Medical and Research Publications
International Open Access

Research Article **Journal of MAR Pathology and Clinical Research (Volume 2 Issue 4)**

Pragmatic Language Skills of Children with Down Syndrome and Typically Developing Children: A Comparative Study

Sidra Khan*[1]

Corresponding Author: Sidra Khan, Center for Clinical Psychology, University of the Punjab, Lahore.

Received Date: April 28, 2023

Published Date: Nov 19, 2024

Abstract

Purpose: *The purpose of the present study was to assess differences in the pragmatic language skills of children with down syndrome and typically developing children. Gender and family system differences and relationship among demographic characteristics and pragmatic skills were discovered.*

Method: *Children of matched mental age range 5.0-6.0 were recruited for both groups. The sample size comprised of 60 children (down syndrome=30, typically developing children=30). Non probability purposive sampling was employed as a sampling strategy. Slosson Intelligence Test was used to profile mental age of children. Self-constructed demographic sheet and Orion's Pragmatic Language Skills Questionnaire (OPLS) consisting of nonverbal communication, expressive skills, conversational skills, speech conventions and peer skills was employed.*

Results: *Data was analyzed statistically. The results of the study demonstrated that there was statistically significant difference between pragmatic language skills of children with down syndrome and typically developing children. Gender difference were present in pragmatic language skills of children with down syndrome. Girls had outperformed in all pragmatic skills as compared to boys with down syndrome. It was discovered that positive relationship was present among demographic characteristics and pragmatic language skills.*

Conclusion: *This study showed that significant difference was present in pragmatic language skills of children with down syndrome and typically developing children. Nonverbal communication skills were stronger in Children with down syndrome. The findings are discussed in terms of practical implications and future research.*

Keywords. *Pragmatic Language Skills, Down Syndrome, Orion's Pragmatic Language Skills Questionnaire (OPLS)*

Introduction

Pragmatic language skill denotes the proficiency of using language in a social situation. It allows the individuals to employ linguistic skills and resources proficiently and appropriately. These skills are very prominent for allowing the vibrant exchange of feelings, thoughts and ideas. The advancement of these skills occurs in combination with overall language development (Leigh, 2018). Pragmatic skills are vigorous traits in the down syndrome population. Although, they are typically social, caring and interactive with others. However, not all parts of pragmatics are reliable. Few children with down syndrome have problems while requesting and few exhibit topic maintenance skills alike typically developing children. They have many similarities like answering, protesting and commenting with typically developing children (Martin, Klusek, Estigarribia & Roberts, 2009). They mostly have problems in expressive skills while communicating with others. There are cultural differences present in the use of pragmatics across different cultures.

Cultures are in distinction with each other because the language spoken in these cultures itself differs too. People of east and west have cultural differences by languages they speak. Due to language difference in different cultures speakers of different languages are also cognitively different (Chen, 2010). Pragmatics is an important component of language and it vary from culture to culture. People use different pragmatic skills across different cultures (Lam, 2017). Children with Down syndrome deviate on domain of pragmatics from typically developing children. Identification of pragmatic skills of down syndrome in contrast to their typically developing peers is of immense significance. The present research was designed to compare the pragmatic language skills of children with Down syndrome and typically developing children of matched mental age. Down syndrome causes intellectual disability and it not only affect adaptive skills but speech language skills also. This research study describes the pragmatic skills and deficits of children with down syndrome and how much they diverge from the typically developing children in this language area. In this section variables and sample population will be defined. Literature will be reviewed related to topic and rationale will be presented.

Pragmatic Language Skills

Pragmatics is an element of language which primarily define the use of language in real life situations and effects of context on language. It includes the social communication skills that can be used in everyday interaction with others (Moore, 2001). It also focuses on person's ability of what to say, how to say it, how to interact appropriately in a specified situation and their nonverbal communication,

which may comprise of body language, eye contact and facial expression of a particular person during his interaction with others (Leigh, 2018). There are several verbal and non-verbal components of pragmatic language skills.

Developmental pragmatics enable the children to obtain the ability of using language for the purpose of communicating with others. It also allows them to express their own intentions and induce implications about the intentions of others (Falkum, 2018). Before uttering first word, human infant has already reached several fundamental pragmatic milestones. Prelinguistic skills emerged before proper language skills. They are child's deliberate communication skills which do not possess words (Cekaite, 2012). Vocalization, gestures, facial expressions and other body movements are common features of prelinguistic skills. These skills emerge in the age of 10 to 12 months. After this period of age typically developing children evolve their skills into words and symbolic communication by 12 to 18 months (Panevova & Hana, 2011). Joint attention is one of important pre-linguistic skill that play role in language development. It is essential part of development as it is the basis for the emergence of pragmatic development and social communication skills. It is displayed as child join their interactive partner's attention towards themselves and to the matter or item of their interest (Abbeduto, Warren, & Conners, 2007). It is believed that acquiring joint attention and language development are linked as it permits the children to share topics with others and permits caregivers to help child in language learning through social communication (Adamson, Bakeman, Deckner & Romski, 2009).

Linguistic skills appear usually at the end of prelinguistic skills development at 18 to 36 months of age. At this phase, children start production of single words and enlarge their communication into two words combinations and sentences. They acquire directions and principles related to phonemes, grammar, comprehension and their use (Roberts, Price, & Malkin, 2007). The basic fundamentals of language are phonology, syntax, semantics and pragmatics. Children learn these elements which help them to develop basic vocabulary, sentence construction, and appropriate social interactions with peers. Phonology comprises of construction of phonemes and the numerous conducts to position them for the creation of meaningful words. Semantic is known as the meaning or content of words. Syntax refers to constructing phrases and sentences by combing words. It consists of word inflections, nouns, verbs, order of words and sentence components. Pragmatics is the use of language in social context (Panevova, & Hana, 2011). It comprises features of social communication including taking turns throughout a conversation, starting and monitoring conversational topics, identifying communication interruptions, reviewing one's own speech to deliver a purer clarification, describing actions, demanding, and complaining objects (Wolfe, 2014). Typically developing children acquire all these skills at appropriate age and use them in their daily lives while interacting with others as compared to

children with down syndrome (Roberts et al., 2007). Interacting with other children is also part of developmental milestones. Children have interest in communicating and playing with other children. At the age of 21 to 24 months child can imitate others and understands that he is separate from others. They begin to interact with others and their socialization increase with the increase in his age (Zimmerman, 2018).

Constructive quality and quantity of parent-child interaction is vital for determining a language expansion of child. Parent-child interaction is one of the most important factors in the language expansion of a child. When child interact with parents and spend more time with then their language skills improve a lot. They learn new ways from parents to communicate with others. (Safwat & sheikhnay, 2014). Family system birth order and sibling role are important in language development of child. Important disparities in language learning settings exist on the basis of family structure, birth order and sibling role. Accessibility of family resources, parental care, time vigor, and affiliation with family members and parents are different for children in different birth orders. Differences in the accessibility of all these resources may have influence on language development of younger siblings. Children belonging from joint families have diluted resources distributed among many children. These factors also restrict the interaction of children with their parents. Academic outcomes of children are also affected. All these factors influence on the children language development (Das & Priya, 2017).

Pragmatics is the only element of linguistics that contract with individuals and their verbal and non-verbal connections. Certain difficulties triggered in this field depends on the level of familiarity amid the utterer and the listener. These skills are vital for interactive individual opinions, beliefs and emotions. Children having problems in pragmatic skills most often misapprehend other's perspectives and face difficulty in verbal and non-verbal response (Center for Advanced Research on Language Acquisition, 2019). Down syndrome children have problems in pragmatic language skills as compared to typically developing children. In next portion down syndrome and their various characteristic are discussed.

Down Syndrome

Down syndrome is an inherited condition allied with intellectual impairment, restrictions in adaptive skills, and anatomical variances in tongue size. It is triggered by the existence of all or fragment of a third copy of chromosome 21. John Langdon Down (1866), an English doctor, issued a precise portrayal of individual with Down syndrome in late nineteenth century. It enables him to earn the acknowledgement as the "father" of the disorder (Mandal, 2019). Down syndrome is one of the most

prevalent genetic syndromes. It transpires in 13.65 percent in 10,000 births and affect around 5,500 children in United states each year (Roberts, Price & Malkin, 2007). It is considered as one of major cause of learning disability throughout the world. World Health Organization mentioned the predictable prevalence of Down syndrome amongst 1 in 1000 to 1 in 1100 births globally (National Down Syndrome Society, 2020).

Numerous genetic abnormalities are linked with the occurrence of down syndrome. Anomalies in the sequence of chromosomes results in the developmental syndrome. Few major causes associated with down syndrome are trisomy 21, mosaicism and translocation of chromosomes. Trisomy 21 (nondisjunction) is a fault in cell splitting that typically roots Down syndrome (Mandal, 2019). Mosaicism, also recognized as Mosaic Down syndrome, is category of down syndrome in which combination of two kinds of cell is present. Few cells comprise typical 46 chromosomes and few holds 47 chromosomes. An additional chromosome 21 is existent in those cells with 47 chromosomes. ((Martin, 2009). Translocation is a type in which an extra complete or half duplicate of chromosome 21 ascribes to another chromosome, usually chromosome 14 (NDSS, 2019).

The supplementary inherited material amends the sequence of growth. It roots the features allied with Down syndrome. Down syndrome has many common physical traits. hypotonia, small height, an ascendant angle of eyes, and a solo deep crinkle over the midpoint of the palm (Pace, Shin, & Rasmussen, 2010). Although, each individual with Down syndrome is an exceptional individual and might own these appearances to dissimilar degrees, or not at all. Along with these physical characteristics children with down syndrome also have cognitive deficiencies. It is confirmed from the research that many individuals with down syndrome have Intelligence Quotient ranging from 30 to 70 and exhibits deficiency in cognition, receptive and expressive language skills. Attention is another concerned area in which down syndrome population face challenges when concentrating on any task (Oliver, 2012). Another problem related with down syndrome are hearing impairment and deviation in oral motor structure and functions that may affect their speech and language development. They have difficulties associated to hearing, eye ailments and cardiac health. They also have obstructive sleep apnea, which is a state where the person's breathing momentarily stops during sleep (Pace, Shin, & Rasmussen, 2010).

Development of language is delay in children with DS as compared to typically developing children. Linguistic skills are zone of major difficulty for them. Prelinguistic skills are developed before linguistic skills. These skills included vocalizations, gestures and facial expressions. Duration of prelinguistic skills exceeds for children with down syndrome as their symbolic communication of

words and signs is delayed. Slight delay exists in the occurrence of canonical babbling as compared to typically developing children (Abbeduto, Warren, & Conners, 2007). Communicative signs are considered as most powerful mean of interaction in the children with down syndrome. They possess more powerful inventory of gestures when compared to typically developing children. Imitation is another strength of down syndrome population. They have capacity to imitate others and also engage these skills in social play with peers. They have interest in social interaction but they have little difficulty in joint attention. When engaged in any activity or play most common problem for them is maintaining long period attention on a task (Maria, Pereira, & Maria, 2009).

Due to difficulties in early joint attention children with down syndrome face difficulties in developing language skills. Their expressive skills acquisition is slower than their nonverbal skills. They are labeled as having a specific speech and language delay. Many of them eagerly interact and they have strong non-verbal communication skills. These skills comprise of eye contact, turn taking in games and using gesture to communicate. They use early gestures more efficiently and use them for longer period then typically developing children (Martin, Klusek, Estigarribia, & Roberts, 2009). Most children develop comprehension at degree anticipated for their cognition. Though their speech production is slower in development. Comprehension of valuable variety of vocabulary is established over the period of time. they understand more than they can say. Grammar use is one of the more difficult area for children with down syndrome. It established more slowly than vocabulary. They use few keywords to make others understand their meaning. Although they can learn grammar and sentence structures through their teenage years (Lucisano, Pfeifer, Pintob, Santos, & Anhaod, 2013).

Factors that influence pragmatic skills in down syndrome population includes hearing, physical problems of speech articulators and impaired memory skills. Hearing impairment is associated simultaneously to complications in understanding of syntactic morphemes and vocabulary of Down syndrome. Speech production of DS perhaps allied to variances in oral structural and functional anomalies. Individuals with DS have structural variances including small oral cavity with large tongue and high arched narrow palate. These problems affect their speech intelligibility. They have intellectual disability in the range of moderate to severe. About 80% are at moderate level, while some are at severe level of intellectual disability and others have average IQ scores. Impaired phonological memory skills perhaps linked with poor linguistic comprehension, decreased Mean Length of Utterance (MLU), and reading problem in Down syndrome (Martin, Klusek, Estigarribia & Roberts 2009). Cultural differences are present in the use of different languages.

There are many factors that influence pragmatic skills such as gender, birth order, cultural differences, family system and size and parent child interaction. Genetic and developmental disorder like down syndrome, damage not only quality of life of individuals but also effects their speech and language development. Down syndrome lead to deficiencies in the language development in children. They are active and social but their pragmatic skills are delayed as compared to typically developing children. Expressive and conversational skills are poor in children with down syndrome as compared to typically developed children of same mental age.

Rationale

Language is one of the important skills of an individual. Through language an individual interacts with others which is necessary for survival as humans are social beings and they need others to communicate with. Pragmatics is the most important component of language allowing people to use language in real life interaction with others. Pragmatic skills are important for children with down syndrome to interact with others. Many international researches are conducted on pragmatic skills of children with down syndrome. Significant evidence is present that individuals with Down syndrome have exceptional sorts of social and emotional skills. However, it is still debatable that how they develop pragmatic skills. There appears to be much contradictory information regarding the pragmatic skills of children with down syndrome. Few researchers claimed that individuals with down syndrome have high social quotient, have good job skills and their topic maintenance skills are good. While few researchers stated that children with down syndrome have difficulty in forming their relationships with peers and teachers and their topic maintenance skills are poor as compared to typically developing children (Comptom, 2009). Due to variations in different research findings research is needed on the pragmatic language skills of children with Down syndrome.

As it is known that children with DS are delay in language skills from their typically developing peer of same chronological age. So, in this research children for both groups are chosen on the basis of matched mental age of 5 to 6 years to identify either there is difference between pragmatic skills of both groups. Mental age was selected because according to King (1971) mental age positively correlates with children speech and language performance as compared to chronological age in individuals with intellectual disabilities. The present research provides the comparison of down syndrome children and typically developing children of the matched mental age to clarify these confusions related to pragmatic skills of children with down syndrome. There are also differences in the languages and cultural contexts of different societies. Children belonging to different cultures may

have different results in pragmatic language skills. In developing countries like Pakistan there is very little awareness about condition of Down syndrome and other factors related to it. Parents are not aware of child's speech and language deficiencies and importance of early intervention (Ahmed, Jafri, Rashid, 2015). There is also differences in the pragmatics of different cultures so indigenous research is important in this particular language area. The present study will provide comparison of pragmatic language skills of children with DS and typically developing children in Pakistan. It will be helpful to identify areas of pragmatic language deficits and strengths in down syndrome. This research will also provide gender differences in pragmatic language skills of children with down syndrome and typically developing children.

In the present study it was hypothesized that there is likely to be a difference in the pragmatic language skills of children with down syndrome and typically developing children. It was also hypothesized that there is likely to be gender differences in the pragmatic language skills of children with down syndrome and typically developing children. Another hypothesis was that demographic characteristics are likely to have significant correlation with pragmatic language skills of children with down syndrome and typically developing children.

Studies on Pragmatic Language Skills

Cunha and Limongi (2010) studied the influences of contextual and environmental variables on pragmatic language skills of children with down syndrome while interacting with parents and therapist. Fifteen children with DS of age range 4 to 6 years were recruited. Protocol of Functional Communicative Profile and Socioeconomic Questionnaire was used for data collection. Results showed that socioeconomic status and qualification of caregivers had most influence on the pragmatic language skills of children with down syndrome in both interaction situations. The communicative mode was significantly influenced by the socioeconomic level, and by the caregiver education. Safwat and sheikhny (2014) studied the contribution of quantity and quality of parent child interaction in language development. 100 parents and their children were recruited for study. Parents communicative behaviors were assessed through questionnaire. Data was analyzed through Pearson correlation and regression analysis. Results indicated that the interaction score of parent and the child's total language age were significantly positively correlated. Socioeconomic status significantly predicted the child's language outcomes.

Maria, Pereira and Maria (2009) conducted a research to identify the pragmatic skills and their influence on communicative use in individuals with down syndrome. Ten children and adolescents

ages seven to thirteen years old were selected for research. Communicative function, communicative means (vocal, gestural or verbal) and communicative acts were used to analyze the behavior patterns of participants. Free play situation with a family member was used for data collection. The Kruskal Wallis test was used for statistical analysis. The results of the research revealed that among the communicative functions, the most frequent were commentary and narrative. The most frequent communicative medium was verbal. All participants used communicative functions including comment, recognition of the other and shared game and 90% of the communication direction was carried out by children and adolescents.

Bush and Losh (2017) conducted longitudinal research to examine pragmatic language in school-age children with Down syndrome and typically developing children at up to three time points. Participants were 46 children with down syndrome (boys=22, girls= 24) and 47 typically developing children (Boys=23, girls=24). For the purpose of assessment parental reports and standardized assessments were done. It was shown from the results that children with DS had difficulty in controlling cognitive and language abilities while comparing to typically developing children. Girls with DS showed similar results when comparing with typically developing girls in the areas of nonverbal communication and scripted language abilities. Pragmatic skills of children with DS were showed to be developed at delayed rate when compared with control group. Smith, Naess and Jarrold (2017) conducted a study in which the nature of pragmatic communication in typically developed children and children with Down Syndrome was explored. The focus of the study was to explore the areas of nonverbal communication, understanding context, initiation and scripted language. Six-year-old children with DS (N=29) were selected as sample. Children's Communication Checklist-2 was used for assessment. Results of the study revealed that children with DS had deficiencies in all areas of pragmatics as compared to typically developed children. They have significantly stronger nonverbal communication, while significantly poorer area of understanding context.

Guralnick, Connor and Johnson (2011) conducted a research to identify the peer-related social competence of children with DS and typically developed children. Two groups of typically developed children (N=27 in each group) were selected. One group had matched chronological age (CA-match) to the children with DS and the other had matched mental age (MA-match). Observational research design was used. The findings of this research revealed that older typically developing children had more advanced peer interactions in comparison to both younger typically developed children and children with DS. There was no significant difference in the peer interactions of children with Down syndrome from the mental age matched group of younger typically developed children, but their peer conversation was at low level. Mundy (1988) conducted a research to examine the nonverbal

communication of children with DS. A sample of 30 Down syndrome children ages ranging from 18 to 48 months was recruited. Reynell Developmental Language Scale and the Early Social Communication Scale were administered. The results of the research revealed that children with down syndrome displayed significant stronger nonverbal social interaction skills as compared to typically developing children. Nonverbal requests for objects or assistance with objects had significant deficiency. Children with down syndrome also showed a deficiency in expressive language.

Berglund, Eriksson and Johansson (2001) studied the comparison of spoken language skills of children with DS and typically developed children. Individual differences, growth tendencies, gender differences, vocabulary performance, pragmatic, grammar scales and MLU were explored. Sample of 330 children with DS ages ranging from 1 to 5 years and 336 typically developing children ages ranging from 1.4 to 2.4 years were recruited for study. The Swedish Early Communicative Development Inventory-words and sentences was applied. Results showed that children with down syndrome showed slight delay on pragmatics and grammar scale when compared to children in normative group of similar vocabulary size.

Saeed, Rana and Tarar (2016) examined the relationship among social predictors, pragmatic skills and conversational maxims in children of age range 5.1 to 5.12 years and 6.1 to 6.12 years. The sample size of 66 individuals (men= 33 & women= 33) was recruited. Purposive Sampling was used for data collection. Slosson Intelligence Test Revised 3rd, Social Communication Skills-The Pragmatic Checklist, Conversational Maxims Checklist and Pictures Elicitation Techniques were used for data collection. Results of the study showed that no significant difference was present in pragmatic skills of children on the basis of gender, age, and types of schooling. Significant difference was shown by variable of age on conversational maxims. Significant correlation was present between family system with conversational maxims. Amjad and Muhammad (2019) conducted a qualitative research aimed for developing the understanding of the learning difficulties faced by students with Down syndrome through the perspectives of special school teachers and psychologists. Qualitative case study method was used. Participants were selected by using criterion sampling technique. Semi structured interview guide was constructed by researcher which consist of seven dimensions. Qualitative content analysis was done. Results of the present study showed that according to teachers and psychologists perception students with Down syndrome absolutely face many difficulties in their learning such as lack of obligatory skills, low IQ, memory storage problems, interaction problem, behavior problems and distraction issues.

Method

Design

Cross-sectional research design was employed to compare the pragmatic language skills of children with down syndrome and typically developing children of matched mental age of 5 to 6 years.

Participants

Sample of 60 children (Down Syndrome=30, Typically Developing Children=30) was recruited through non probability purposive sampling. Sample size was recruited with the reference of previous researches. Smith, Naess and Jarrold (2017) conducted a study in which the nature of pragmatic communication in typically developed children and children with Down Syndrome was explored. Twenty-nine children with DS were selected as sample. In another research Guralnick (2011) conducted a research to identify the peer-related social competence of children with DS and typically developed children. 27 participants were selected for each group.

In present study each sample group had 30 participants. Participants whose mental age was ranging from 5.0 to 6.0 were selected for both sample groups. Mental age was selected because according to King (1971) mental age positively correlates with children speech and language performance as compared to chronological age in intellectual disabled individuals. The down syndrome group included 16 boys and 14 girls while the group of typically developing children included 14 boys and 16 girls. Sample was recruited from 2 special education schools and down syndrome community of Lahore, Pakistan. Participants were screened and those who met the criteria were selected. The total sample collected from school one included 10 children, school two included 35 children and community included 15 children. The overall response was 92% 8 mothers refused to participate as they were busy and not interested in participating. Total 80 children were screened for their intellectual ability out of which only 60 met the criteria. The final sample was 60 participants (children with down syndrome=30, typically developing children= 30).

The inclusion criteria for children with down syndrome was mental age 5.0 to 6.0 years, taking treatment sessions and attending schools and able to understand and speak Urdu language. Children with down syndrome with a history of sensory-neural, visual or hearing problems and severe behavioral issues were exclude. The inclusion criteria for typically developing children was mental age 5.0 to 6.0 years and children who were able to understand and speak Urdu language. Typically developing children with any serious medical condition or impairment were excluded.

Material

Slosson intelligence test (SIT-R3; Slosson, Nicholson & Hibshamp, 2002). The Slosson Intelligence Test (SIT-R3) was used to identify an individual's mental ability. This test assesses mental age, IQ of children and adults. It can also be used on individuals with visual impairment. It assesses six verbal cognitive areas including general information, similarities and differences, quantitative, comprehension, vocabulary and auditory memory. Age range for Slosson intelligence test is from 4-65 years. In the present study Slosson Intelligence Test was used to profile mental age of children with DS and typically developed children.

Orion's pragmatic language skills questionnaire (Stewart; 2007). Orion's Pragmatic Language Skills (OPLS) Questionnaire was used as a standardized measure of pragmatic skills. It was developed by Dr Kathryn Stewart in 2007. It consists of 53 items assembled in five subsections such as nonverbal communication, expressive skills, conversational skills (topic maintenance and turn taking), speech conventions and peer skills. It is a 5-point Likert scale ranging from 1 (almost always) to 5 (never). Reliability of this checklist is 0.92. It is a tool used by parents and professionals who is familiar with the child. It can be used to identify the pragmatic skills used in everyday situation. It is used at several specializing hospitals to screen present pragmatic language levels. OPLS was used to identify the pragmatic language skills of both sample groups.

Demographic sheet. A self-constructed demographic sheet was designed by researcher for collection of participants information. This sheet consists of the questions related to participants' age, gender, family system, school starting age, parent child interaction time, numbers of family members number of siblings, mother and father education, birth order, parents' qualification, speech and developmental milestones, health and behavioral issues.

Procedure

Pilot study. Initially pilot study was conducted on ten children five with DS and five typically developing children. The participants were recruited from special education schools in Lahore. Initially mothers were contacted through school and those who signed consent form were recruited for further study. The information was collected from the mothers in the labs and conference rooms and they were requested to provide demographic information. The participants were screened for their intellectual functioning through Slosson intelligence test. Those who met the criteria of mental age 5.0 to 6.0 years were selected. After this parental report was taken on the Orion's pragmatic language skills

questionnaire. After pilot study no major changes were made as participants understands questionnaire and responded appropriately.

Main study. The permission was taken for the approval of the research topic from Departmental Doctoral Program Committee, Centre for Clinical Psychology, University of the Punjab, Lahore. After obtaining permission the research was processed further. Sample was recruited through non probability purposive sampling. The authority figures of concerned schools were contacted for the purpose of data collection. Sample was recruited from 2 special education schools and down syndrome community of Lahore, Pakistan. Permission was taken from authorities of concerned institutes and departments. First step was the screening of the participants. Slosson intelligence test was used as screener to find children of matched mental age for both sample groups. Orion's pragmatic language skills questionnaire was applied to evaluate pragmatic language skills of children in both groups. The school authorities were asked to arrange meeting with parents. Consent was taken from the parents for the participation of their children. The procedure was performed after signing the consent by the parents. The agreement freely, authorizing the participation of their children in this study. After the consent form, parents were briefly explained the research topic and purpose of the study. Slosson intelligence test was administered to recruit the sample according to targeted mental age for both sample groups. The average screening time was 20-25 minutes. After applying slosson intelligence test those who were not matching criteria were excluded and those who met the criteria were included for further procedure. Demographic form along with Orion's pragmatic language skills questionnaire was presented to the parents of child. Parents were asked to fill those questionnaires. The data was completed in four weeks. Research ethics were kept into consideration. After data collection data was enter in SPSS. Statistical analysis was done and data was analyzed.

Results

Statistical Analysis

SPSS (Statistical Package for Social Sciences) version 21 was used for analyzing the data. Independent sample t-test was used to discover the difference in the pragmatic language skills of children with DS and typically developed children. Differences were also identified on the basis of gender for both groups through Mann Whitney U test. Pearson correlation was employed to inspect the correlation between demographics and pragmatic language skills. Descriptive for demographics were identified for both groups. Inter- rater reliability of the Orion's pragmatic language skills checklist and its sub-scales was evaluated through Cronbach Alpha value. Table 1 showed the inter-rater reliability of the

OPLS. The inter-rater reliability of the OPLS was .96 which is considered as perfect. Reliability of subscales was also ranging from .73 to .93.

Variables	K	M	SD	α	Range
OPLS	53	130.33	28.80	.96	1-5
NVC	8	15.3	3.16	.73	1-5
ES	8	21.40	4.66	.75	1-5
CSTM	6	16.77	6.01	.93	1-5
CSTT	6	15.98	4.49	.84	1-5
SC	6	12.95	3.36	.75	1-5
PS	12	30.15	7.04	.85	1-5
O	7	17.73	4.86	.82	1-5

Note: OPLS= Orion's pragmatic language skills questionnaire, NVC=nonverbal communication, ES=expressive skills, CSTM=conversational skills-topic maintenance, CSTT=Conversational skills-turn taking, SC=speech convention, PS= peer skills, o=other social behaviors

Table 1 Psychometric Properties of the Study Variables

Table 2 shows differences in the mean, standard deviation and t value for children with down syndrome and typically developing children on the sections of all pragmatic skills. The higher mean shows the weakness of that skills. Results indicated that there was significant difference in the means of nonverbal communication skills for both sample groups t(58)=2.14, p>0.03. It indicated that typically developing children score higher on nonverbal communication (M=16.2, P>0.03) as compared to Children with down syndrome (M=16.2, p>0.03). There was significant difference in the means of expressive skills t(58)=-5.47, p>0.001. It specified that children with down syndrome score higher on expressive skills (M=24.1, P>0.001) as compared to typically developing children (M=18.7, p>0.001). Significant difference was present in the means of topic maintenance skills t(58)=-8.32, p>0.001. It showed that children with DS score higher on topic maintenance skills (M=21.16, P>0.001) as compared to typically developing children (M=12.36, p>0.001). There is also significant difference in the means of turn taking skills t(58)=-6.32, p>0.001. It indicated that children with DS score higher on turn taking skills (M=18.83, P>0.001) as compared to typically developed children (M=13.13, p>0.001). Results also showed that there is significant difference in the means of speech conventions t(58)=-4.21, p>0.001. It revealed that children with DS score higher on speech convention (M=14.56, P>0.001) as compared to typically developing children (M=11.33, p>0.001). Significant difference was present in the means of peer skills t(58)=-5.43, p>0.001. It indicated that children with DS score

higher on peer skills (M=33.63, P>0.001) as compared to typically developing children (M=26.6, p>0.001). There was also significant difference in the means of social behaviors t(58)= -7.16, p>0.001. It showed that children with DS score higher on other social behaviors (M=20.23, P>0.001) as compared to typically developing children (M=15.23, p>0.001).

	Child category							
	DS (n=30)		TD(n=30)				95%CI	
Variables	M	SD	M	SD	T	P	LL	UL	Cohen's d
NVC	14.5	3.40	16.2	2.70	2.14	.036	.110	3.28	.5
ES	24.1	4.78	18.7	2.49	-5.47	.001	-7.37	-3.42	1.41
CSTM	21.16	5.15	12.36	2.64	-8.32	.001	-10.91	-6.68	2.15
CSTT	18.83	4.04	13.13	2.82	-6.32	.001	-7.50	-3.89	1.63
SC	14.56	3.51	11.33	2.30	-4.21	.001	-4.768	-1.69	1.08
PS	33.63	7.60	26.6	4.24	-5.43	.001	-10.14	-3.78	1.14
O	20.23	5.29	15.23	2.61	-4.62	.001	-7.16	-2.83	1.19

Note: CI=Confidence interval, NVC=nonverbal communication, ES=expressive skills, CSTM=conversational skills-topic maintenance, CSTT=Conversational skills-turn taking, SC=speech convention, PS= peer skills, o=other social behaviors

Table 2 Independent Sample T-Test assessing Pragmatic Language Skills (N=60)

Table 3 present the gender differences in the pragmatic skills of children with down syndrome through Mann Whitney U test. The higher scores show the weakness of that skills. Results indicates that there is significant difference in the mean ranks of nonverbal communication skills of boys (Mean Ranks=18.38) than girls (Mean Ranks=12.21). It showed that girls with down syndrome had stronger nonverbal communication than boys (U=66, P=.05). There is also significant difference in the mean ranks of expressive skills of girls (Mean Ranks=8.39) and boys with down syndrome (Mean Ranks=21.72). It indicated that boys score higher on expressive skills as compared to girls (U=12.50, P=.001). Significant difference was present in the means of topic maintenance of boys (Mean Ranks=21.09) than girls (Mean Ranks=9.11). It indicated that boys had scored higher on topic maintenance skills as compared to girls (U=22.50, P=.001). There is also significant difference in the mean ranks of turn taking skills of boys (Mean Ranks=20.19) than girls (Mean Ranks=10.14). It indicated that boys score higher on turn taking skills (U=37, P=.001). Mann Whitney U test also showed significant difference in the mean ranks of speech convention of boys (Mean Ranks=20.72) and girls (Mean Ranks=9.54) indicating that girls had stronger speech convention skills than boys with

DS (U=28.50, P=.001). There is significant difference in the mean ranks of peer skills of girls (Mean Ranks=8.46) and boys (Mean Ranks=21.66) suggesting that boys had score higher on peer skills as compared to girls (U=13.50, P=.001). There was also significant difference in the mean ranks of other social behaviors of boys (Mean Ranks=20.47) and girls (Mean Ranks=9.82). It indicated that boys had higher scores on other social behaviors (U=32.50, P=.001).

Variables	Mean rank		U	Z	P
	Boys	Girls			
NVC	18.38	12.21	66.00	-1.925	.058
ES	21.72	8.39	12.50	-4.14	.001
CSTM	21.09	9.11	22.50	-3.73	.001
CSTT	20.19	10.14	37.00	-3.15	.001
SC	20.72	9.54	28.50	-3.49	.001
PS	21.66	8.46	13.50	-4.10	.001
O	20.47	9.82	32.50	-3.31	.001

Note: NVC=nonverbal communication, ES=expressive skills, CSTM=conversational skills-topic maintenance, CSTT=Conversational skills-turn taking, SC=speech convention, PS= peer skills, o=other social behaviors.

Table 3 Mann Whitney u test assessing gender differences in children with down syndrome

Table 4 presents the gender difference in the pragmatic skills of typically developing children through Mann Whitney U test. Mann Whitney U test presented statistically significant difference for nonverbal communication of typically developing boys and girls (U=64, P=.047). The mean ranks for boys was (Mean Ranks=18.89) and girls (12.53). Results disclosed that there was no significant difference present in the expressive skills of typically developing girls and boys (U=87, P=.313). The mean ranks for boys was (Mean Ranks=17.29) and girls (Mean Ranks=13.94). Results also showed that there was no significant difference present in the topic maintenance skills of typically developing girls and boys (U=107, P=.854). The mean ranks for boys was (Mean Ranks=15.86) and girls (Mean Ranks=15.19). Mann Whitney U test also revealed that there was no significant difference present in the turn taking skills of typically developing girls and boys (U=97, P=.552). The mean ranks for boys was (Mean Ranks=16.57) and girls (Mean Ranks=14.56). Results also revealed that there was no significant difference present in the speech conventions of typically developing girls and boys (U=112, P=.1.00). The mean ranks for boys was (Mean Ranks=15.50) and girls (Mean Ranks= 15.50). Results showed that no significant difference was present in the peer skills of typically developing girls and boys (U=88.50, P=.334). The mean ranks for boys was (Mean Ranks=17.18) and girls (Mean Ranks=14.03).

Results revealed that typically developing girls and boys had no significant difference present in the other social behaviors (U=99, P=.608). The mean ranks for boys was (Mean Ranks=16.43) and girls (Mean Ranks=14.69).

Variables	Mean rank		U	Z	P
	Boys	Girls			
NVC	18.89	12.53	64	-1.99	.047
ES	17.29	13.94	87	-1.05	.313
CSTM	15.86	15.19	107	-.210	.854
CSTT	16.57	14.56	97	-.629	.552
SC	15.50	15.50	112	.00	1.00
PS	17.18	14.03	88.50	-.98	.334
O	16.43	14.69	99	-.548	.608

Note: NVC=nonverbal communication, ES=expressive skills, CSTM=conversational skills-topic maintenance, CSTT=Conversational skills-turn taking, SC=speech convention, PS= peer skills, o=other social behaviors.

Table 4 Mann Whitney U Test Assessing Gender Differences of Typically Developing Children

Table 5 showed that there was no statistically significant difference present between pragmatic language skills of children with down syndrome and typically developing children on the basis of family system.

	Family system						95%CI		
	Nuclear		Joint						
Variables	M	SD	M	SD	T	P	LL	UL	Cohen's d
NVC	14.00	3.08	15.15	3.80	-.918	.366	-3.72	1.42	.332
ES	23.23	3.56	25.23	6.00	-1.13	.265	-5.59	1.59	.405
CSTM	20.82	4.61	21.61	5.95	.411	.684	-4.73	3.15	.148
CSTT	18.11	4.02	19.76	4.07	-1.13	.275	-4.69	1.38	.407
SC	13.82	2.9	15.53	4.07	-1.34	.190	-4.32	.898	.483
PS	31.58	7.49	36.30	7.15	-1.74	.092	-10.2	.828	.644
O	19.70	4.75	20.92	6.06	-.617	.542	-5.25	2.82	.224

Note: CI=Confidence interval, NVC=nonverbal communication, ES=expressive skills, CSTM=conversational skills-topic maintenance, CSTT=Conversational skills-turn taking, SC=speech convention, PS= peer skills, o=other social behavior.

Table 5 Independent Sample T-Test Assessing Family System differences.

Next the relationship between different demographic characteristics with the pragmatic language skills was find out by Pearson product-moment correlation coefficient (PPMCC). Table 6 showed that number of family members does not show any correlation with pragmatic skills. School starting age also had not any correlation with pragmatic skills.

Measures	1	2	3	4	5	6	7	8	9	10	11
1. NFM	-	.137	-.097	.075	.292	.217	.094	.211	.219	.233	.101
2. SSA	-	-	.202	.123	.354	.114	.120	.153	.073	.031	.100
3. PCI	-	-	-	.242	.287	.303	.378*	.170	.298	.277	.156
4.UFW	-	-	-	-	-.015	.473	.265	.279	.362*	.248	.218
5. NVC	-	-	-	-	-	.53**	.599**	.570**	.417**	.594**	.493**
6. ES	-	-	-	-	-	-	.788**	.778**	.741**	.810**	.690**
7. CSTM	-	-	-	-	-	-	-	.720**	.763**	.813**	.771**
8. CSTT	-	-	-	-	-	-	-	-	.575**	.757**	.648**
9. SC	-	-	-	-	-	-	-	-	-	.812**	.804**
10. PS	-	-	-	-	-	-	-	-	-	-	.864**
11.O	-	-	-	-	-	-		-	-	-	-

Note: NFM=no. of family members, SSA=school starting age, PCI=parental child interaction time, UFW=utterance of first word, CSA=conversation starting age, NVC=nonverbal communication, ES=expressive skills, CSTM=conversational skills-topic maintenance, CSTT=Conversational skills-turn taking, SC=speech convention, PS= peer skills, o=other social behavior.

Table 6 Pearson Product Moment Correlation of Pragmatic Language Skills and Demographic Characteristics in Children with Down Syndrome (N=30)

Parent child interaction time had significant positive correlation with topic maintenance skills (r=.378, p=.03). Utterance of first word had significant positive correlation with conversation starting age (r=.466, p= .01) and speech convention (r=.362, p=.04). Nonverbal communication had significant positive correlation with expressive skills (r=.535, p=.002), topic maintenance skills (r=.599, p=.001), turn taking skills (r=.570, p=.001), speech conventions (r=.417, p=.02), peer skills (r=.594, p=.001) and other social behaviors (r=.493, p=.006). Expressive skills significantly positively correlate with topic maintenance skills (r=.788, p=.001), turn taking skills (r=.778, p=.001), speech conventions (r=.741, p=.001), peer skills (r=.810, p=p=.001) and other social behaviors (r=.690, p=.001). Topic maintenance skills showed significant positive correlation with turn taking skills (r=.720, p=.001),

speech conventions (r=.763, p=.001), peer skills (r=.813, p=.001) and other social behaviors (r=.771, p=.001). Turn taking skills also had significant positive correlation with speech conventions (r=.575, p= .001) peer skills (r=.757, p=.001) and other social behaviors (r=.648, p=.001). Speech conventions showed significant positive correlations with peer skills (r=.812, p=.001) and other social behaviors (r=.804, p=.001). Peer skills had significant positive correlation with other social behaviors (r=.864, p=.001).

Next the frequency and percentage of the participants who are in neurotypical and deficiency range were identified. Table 7 showed

Variabes	Child category			
	DS(n=30)		TD (n=30)	
	f	%	f	%
NVC				
Neurotypical	28	93.3	26	86.7
Deficiency	1	3.3	1	3.3
ES				
Neurotypical	6	20	19	63.3
Deficiency	23	76.7	8	10
CSTM				
Neurotypical	3	10	25	83.3
Deficiency	26	86.7	2	6.7
CSTT				
Neurotypical	3	10	22	73.3
Deficiency	25	83.3	5	16.7
SC				
Neurotypical	15	50	28	93.3
Deficiency	12	40	1	3.3
PS				
Neurotypical	10	33.3	23	76.7
Deficiency	19	63.3	5	16.7
O				
Neurotypical	9	30	25	83.3
Deficiency	21	70	5	16.7

Note: NVC=Nonverbal communication, ES=Epressive skills, CSTM=conversational skills-topic maintenance, CSTT=conversational skills-turn taking, SC=speech conventions, PS=peer skills, O=other social behaviors

Table 7 Frequency and Percentage of Neuro Typical and Deficiency Range (N=60)

that on nonverbal communication skills down syndrome group had 93.3% participants on neurotypical range and 3.3% on deficiency range. Whereas typically developing had 86.7% participants on neurotypical range and 3.3% on deficiency range. Which indicated better nonverbal communication in down syndrome group. Expressive skills section included only 20% down syndrome participants on

neurotypical range whereas 76.7% on deficiency range as compared to 63.3% typically developing children on neurotypical range. Topic maintenance skills and turn taking skills had only 10% participants on neurotypical range from down syndrome group whereas 86.7% on deficiency range as compared to typically developing group had 83.3% on neurotypical range. Speech convention section had 50% participants from down syndrome group on neuro typical range as compared to 93.3% typically developing children. Which indicated that down syndrome showed good performance on speech convention skills as compared to their other pragmatic skills. Only 33.3% participants from down syndrome group had neuro typical range on peer skills. 30% participants were on neuro typical range from down syndrome group and 83.3% from typically developing groups on other social behaviors section.

Variables	Child category			
	DS (n=30)		TD (n=30)	
	M(SD)	*f* %	M(SD)	*f* %
Mental age	5.23(.217)		5.4(.291)	
Birth order				
First born		17 (56.7)		10(33.3)
Middle born		6 (20)		10(33.3)
Last born		7 (23.3)		10(33.3)
Gender				
Girl		16 (53.3)		14(46.7)
Boy		14 (46.7)		16(53.3)
Family system				
Nuclear		17 (56.7)		14(46.7)
Joint		13 (43.3)		16(53.3)
Mothers education				
Uneducated		0		3(10)
Matric		3(10)		7(23.3)
Inter		5(16.7)		10(33.3)
Graduation		4 (13.3)		3(10)
Masters		14 (46.7)		6(20)
M.phil		4 (13.3)		1(3.3)
Fathers education				
Uneducated		3(10)		0
Matric		1(3.3)		6(20)
Inter		2(6.7)		6(20)
B.A		4(13.3)		4(13.3)
Masters		8(26.7)		10(33.3)
M.phil		12(40)		4(13.3)
School starting age	4.24(1.32)		3.56(.449)	
No. of family members	6.70(2.52)		8.27(4.0)	
Parent child interaction	9.03(2.91)		5.50(1.45)	

Note: DS=down syndrome, TD= typically developing children

Table 8 Frequencies and Percentages of Demographic Characteristics (N=60)

Discussion

In the present study data was collected from children whose mental age was ranging from 5.0 to 6.0 years after screening their intellectual ability. Data was collected from schools and down syndrome community in Lahore. Parental report on pragmatic language skills was obtained on Likert scale covering nonverbal communication skills, expressive skills, topic maintenance skills, turn taking skills, speech conventions, peer skills and other social behaviors. First it was hypothesized that there is likely to be significant differences in the pragmatic language skills of children with down syndrome and typically developing children. The results of the study support this hypothesis. Significant difference was present in all areas of pragmatic language skills of children with DS and typically developing children of the matched mental age including expressive skills, topic maintenance skills, turn taking skills, speech conventions and peer skills. However, the results also showed that children with down syndrome had stronger nonverbal communication skills than typically developing children. Researches with mixed result findings are present in the literature. The finding of this study is in line with study by Lee (2017). He examined the pragmatic language competency of children with DS and typically developed peers of the matched mental ages ranging from 4.98 to 5.93 years. According to his research findings children with down syndrome present pragmatic impairments as compared to control group of the same mental age. Children with down syndrome showed stronger nonverbal communication skills. According to Berglund (2001) children with DS are capable of using expressive language for discussing absent objects, past and future situations but in findings of present research expressive skills were poor in children with DS when compared to typically developed children. Abbeduto (2007) had done a metanalytic review of pragmatic language skills of children with DS and typically developing children. According to his study requesting and commenting are thought to be a strength in down syndrome. Kumin (1996) conducted a research which stated that children with DS are capable to request and commands efficiently. They are also able to maintain topic. They respond appropriately to request for clarification when communicating with others. The difference and conflict in these researches may be due to cultural differences across globe. According to Chen (2010) Cultures are in distinction with each other because the language spoken in these cultures itself varies. People of east and west have cultural differences by languages they speak. Due to language difference in different cultures speakers of different languages are also cognitively different. People use different pragmatic skills across different culture. (Lam,2017). Eastern languages use numerous speech acts such as complaints, appreciation, requests and respond to compliments in different styles than people of west.

It means that children belonging to different cultures may have different results in pragmatic language skills.

Statistically there was difference in pragmatic language skills of down syndrome and typically developing children. Children with down syndrome showed stronger nonverbal communication skills. Along with nonverbal communication speech conventions were also better in down syndrome. Although there was statistically difference in speech convections but half of the children with down syndrome scored neuro typical range in this section. According to results children with down syndrome have poor peer skills but they demonstrate empathy with others. They also accept and offers compliments. These findings go in line with the research findings of Kumin (1996).

The second hypothesis was that there is likely to be significant gender difference in the pragmatic language skills of children with down syndrome. The findings of a research support this hypothesis. There was statistically significant difference in the pragmatic language skills of children with Down syndrome. Girls performed better in all areas of pragmatic skills than boys with down syndrome. The result of this hypothesis is in row with study by Lee, (2017). According to the results of this study there is significant difference in the pragmatic skills of children with DS on the basis of gender. Girls have better pragmatic skills then boys with down syndrome. The reason maybe that girls often start speaking earlier than boys. Third hypothesis was that there is likely to be significant gender difference in the pragmatic language skills of typically developing children. The outcomes showed that typically developing girls and boys had no statistically significant difference in the pragmatic language skills except the nonverbal communication on which girls outperformed. This outcome was in row with the results of study by Lee (2017). Typically developing girls and boys had similar results in all areas of pragmatic skills.

Afterwards it was hypothesized that there was likely to be difference in the pragmatic language skills of children with down syndrome and typically developing children belonging to different family systems. The results showed that there was no significant difference present in pragmatic skills on the basis of family system. Das and Priya (2017) research findings are at the odd of this result which revealed that there is significant difference present in the language skills of children belonging to different family systems. Children from joint family had better language development than nuclear family system. The reason for this can be because family system is not the only factor that can influence pragmatic language skills. It was hypothesized that there is likely to be relationship of variables such as number of family members, birth order, parent child interaction time, school starting age, mother and father education, utterance of first word with the pragmatic language skills of children with down

syndrome. The results revealed that school starting age has no correlation with pragmatic skills of down syndrome. No research studies were found out in favor or against of this finding. But the research discussing the influence of school starting age on language development by Rockville (2007) claimed that children starting kindergarten at early age had stronger word recognition skills but their linguistic knowledge was poor.

The results of the study showed that parent child interaction had significant positive correlation with topic maintenance skills of children with Down syndrome, although exact research is not available in the support of this finding but there is a research conducted by Safwat and Sheikhnay (2014) which showed that parent-child interaction is one of the most important factors in the language expansion of a child. When child interact with parents and spend more time with then their language skills improve a lot. They learn new ways from parents to communicate with others. The results of study showed that number of family members had no significant correlation with pragmatic skills of both children with down syndrome and typically developing children. According to Ortiz (2009) large family size have more members and relatives so it improves the child interaction with others and their use of language will also improve. The cause of no relationship between number of family members and pragmatic language skills is that now days every person in family use gadgets and social media they do not spend time with each other either they are living in same house.

It was revealed that there was no correlation between birth order and pragmatic language skills of both groups. There is no direct research in support of this finding but there is a research by Falkum (2018) which explains that important disparities in language learning settings exist on the basis of family structure, birth order and sibling role. Accessibility of family resources, parental care, time vigor, and affiliation with family members and parents are different for children in different birth orders. And it may have influence on younger sibling language development. The results showed that utterance of first word is likely to have significant positive correlation with speech convection in children with down syndrome. According to Niano (1985) first word that child learn are probably rules for the lexicalization of specific communicative acts. So, if the child learns to utter meaningful words it means that they will develop language and its use in daily life. It was identified that nonverbal communication skills, expressive skills, conversational skills, speech convection, peer skills and social skills are all interlinked with each other and significant positive relation was found out between them. which mean that increase in one skill will increase other skills. These findings go in line with the research study by Munday, Sigman, Kasari and Yirmia (1988) which suggested that expressive language is associated with early developing nonverbal requesting skill among children with down syndrome. Children who will have better nonverbal skills will have better expressive skills and those who have deficits in

nonverbal skills will associate with deficits in expressive skills. Those who have better expressive skills will have better conversational skills and their peer and social skills will also be better.

Limitations

This study is cross sectional study. The data could be more elaborated and deeply studied if done through longitudinal research design instead of cross-sectional. The more data could be gathered rather than 60 but was limited due to COVID-19 scenarios. The participants of the research were not equally divided on the basis of demographic including birth order, working and nonworking mothers and father and mother's qualification. The controlled grouping on the basis of these factors may be come up with some other results.

Implications

Speech language pathology is an emerging yet rapidly spreading allied health discipline in Pakistan. This study could be count in the research for this field. In developing countries like Pakistan there is very little awareness about condition of Down syndrome and other factors related to it. Parents are not aware of child's speech and language deficiencies and importance of early intervention. This study enlightens the pragmatic language skills of the children with Down syndrome and typically developing children of the matched mental age. This research could help the parents, caregivers and trainers of the children with Down syndrome have a look on statistical view for the comparison of different domains of pragmatic skills among children with down syndrome. Which will help them in the intervention of children development program. This study also dominates some extraordinary positive skills of down syndrome as compare to typically developed children which includes nonverbal communication skills. This research could also help the upcoming students to get the statistical figure regarding the comparison of typically developed and down syndrome children in various domains of pragmatic language skills. Identification of the relative strengths and weaknesses could be helpful for development of pragmatics intervention for down syndrome.

Conclusion

The present study was aimed to compare the pragmatic language skills of children with down syndrome and typically developing children. The results of the study are consistent with many earlier researches. There was statistically significant difference in pragmatic language skills of children with down syndrome and typically developing children of the matched mental age of 5 to 6 years. There

were also statistically significant gender differences between pragmatic skills of children with down syndrome. Girls with down syndrome performed better in all areas of pragmatic skills than boys with down syndrome. There was statistically no significant gender difference between pragmatic skills of typically developing children. There was no significant difference present in pragmatic skills on the basis of family system. The results of the study revealed that demographic characteristics had significant positive correlation with pragmatic language skills of children with down syndrome. The findings of this research may help as baseline for future researches on down syndrome. It may also help for development of intervention program for children with down syndrome. Further this research also extends the literature based on the pragmatic language skills of children with down syndrome.

References

1. Abbeduto, L., Warren, S. F., & Conners, F. A. (2007). Language development in Down syndrome: from the prelinguistic period to the acquisition of literacy. Mental Retardation and Developmental Disabilities Research Reviews, 13(3), 247-261. doi https://doi.org/10.1002/mrdd.20158
2. Adamson, L. B., Bakeman, R., Deckner, D. F., & Romski, M. (2009). Joint engagement and the emergence of language in children with autism and Down syndrome. Journal of Autism and Developmental Disorders, 39(1), 84-96. doi: 10.1007/s10803-008-0601-7
3. Ahmed, K. J., Ahmed, M., Jafri, H. S., Raashid, Y., & Ahmed, S. (2015). Pakistani mothers' and fathers' experiences and understandings of the diagnosis of Down syndrome for their child. Journal of Community Genetics, 6(1), 47-53. doi: 10.1007/s12687-014-0200-6
4. Berglund, E., Eriksson, M., & Johansson, I. (2001). Parental reports of spoken language skills in children with Down syndrome. Journal of Speech, Language & Hearing Research, 44, 179-191. doi https://doi.org/10.1044/1092-4388(2001/016)
5. Cekaite, .A. (2012). Child Pragmatic Development. Retrieved from 10.1002/9781405198431.wbeal0127
6. Center for Advanced Research on Language Acquisition. (2019). What is a Speech Act? Retrieved from https://carla.umn.edu/speechacts/definition.html
7. Chen, R. (2010). Pragmatics east and west: similar or different. Pragmatics Across Languages and Cultures, 167. doi: 10.1515/9783110214444.1.167

8. Cunha, E., & Limongi, S. C. (2010). Communicative performance of children with Down syndrome in two different situations. Pro-fono: Revista de Atualizacao Cientifica, 22(3), 251-256. doi: 10.1590/s0104-56872010000300016
9. Falkum, I. L. (2018). Pragmatic development: learning to use language to communicate. Retrieved from https://www.researchgate.net/publication/328253707
10. Guralnick, M.J., Connor, R.C., & Johnson, N.C. (2011). The peer-related social competence of young children with Down syndrome. National Center for Biotechnology Information. 116(1). 48–64. doi: 10.1352/1944-7558-116.1.48
11. King, S.H. (1971). The relationships between mental age, level of language functioning and social acceptability in the trainable mentally retarded. LSU Historical Dissertations and Theses. 71-1863. doit: https://digitalcommons.lsu.edu/gradschool_disstheses
12. Kumin, L. (1996). Speech and language skills in children with Down syndrome. Mental Retardation and Developmental Disabilities Research Reviews. 2(2), 109-115. Doi https://doi.org/10.1002/(SICI)1098-2779(1996)2:2<109
13. Lam, L. (2017). Cultural differences between east and west: A linguistic perspective. Retrieved from https://www.asiascot.com/blogpost/3917/#:~:text=Generally
14. Lee, M., Bush, L., Martin, G. E., Barstein, J., Maltman, N., Klusek, J., & Losh, M. (2017). A multi-method investigation of pragmatic development in individuals with Down syndrome. American Journal on Intellectual and Developmental Disabilities, 122(4), 289-309. doi https://doi.org/10.1352/1944-7558-122.4.289
15. Leigh, K. (2018). What are pragmatic language skills?. Retrieved from https://www.sensationalkids.ie/what-are-pragmatic-language skills/#:~:text=Pragmatic%20language%20refers%20to%20the,are%20in%20a%20given%20situation.
16. Mandal, D.A., (2019). Down syndrome in society. Retrieved from https://www.newsmedical.net/health/Down-Syndrome-in-Society.aspx
17. Maria, E., Pereira, B., & Maria, T. (2009). Pragmatic ability and Down syndrome. Retrieved from https://doi.org/10.1590/S1516-18462009000800006
18. Martin, G. E., Klusek, J., Estigarribia, B., & Roberts, J. E. (2009). Language characteristics of individual with Down syndrome. Topics in language disorders, 29(2), 112–132.
19. Moore, A. (2001). What is pragmatics? Retrieved from http://www.universalteacher.org.uk/lang/pragmatics.pdf

20. Mundy, P., Sigman, M., Kasari, C., & Yirmiya, N., (1988). Nonverbal communication skills in down syndrome children. Wiley on Behalf of the Society for Research in Child Development. 59(1). 235-249. doi https://www.jstor.org/stable/1130406
21. Naess, K. A. B., Nygaard, E., Ostad, J., Dolva, A. S., & Lyster, S. A. H. (2017). The profile of social functioning in children with Down syndrome. Disability and Rehabilitation, 39(13), 1320-1331. doi:10.1080/09638288.2016.1194901
22. Niano, A. (1985). The meaning of children's first words: evidence from the input. Journal of Pragmatics. 9(4), 527-546. doi https://doi.org/10.1016/0378-2166(85)90020-7
23. Oliver, C. D., (2012). Down syndrome and language development. Retrieved from http://opensiuc.lib.siu.edu/gs_rp/232
24. Ortiz, E.A. (2009). The influence of family structure and the role of siblings on early language development of Latino preschool children. Retrieved from https://digitalcommons.usu.edu/etd/489
25. Pace, J. E., Shin, M., & Rasmussen, S. A. (2010). Understanding attitudes toward people with Down syndrome. American Journal of Medical Genetics Part A, 152(9), 2185-2192. doi https://doi.org/10.1002/ajmg.a.33595
26. Panevova, J., & Hana, J., (2011). Intro to linguistics–pragmatics. Retrieved from http://ufal.mff.cuni.cz/~hana/teaching/ling1/08-pragmatics.pdf
27. Roberts, J. E., Price, J., & Malkin, C. (2007). Language and communication development in Down syndrome. Mental Retardation and Developmental Disabilities Research Reviews, 13(1), 26-35. doi: https://doi.org/10.1002/mrdd.20136
28. Safwat, R.F., Shekhnay, A.R. (2014). Effect of parent interaction on language development in children. The Egyptian Journal of Otolaryngology. 30(3). 255- 263. doi http://www.ejo.eg.net/text.asp?2014/30/3/255/138488
29. Setia, M.S., (2016). Methodology series module 3: Cross-sectional studies. Indian Journal of Dermatology. 61(3), 261–264. doi: 10.4103/0019-5154.182410
30. Smith, E., Næss, K. A. B., & Jarrold, C. (2017). Assessing pragmatic communication in children with Down syndrome. Journal of Communication Disorders, 68, 10-23. doi: 10.1016/j.jcomdis.2017.06.003
31. Statistics How To. (2020). Non-probability sampling: definition, types. Retrieved from https://www.statisticshowto.datasciencecentral.com/non-probability-sampling/
32. Stewart, K. (2007). Helping a child with nonverbal learning disorder or Asperger's disorder: A parent's guide. Oakland, CA: New Harbinger Publications.

33. Wolfe, K. (2014). Turn taking and pausing. Retrieved from https://prezi.com/99vinbp2yo4d/turn-taking-and-pausing/
34. Zimmerman, J. (2018). The difference between typical and atypical development in children. Retrieved from https://www.hellomotherhood.com/the-difference- between-typical-and-atypical-development-in-children-9603077.html