared to the normal children. The authors suggested that the saccular dysfunction can be concomitant sign in auditory neuropathy and

also suggested to use the term audiovestibular dys-synchrony instead of auditory neuropathy for these children.

Singh, Sinha, and Barman (2016) examined the otolith modulated functioning in individuals with ANSD. Thirty one individuals with ANSD and thirty one individuals with normal hearing and vestibular functions participated in the study. Both cVEMP and oVEMP were administered using 500Hz tone bursts. In this study the cVEMP and oVEMP responses were present in less than 20% of the individuals with ANSD. Also, there was significant prolonged inter-peak and later peaks latency and significant decreased amplitudes in ANSD individuals than the control groups. Abnormal or absent responses indicated the dysfunction of superior and inferior vestibular nerves in these individuals. Therefore, the authors suggested the need to include vestibular test battery for assessing suspected ANSD candidates.

Few of the studies on degenerative peripheral neuropathies such as neurosarcoidosis were reported to have vestibular neuropathy as well where comorbid demyelination of auditory, vestibular and facial nerves were found to be present resulting in the degeneration of associated end organs. In the single case study of 32 year old man with sarcoidosis, histological findings revealed degeneration of cochlear and labyrinthine neuroepithelium and stria vascularis. With audiological criteria fulfilled as ANSD, these individuals were found to have no nystagmus on caloric stimulation suggesting bilateral dysfunction lateral semicircular canals (Babin, Liu and Aschenbrener, 1984; Von Brevern, Lempert, Bronstein and Kocen, 1997). Also another single case study of 45 years old female with chronic inflammatory demyelinating polyneuropathy where noted with having limb weakness, postural difficulty, foot numbness and oscillopsia. Client underwent various tests such as clinical examination, bithermal caloric, rotatory chair testing, dynamic posturography etc. It was found to have reduced caloric response on bithermal stimulation suggesting of vestibular dysfunction in degenerative peripheral pathologies (Frohman, Tusa, Mark and Cornblath, 1996).

To conclude, neuropathic condition of auditory nerve may also comprise vestibular nerve. The variations seen in audiological findings across individuals with ANSD can be parallel to the vestibular findings with a huge unevenness. Moreover, the neuropathic condition of vestibulocochlear nerve is limited within peripheral vestibular system than invading central oculomotor system. Also, these studies reveal that most of the individuals remain asymptomatic with respect to their vestibular damage due to the bilateral distribution of the disorders and the compensatory changes happening in the individuals with ANSD.

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जर्नल ऑफ रिहैबिलिटेशन काउंसिल ऑफ इंडिया - कॉल फॉर पेपर्स

भारतीय पुनर्वास परिषद् (सामाजिक न्याय और अधिकारिता मंत्रालय के अधीन एक सांविधिक निकाय दिव्यांगजन सशक्तिकरण विभाग) द्वारा एक जर्नल प्रकाशित किया जाता है, जिसमें पुनर्वास अनुसंधान, संसाधन विकास, तकनीकी विकास, समाचार और कार्यक्रम, संपादकीय, पुस्तक समीक्षा, आदि प्रवृत्तियों पर लेख होते हैं। परिषद् सभी प्रतिष्ठित पुनर्वास वैज्ञानिकों/ पेशेवरों/ शोधकर्ताओं से जेआरसीआई के लिए लेख आमंत्रित करने पर प्रत्येक पहले लेखक को योगदान के लिए ₹5,000/- और मानार्थ प्रति दी जाती है एवं लेख समीक्षा के लिए ₹3,000/- का भुगतान किया जाता है।

हस्तलिपि वास्तविक क्षेत्र के मूल योगदान को लेखों में काम के आधार पर बौद्धिक और विकासात्मक अक्षमताओं, श्रवण बाधित, दृश्य बाधित, लोकोमोटर्स और संबंधित अक्षमताओं और बहु विकलांगताओं से संबंधित प्रतिबिंबित होना चाहिए।

भाग अ: जेआरसीआई के लेखों के समीक्षकों के लिए दिशानिर्देश

क. गोपनीयता: समीक्षा प्रक्रिया सख्ती से गोपनीय है और समीक्षकों द्वारा इसे इस तरह माना जाना चाहिए। प्रकाशन से पहले या बाद में समीक्षक द्वारा हस्तलिपि से प्रत्यक्ष/अप्रत्यक्ष रूप से जुड़े किसी भी व्यक्ति से परामर्श नहीं किया जाना चाहिए। समीक्षक केवल सार्वजनिक रूप से प्रकाशित डेटा (अर्थात् प्रकाशित लेख की सामग्री) का उपयोग कर सकते हैं और किसी भी पुराने मसौदे की जानकारी का नहीं।
द्वितीय। सहकर्मी की समीक्षा को समझना: एक कुशल संपादकीय प्रक्रिया जिसके परिणामस्वरूप समय पर प्रकाशन होता है, लेखकों और वैज्ञानिक समुदाय दोनों को बड़े पैमाने पर एक मूल्यवान सेवा प्रदान करता है। लेखक आपके साथी हैं और उचित सम्मान के पात्र हैं। लेखक/लेखकों को जानने का प्रयास किए बिना समीक्षा किए जाने की अपेक्षा की जाती है।

ख. सहकर्मी की समीक्षा को समझना: एक कुशल संपादकीय प्रक्रिया जिसके परिणामस्वरूप समय पर प्रकाशन होता है, लेखकों और वैज्ञानिक समुदाय दोनों को बड़े पैमाने पर एक मूल्यवान सेवा प्रदान करता है। लेखक आपके साथी हैं और उचित सम्मान के पात्र हैं। लेखक/लेखकों को जानने का प्रयास किए बिना समीक्षा किए जाने की अपेक्षा की जाती है।

ग. समीक्षा की समय अवधि: आलेख की समीक्षा की जानी चाहिए और आर.सी.आई से प्राप्त होने के 30 दिनों के भीतर रिपोर्ट दी जानी चाहिए।

घ. नैतिक मुद्दे:

- साहित्यिक चोरी: यदि आपको संदेह है कि एक लेख किसी अन्य कार्य की पर्याप्त प्रतिलिपि है, तो संपादक को बताएं, जितना संभव हो उतना विस्तार से पिछले कार्य का हवाला देते हुए। कृपया उपलब्ध सॉफ्टवेयर का उपयोग किया जा सकता है।
- धोखाधड़ी: धोखाधड़ी का पता लगाना और निर्धारित करना बहुत मुश्किल है, लेकिन अगर आपको संदेह है कि लेख के परिणाम असत्य, हेरफेर या मनगढ़ंत हैं, तो अपनी गोपनीय टिप्पणियों में संपादक के साथ इस पर चर्चा करें।
- अन्य नैतिक चिंताएं: क्या अनुसंधान प्रतिभागियों की गोपनीयता बनाए रखी गई है? लेख में यह संकेत नहीं होना चाहिए कि प्रतिभागियों की सहमति के बिना डेटा एकत्र किया गया है। यदि पशु या मानव विषयों के नैतिक व्यवहार के स्वीकृत मानदंडों का उल्लंघन हुआ है, तो इनकी भी पहचान की जानी चाहिए।
- अन्य नैतिक मुद्दों का जिनका उल्लेख यहां नहीं है।
- समीक्षकों से अपेक्षा की जाती है कि वे लेख की समीक्षा करने से पहले पेपर सबमिशन के लिए नीचे दिए गए दिशानिर्देशों को पढ़ें।

भाग ब: शोध पत्र लिखने के लिए दिशानिर्देश

सबमिट किए गए लेख के नीचे दिए गए विनिर्देशों के अनुसार होने की उम्मीद है:

1. पेपर अंग्रेजी या हिंदी में होना चाहिए, ए4 पेपर के एक तरफ डबल स्पेस टाइप करें, अपने पेपर के टेक्स्ट के चारों ओर एक इंच का मार्जिन छोड़ दें।
2. एंडनोट के स्थान पर अंतिम टिप्पणियों और उद्धृत कार्यों का उपयोग किया जाना चाहिए।
3. पक्षपाती भाषा से बचें और शब्दों को रेखांकित न करें।
4. पहले उल्लेख पर संक्षिप्त शब्द पूर्ण रूप से लिखे जाने चाहिए और उसके बाद कोष्ठक में संक्षिप्त नाम।
5. सन्दर्भ सूची लेख के अंत में निम्नलिखित पैटर्न में संपूर्ण ग्रंथसूची जानकारी के साथ होनी चाहिए:

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6. लेखक(कों) द्वारा एक घोषणा कि पेपर(पत्रों) को प्रकाशन/प्रस्तुति के लिए कहीं और नहीं भेजा गया है। इसे अलग शीट पर योगदान के शीर्षक, लेखक(कों) के नाम, पत्राचार के लिए पूरा डाक पता हस्ताक्षर के साथ बनाया जाना चाहिए।
7. अपने केंद्रीय पुनर्वास रजिस्टर (सीआरआर) संख्या (यदि कोई हो) का उल्लेख करें। प्रकाशन के बाद, पहले/एकल/संबंधित लेखक के लिए 10 सीआरई अंक और दूसरे और किसी अन्य लेखक के लिए 06 सीआरई अंक जोड़े जाएंगे।

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CONTENTS

From Chairperson's Desk	V
From Chief Editor's Desk	VII
<input checked="" type="checkbox"/> Effect of Tangram on the Geometrical Learning of Low Achievers in Mathematics <i>Kritika Mishra</i>	1
<input checked="" type="checkbox"/> Women Education without Discrimination: A Step Towards Equality <i>Preetam Pyari</i>	7
<input checked="" type="checkbox"/> Phonological Working Memory in Children with Normal Non-Fluency <i>Theaja Kuriakose and Nayana Benny</i>	17
<input checked="" type="checkbox"/> Efforts Taken by Families for Economic Empowerment of their Adult Family Members with Intellectual Disability <i>R. V. Desetty and V. N. Patnam</i>	25
<input checked="" type="checkbox"/> Application of Motor Learning Principles in Management of Ataxic Dysarthria Secondary to "Cerebellar Infarct": A Case Study <i>Joyanta Chandra Mandal, Auroshree Mohapatra and Indranil Chatterjee</i>	33
<input checked="" type="checkbox"/> Position of the Implementation of Inclusive Education for Children with Special Needs in Primary Schools of Haryana <i>Sandeep Berwal and Renu Bala</i>	40
<input checked="" type="checkbox"/> Vestibular Problems in Individuals with Auditory Neuropathy Spectrum Disorders: Review <i>Sujeet Kumar Sinha, Anuj Kumar Neupane and Abhishek Ranjan</i>	57
JRCI – Call for Papers	67
Subscription Form	72

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