

# Comparison of Various Aspects of Pragmatic Language Skills in Male and Female Adults with Spastic Cerebral Palsy.

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**Abstract- Aim:** To assess and compare pragmatic language skills in male and female adults with Spastic Cerebral Palsy

**Methods:** A minimum sample of 20 adults with Spastic CP from the special schools and vocational training centers. Participants within the age range of 18 to 25 years with minimum language age of 3 years and above were considered in the study. Revised Pragmatic protocol tool developed by Carol A. Prutting and Diane M. Kirchner (1987) was used. The protocol consists of 30 pragmatic aspects of language. It assesses three aspects i.e. Verbal aspects, paralinguistic aspects, and non- verbal aspects. REELS was used to assess language.

Responses were recorded by using a digital voice recorder. Results were analyzed and tabulated by using descriptive statistics and TWO-WAY ANOVA on IBM SPSS 23 software and Microsoft excel version 13. The probabilities attached to the statistics was tested at 5% level of significance.

**Results:** The results of the Two-way ANOVA indicates no significant difference between male and female subjects but significant difference within the three aspects.

**Conclusion:** These study findings will also help in implementing and planning intervention program for young and older children with similar problems in their young age.

**Index Terms-** Spastic Cerebral Palsy, Pragmatic Language skills, male, females, adults

## I. INTRODUCTION

Cerebral palsy (CP) means a group of non- progressive conditions of a person characterized by abnormal motor control and posture resulting from brain insult or injuries occurring in the prenatal or infant period of development (National Trust, 1999) also Cerebral Palsy refers to a non- progressive central nervous system deficit. The lesion may be in a single or multiple locations of the brain, resulting in definite motor and sensory abnormality (Peristein. M. A, 1952). A progression in clinical signs with development is seen in all types of CP (Miller F. and Bachrach S., 2006). The most common type of CP is spastic type with an occurrence of 70% to 80% of all CP cases (Hegde, 2008). The characteristics of spastic CP include increased muscle tone, dysphagia, communication problems, decreased rate of speech, a perceptually harsh and strained voice quality and decreased variation in loudness (Cougher, L., Savage,

E., Smith, M., 1992). For acceptance in society and in peers, socialization skills and good communication is vital and it is also dependent on understanding, concern and care but an adult with CP need more efforts to make a place in the society due to movement problem, delayed language development and limited communication skills according to Miller and Cougher L. and Savage E. (1992,2006). Communicative competence is valued by adolescents as a way of presenting themselves to peers and great pressure exists to conform while CP adults face difficulty in maintaining this competence, Salzmann, Z. (1994).

## II. IDENTIFY, RESEARCH AND COLLECT IDEA

### Review of literature:

Beckung, E.,& Hagberg, G. (2002) describes children with cerebral palsy (CP) experience restricted participation in life situations ranging from leisure pursuits to education and social roles. Michelsen, S. I., Uldall, P., Hansen, T., & Madsen, M. (2006) states that most children with CP live to adulthood, where they remain at higher risk of social disadvantage than adults without CP in terms of independent living, employment, and establishing a family. Adolescence phase may be particularly challenging for young people with physical impairments, King, G. A., Brown, E. G., & Smith, L. K. (2003).

Turkstra, L. S., Clark, A., Burgess, S., Hengst, J. A., Wertheimer, J. C.,& Paul, D. (2016) conducted a study on Pragmatic communication abilities in children and adults, implications for rehabilitation professionals. The purpose was to provide a review of pragmatic communication ability and its disorders, as a resource for rehabilitation team members. They guided assessment of pragmatic communication ability to describe the developmental progression of pragmatic skills and expectations for children and adults.

Donkervoort, M., Roebroek, M., Wiegerink, D., Van der Heijden-Maessen, H., Stam, H., & Transition Research Group South West Netherlands. (2007) stated that adolescents with CP have restricted participation in daily activities and social roles which depends on the severity of their impairments. However, evidence is scarce about the modifiable factors in childhood which predict participation in adolescence.

Dark, L. J., Clemson, L., & Balandin, S. (2016). conducted a study to better understand how adults with CP experience changes in their communication abilities as they age

and the subsequent psychosocial impact. 20 adults with CP aged 40-72 years with complex communication needs participated in a series of in depth interviews. The impact of changing communication abilities emerged as an important area of focus. Implications for speech-language pathologists working with older people with cerebral palsy and complex communication needs include the need to understand the psychosocial impact of communication changes on social interaction, relationships and communicative participation.

#### Need:

Pragmatics is the study of how we use language to communicate, express our intentions and get things accomplished in the world, Owens R., (2001). Pragmatics language includes **various aspects which will be the dependent variables** in the present study like **verbal** (speech acts, topic initiation, maintenance, turn-taking), **non-verbal** (facial expression, body posture, gestures) and **paralinguistic** (intelligibility, intensity, quality, prosody). This Study will contribute in understanding pragmatic abilities of adults with spastic CP, which will further help to set treatment goals for improving pragmatics skills in children with this type of CP and for ongoing development of remedial programs to increase communicative competence. Hence, it is very difficult to understand how the cerebral palsy makes use their pragmatic skill among the group, hence this present study will provide an overview regarding the use of pragmatic skills ultimately help the Speech language Pathologist to understand better for making an appropriate planning for their speech rehabilitation, hence, the present study has been undertaken.

#### Operational definitions:

**Adults:** The term adult means “fully grown up” (Wikipedia contributors, 2017). An adult is a human or organism that has reached sexual maturity. A legal adult is a person who has attained the age of majority and is therefore regarded as independent, self-sufficient and responsible. Young adult extends roughly from 18 to 30yrs and late adulthood covers the period above 60 yrs of age. For the present study, a young adult is considered from 18 yrs to 25 yrs of age.

**Spastic cerebral palsy:** Cerebral palsy is caused by damage to the brain during fetal development, well before the birth process begins (Miller F. and Bachrach S., 2006). CP is classified by the type of movement problem (spastic, athetoid, mixed) and by the body parts involved (legs only, one arm and one leg or all four limbs), Cougher, L., Savage, E., Smith, M. (1992). In the study Spastic type of CP is considered with type of movement problem like diplegia, hemiplegia, paraplegia and quadriplegia.

**Aim:** To assess and compare pragmatic language skills in male and female adults with Spastic CP.

#### Objectives:

1. To assess various aspects in verbal, paralinguistic, and non-verbal aspects of pragmatic skills in male and female adults with Spastic CP.

2. To compare various aspects in verbal, paralinguistic, and non-verbal aspects of pragmatic skills in male and female adults with Spastic CP.

To compare various aspects in overall pragmatic language skills in male and female adults with Spastic CP

#### Hypothesis:

1. There will be no significant difference in verbal, paralinguistic and non-verbal aspects across male and female adults with Spastic CP.

There will be no significant difference in overall pragmatic skills in male and female adults with Spastic CP.

#### Methodology:

The present study aimed to assess and compare various aspects of pragmatic language skills in male and female adults with spastic cerebral palsy. A minimum sample of 20 adults with Spastic CP from the special schools and vocational training centers located within the Mumbai city were considered in the study. Participants within the age range of 18 to 25 years were selected with minimum language age of 3 years and above. Other types of CP like athetoid, ataxic and mixed as well as participants with any associated problems like sensory impairment i.e. hearing impairment, total blindness were excluded.

Revised Pragmatic protocol tool developed by Carol A. Prutting and Diane M. Kirchner (1987) was used. It is designed to provide an overall communicative index for school age children, adolescents and adults. The protocol consists of 30 pragmatic aspects of language. It assesses three aspects i.e. Verbal aspects, paralinguistic aspects, and non-verbal aspects. REELS was used to assess language.

Responses was scored as always appropriate as 2, sometimes appropriate as 1 and not appropriate or absent as 0

#### Procedure:

In the study, consent was obtained from the special schools and vocational training centres then language age was first assessed to be above 3 years on REELS scale and then two tasks were performed on adults with spastic cerebral palsy.

First task was a spontaneous conversation will be made for about 20 minutes with the subject. Questions will be asked to subjects related to his/her daily routine activities or on topic like his favorite hobby or my family was given to subjects for narration task. On second task a validated picture description (market scene, playground scene) was asked to describe for 10 minutes to the subject.

Responses were recorded by using a digital voice recorder. Results were analyzed and tabulated by using descriptive statistics and TWO-WAY ANOVA on IBM SPSS 23 software and Microsoft excel version 13. The probabilities attached to the statistics was tested at 5% level of significance

### III. WRITE DOWN YOUR STUDIES AND FINDINGS

#### Results:

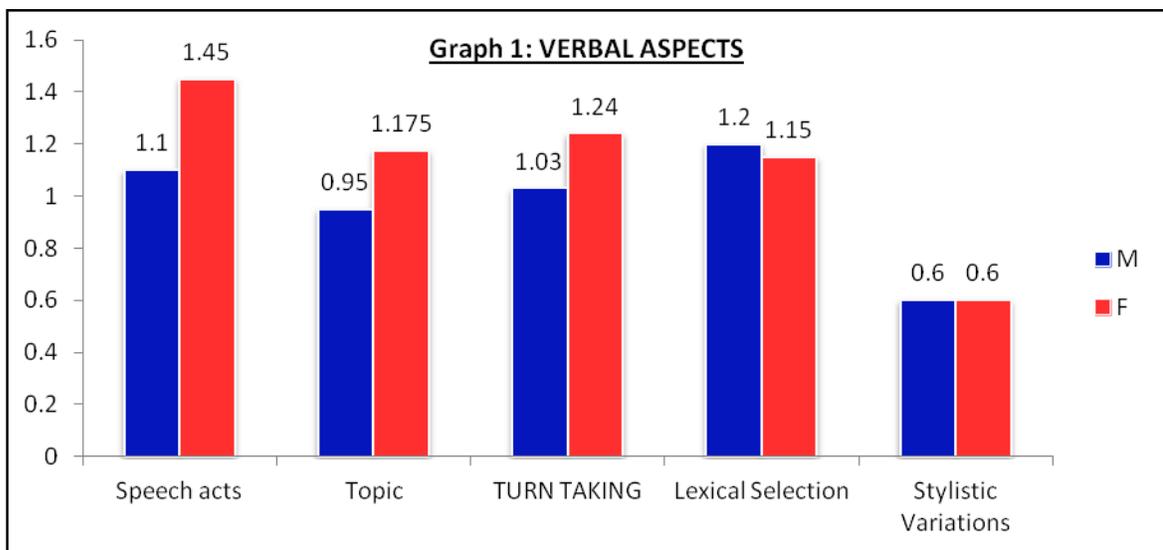
The two-way ANOVA compares the mean differences between groups that have been split on two independent variables (called factors). The primary purpose of a two-way ANOVA is to understand if there is an interaction between the

two independent variables on the dependent variable. In the present study, dependent variables were the three aspects (Verbal, paralinguistic and Non-verbal aspects), while sub-aspects within those three aspects and gender were the independent variables.

1. To assess and compare verbal aspects of pragmatic skills in male and female adults with Spastic CP.

According to the Graph 5.1, mean scores in both males and females indicates that scores of males in speech acts, and

turn-taking sub-aspects of verbal aspects is lower than scores in female subjects, while in lexical selection aspect mean scores were better in males than in the female subjects. Whereas in the last aspect, stylistic variation mean scores were equal in both the subjects. Also, a significant difference observed within the verbal aspect indicating the low performance of both the subjects in the sub-aspects topic, stylistic variations, and lexical selection



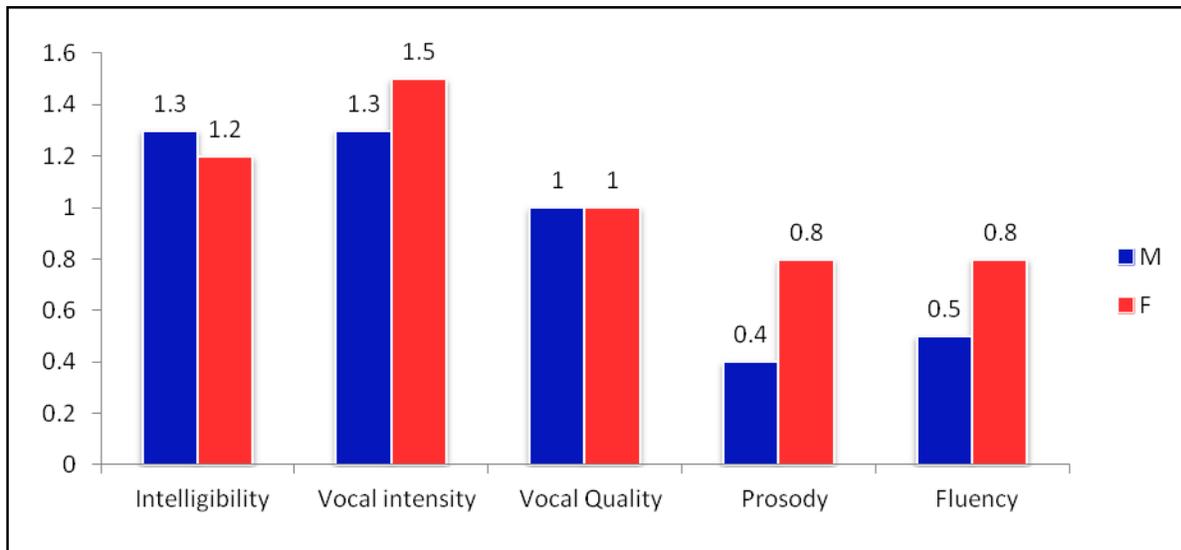
According to mean scores represented in Graph 1, there was a significant difference within the verbal aspects in male and female adults with spastic cerebral palsy, to prove the hypothesis; it needs to be evaluated by ANOVA test. Two-way ANOVA was performed to analyse whether the mean scores of verbal aspects differed significantly with sub-aspects and gender.

The results of the ANOVA indicates that p-value obtained for comparison between males and females is 0.111 which was greater than 0.05 ( $p\text{-value} = >0.05$ ) suggesting no significant difference between mean scores of male and female subjects. For comparison within sub-aspects, p-value obtained is 0.0001 which is less than 0.05 suggesting a significant difference within sub-aspects. Whereas p-value 0.616 for interaction which is

greater than 0.05, suggests no significant difference between aspects and gender.

To assess and compare paralinguistic aspects of pragmatic skills in male and female adults with Spastic CP.

According to the Graph 2 mean scores in both males and females indicates that scores of males in vocal intensity, prosody and fluency sub-aspects of paralinguistic aspects was lower than scores in female subjects, while in intelligibility aspect mean scores are better in males than in female subjects. Whereas, in the vocal quality aspect, mean scores are equal in both the subjects. Also, a significant difference observed within the paralinguistic aspect indicating the low performance of both the subjects in sub-aspects vocal intensity, prosody and fluency.



**Graph 2: Mean scores across both male and female subjects in paralinguistic aspects.**

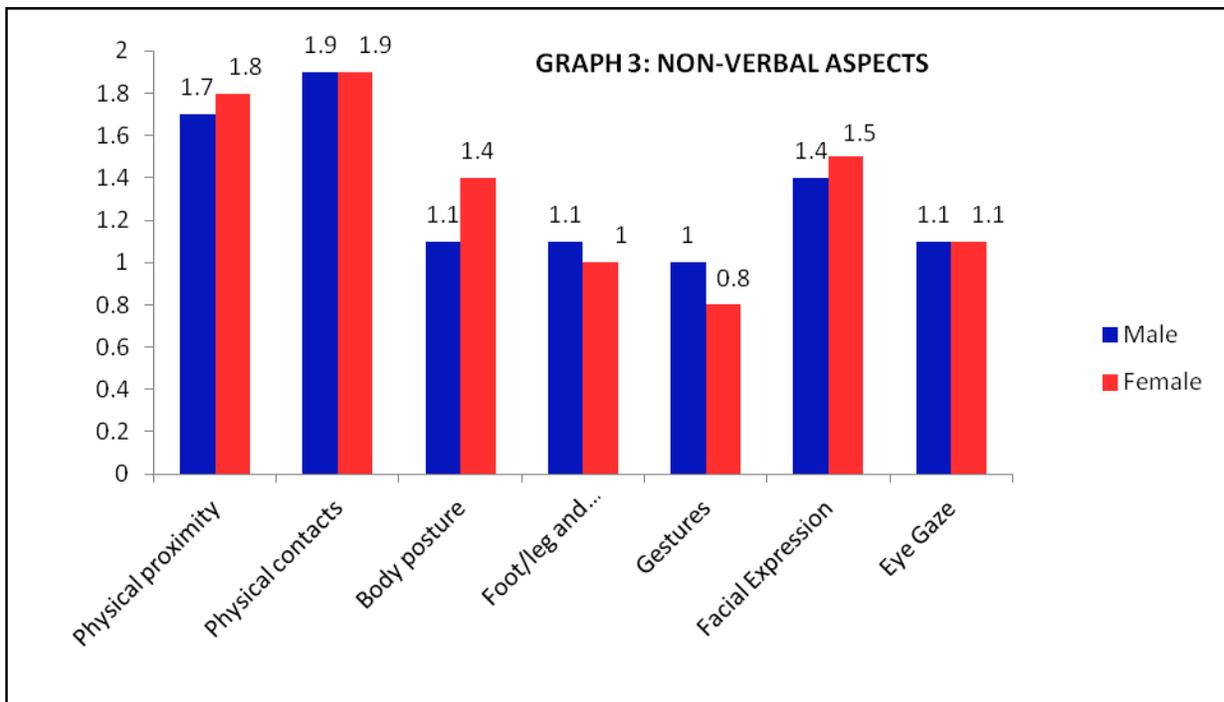
According to mean scores indicated in Graph 2, there was a significant difference within the paralinguistic aspects in male and female adults with spastic cerebral palsy, to prove hypothesis, it needs to be evaluated by ANOVA test. Two-way ANOVA was performed to analyze whether the mean scores of paralinguistic aspects differed significantly with sub-aspects and gender.

The results of the ANOVA indicates that p-value obtained for comparison between males and females is 0.112 which was greater than 0.05 suggesting no significant difference between mean scores of male and female subjects. For comparison within sub-aspects, p-value obtained is 0.0008 which was less than 0.05 (p-value < 0.05) suggesting a significant difference within sub-aspects. Whereas p-value 0.488

for interaction which was greater than 0.05, suggests no significant difference between aspects and gender.

To assess and compare non-verbal aspects of pragmatic skills in male and female adults with Spastic CP.

According to the Graph 3 mean scores in both males and females indicates that scores of males in body posture, facial expression and physical proximity sub-aspects of non-verbal aspects is lower than scores in female subjects, while in foot/leg movements and gestures aspects mean scores are better in males than in female subjects. Whereas in the physical contacts and eye gaze aspect, mean scores are equal in both the subjects. Also a significant difference observed within the non-verbal aspect indicating low performance of both the subjects in sub-aspects body posture, foot/leg movements, gestures and eye gaze aspects.



**Graph 3: Mean scores across both male and female subjects in non-verbal aspects.**

According to mean scores indicated in Graph 3, there was a significant difference within the non-verbal aspects in male and female adults with spastic cerebral palsy, to prove hypothesis, it needs to be evaluated by ANOVA test. Two-way ANOVA was performed to analyze whether the mean scores of non-verbal aspects differed significantly with sub-aspects and gender.

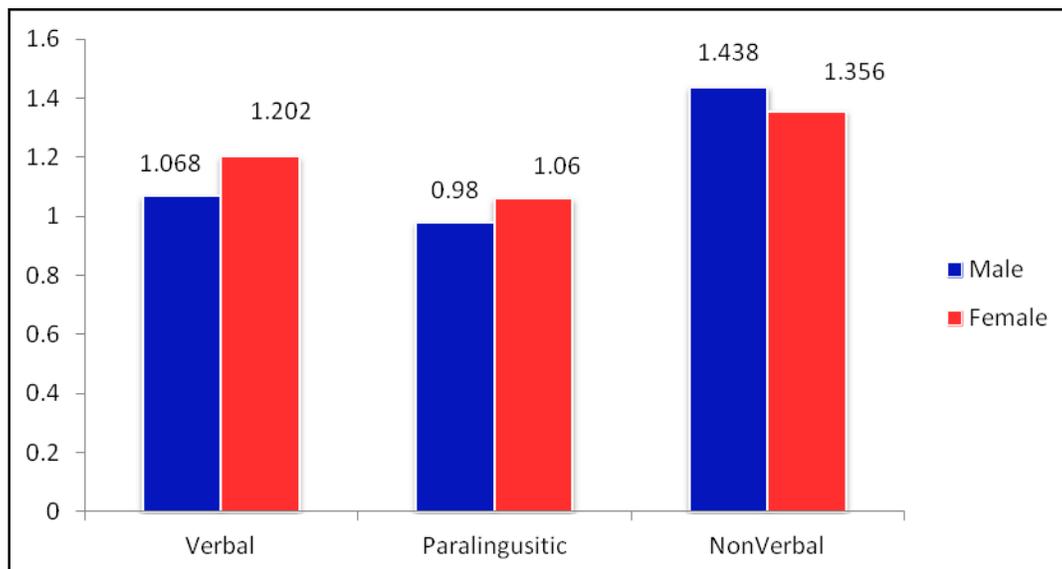
The results of the ANOVA indicates that p-value obtained for comparison between males and females is 0.73 which is greater than 0.05 (p-value= >0.05) suggesting no significant difference between mean scores of male and female subjects

For comparison within sub-aspects, p-value obtained is 0.0007 which is less than 0.05 suggesting a significant difference

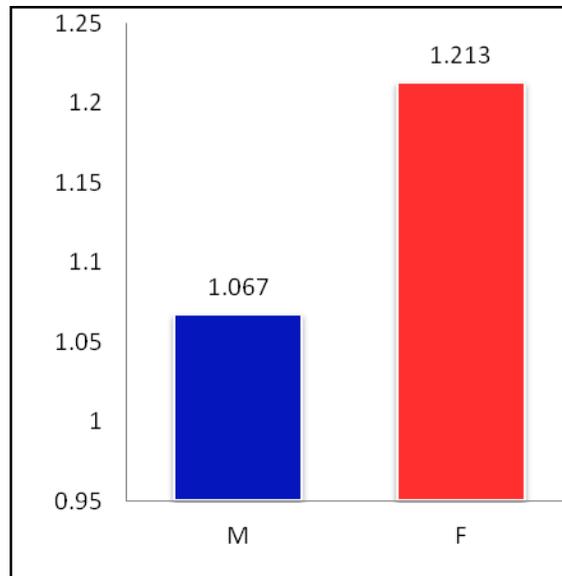
within sub-aspects. Whereas p-value 0.802 for interaction which is greater than 0.05, suggests no significant difference between aspects and gender.

To compare various aspects in overall pragmatic skills in male and female adults with Spastic CP.

According to the Graph 4, it is evident that mean scores of males in verbal and paralinguistic aspects are lower than non-verbal aspects, while female scores indicated greater performance in verbal and paralinguistic aspects than non-verbal aspects of pragmatic skills.



**Graph 4: Mean scores across both male and female subjects in the 3 aspects.**



**Graph 5: explains the overall score and indicates difference in terms of gender.**

Scores for both male and female subjects differed among the various aspects while on overall mean scores of pragmatic skills in males and females with spastic cerebral palsy indicated, female subjects performed better than male subjects, and also female performed better with respect to few aspects than males and it indicates female adults with spastic CP have superior and better pragmatic skills than male adults with spastic CP, but the

statistical significance needs to be evaluated using Two-way ANOVA.

As per mean scores, there is a significant difference between the three aspects and in male and female adults with spastic cerebral palsy with respect to mean scores, to prove hypothesis, it needs to be evaluated. Two-way ANOVA was performed to analyse whether the mean scores differed significantly between aspects and gender.

Source of Variation	SS	Df	MS	F	P-value	F crit
Sample	0.02904	1	0.02904	0.318	0.575147	4.019541
Columns	1.49332	2	0.74666	8.176237	0.000791	3.168246
Interaction	0.12636	2	0.06318	0.691847	0.505033	3.168246
Within	4.93132	54	0.091321			
(p-value=	>0.05)					
<b>Total</b>	6.58004	59				

The results of the Two-way ANOVA indicates that p-value obtained for comparison between males and females is 0.57 which is greater than 0.05 suggesting no significant difference between male and female subjects.

For the columns i.e. difference between the three aspects of pragmatics skills, p-value is 0.0007 which is less than 0.05 suggesting a significant difference between the three aspects in both the groups. In the interaction of both the aspects as well as in the gender, p-value 0.50 which is greater than 0.05 which suggests no significant difference between aspects and gender.

### III. DISCUSSION AND CONCLUSION

Results on descriptive statistics suggest that female adults performed better on many aspects verbal and paralinguistic aspects than males. Also sub-aspects within the three aspects showed a difference indicating that in adults with spastic cerebral palsy few aspects are acquired well while few aspects should be focused during intervention as low score are obtained irrespective of the genders. Results on Two way ANOVA suggest a significant difference within the sub-aspects of pragmatic language skills. And it indicates no significance difference with respect to comparison between the genders. As the main limitation of the study was small sample size, hence

significant difference could not be seen between the genders in this much sample.

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