Research article

SOCIODEMOGRAPHIC PROFILE OF SPEECH AND LANGUAGE DELAY UP TO SIX YEARS OF AGE IN INDIAN CHILDREN

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ABSTRACT

Background: Speech and language is the most important skill for the child's development and scholastic performance. Awareness of the delay is important in the programs for early identification. **Purpose:** to assess the prevalence of speech and language delay in children from age group 0 to six years of age. **Methodology:** The speech and language development of children coming in the well baby clinic and daily pediatric clinic of age group from birth to 6 years were evaluated using Language Evaluation Scale Trivandrum (LEST). The prevalence of speech and language delay in each age group was calculated and also analyzed in the sociodemograhic profile. **Results:** A total of 102 children were studied in which 13.7% had language delay. 18% had questionable language delay and 15.7% had suspect language delay. Though among language delay mixed type was more, children had more difficulty in doing expressive items. Language delay was also found to be more prevalent in males, single child, first born child and children of working mothers. Parental age, education or socioeconomic status was not found to be related to language delay. **Conclusion:** The 13.7% prevalence of language delay in the children indicates the need of early identification and for it a simple screening tool like LEST is a must during the routine evaluation of young children in pediatric clinics. Health care givers and parents should ensure that babies grow up in a language rich, nurturing and stimulating environment right from birth onwards.

Key words: LEST, Language delay, Speech delay, First born child

INTRODUCTION

Speech and language is the most useful and most widely used form of communication. Communication is integral to overall developmental progress in young children mainly in cognitive, social – emotional and adaptive development. Speech helps the children to get attention from others, to satisfy their needs, to influence the behavior of others, to develop social relations and as they grow, it plays an important role in their academic achievements.[1]

Language typically develops in a very predictable fashion, and assessment of language development should be a central part of every well-child visit.

Pediatricians are in an excellent position to identify children's speech and language problems early and to make appropriate referrals for further evaluation and treatment services.

The children who have communication problems may develop behavior problems and difficulty to read and write later in life.[2] Children's capacity to communicate and the vocabulary power when they enter preschool are important for good scholastic performance. Children with language problems in preschool are at risk of poor educational achievement in school age and are at increased risk to develop emotional and

behavioral disorders.[3] Early intervention may prevent or decrease the severity of language delays in school age and increase later academic success in school. To underline this fact, there is increasing number of evidences coming up that intervention given or started during infancy or preschool age has a greater positive effect than services provided at school age.[4]

The language development of a child may be a good marker of developmental delay. Delay in acquiring language development is often an early indicator of pervasive developmental problems and future learning disability. This indicates the need for assessment of all babies less than 2 years.

This study is planned to evaluate the prevalence of language and speech delay in children from birth to 6 years of life as preschool years are the most ideal time for the early identification of communication delay which will help to start the early intervention. It will also be useful to evaluate the prevalence of expressive and receptive type of delay among the children which help to focus our attention to that part.

This study also tries to evaluate the communication delay in the context of maternal and paternal education and occupational status. There is a scarcity of studies involving all these factors. So this study is aimed to involve all these factors which will help to know the multiple factors influencing the language and speech development.

Aims and Objectives: The aim of the present study was to assess the speech and developmental outcomes in children from age group 0 to six years. The objectives were to find the prevalence of speech and language delay in children from age birth to six years of age and to find the sociodemographic characteristics associated with it.

MATERIALS AND METHODS

The Study was conducted by Department of Pediatrics after getting ethical clearance from the institutional ethical committee of Dr SMCSI Medical College, Trivandrum, Kerala, also taken informed consent from parents.

Study design: A descriptive study of cross sectional design.

Study population: The children attending well baby clinic and daily pediatric clinic of a tertiary care centre, Dr SMCSI Medical College, Karakonam of age group birth to six years. Considering the prevalence of

developmental delay as 6.6%(p) as per the study done by Nair MKC et al[5], margin of error at 5%(m), confidence level as 95%(t=1.96), the minimum sample size is estimated to be 102 using the formula $t^2 x p(1-p)/m^2$

Selection of cases: The inclusion criteria consist of children in the age group 0-6 years coming in the outpatient and well baby clinic of Pediatric Department for routine checkups, minor illnesses and also for vaccination. Those children with severe sickness and those with developmental delay in other domains like gross motor, fine motor and social were excluded.

Tools for the study

The study is done by using a performa consisting of the socio demographic parameters like age, sex, family order, living with parents or not and sibling details. Details of paternal age, education and occupation are assessed. The socioeconomic class is assessed using Modified Kuppuswami Scale.[6] Maternal details of age; education and occupational status as house wife or working mother were also assessed. The speech and language assessment is done using Language Evaluation Scale Trivandrum (LEST) which was developed by Child Development Centre, Trivandrum[7]. Other tests are Receptive Expressive Emergent Language Scale (REELS) and Early Language Milestone Scale (ELM Scale 2).[7] But LEST is a culturally appropriate locally relevant simple language development screening tool which can be used both to professionals, those who are working in the field of child development and even with the mothers to pick up speech delay in the early years of life. The assessment of language delay was done by assessing if the child is able to do all items on the left side of their corresponding age in the LEST Chart. The interpretation is done in four ways as in Table1

Table1: Interpretation of language delay using LEST[7]

Normal – All items done	Suspect – Two items not done
Questionable – One item not done.	Delay – Three or more items not done

The distribution of children in different age groups are calculated in 0-1 year, 1-2 year, 2-3 year, 3-4 year, 4-5 year and 5-6 years and the speech and language developmental pattern was assessed in these age

groups. The prevalence speech and language delay was calculated as normal, questionable, suspect and delay which were the outcome variables. Each item is compared in the sociodemographic schedule with different age groups. The type of delay was also assessed as expressive, receptive or mixed type. The delays were compared with different age groups.

Statistical analysis: Mean, standard deviation and Student t tests were used for analysis of continuous variables and Chi Square test was used for categorical variables. A p value below or equal to 0.05 was considered to be statistically significant for a 95% Confidence Interval. The Statistical software SPSS 16.0 was used for the analysis of the data and Microsoft Excel was used to generate tables.

RESULTS

The study was conducted in children attending the well baby and pediatric clinics of Department of Pediatrics, Dr SMCSI Medical College Trivandrum, Kerala. A total of 102 children were assessed for the study in which 49(48%) were females and 53(52%) were males and the difference was not statistically significant (P value 0.73). Depending on the age of

children they were divided into 6 groups 0-1 year, 1-2 year, 2-3 year, 3-4 year, 4-5 year and 5-6 years.

Among the 102 children studied, the total percentage of children with language delay was 13.7%. 15.7% children were in the suspect and 18 % were in the questionable group. The prevalence of language delay in each age group is given in table 2

Among the total 14 of 102 children who had language delay, 10.8% children were having a mixed type of delay, 1% was having receptive and 2% were having an expressive type of delay. Regarding the type of items children could not do during assessment, 20% had difficulty in doing both items.

Comparing expressive and receptive type of language items individually, 16% could not do expressive items only compared to 9.1% who could not do receptive items only. This shows that children had more difficulty in doing expressive items.

The percentage of males having delay were found to be more compared with that of females (15.1% males with 12.2% females) and the difference was not found to be statistically significant (p value 0.67). The sub analysis of children with language delay according to delay, questionable and suspect group is given in table 3.

Table 2: Language delay in each age group

Age Group (yr)	Normal (%)	Questionable (%)	Suspect (%)	Delay (%)	Total
0-1	14(70.0)	4(20.0)	1(50)	1(5)	20
1-2	11(52.4)	6(28.6)	3(14.3)	1(4.8)	21
2-3	7(46.7)	1(6.7)	3(20)	4(26.7)	15
3-4	6(40)	3(20)	3(20)	3(20)	15
4-5	7(43.8)	2(12.5)	4(25)	3(18.8)	16
5-6	9(60)	2(13.3)	2(13.3)	2(13.3)	15
Total	54(52.9)	18(17.6)	16(15.7)	14(13.7)	102

Table 3: Gender related variation in language delay

Sex	Normal (%)	Questionable (%)	Suspect (%)	Delay (%)	Total
Female	30(61.2)	6(12.2)	7(14.3)	6(12.2)	49
Male	24(45.3)	12(22.6)	9(17)	8(15.1)	53
Total	54(52.9)	18(17.6)	16(15.7)	14(13.7)	102

The majority of the children were of the first order which was 67 (61.8%). Of the rest, 37 children (36.3%) were 2nd order. Language Delay was found to be more prevalent among the first born child in this present study. 17.5% delay was seen in the first child compared to 8.1% seen in the second born child. Language delay was found also to be more prevalent

in the single child in the family. 17.3% of 52 single children were having delay compared to 10% of 50 children who were not single kids in the family and it was significant (p value -0.033)

In the present study no association could be made with the parental age and language delay. Among the 14 children with language delay, fathers of half children

had passed 10th class and other half were degree holders. Similarly of those 14 children, 5 mothers had passed 10th class and 9 mothers were degree holders. This shows that all the parents of children with language delay were educated.

It has been found that among the children of house wife mothers', 4 children (11.2%) had language delay. But among the children of working mothers', 10 children (30.8%) had language delay.

Among the 14 children who had language delay, 11 children were living with parents. For 2 children their fathers were not in the state and for one child, both parents were not in the state. No association could be made about the language delay in children not living with both their parents as the number of children in those groups was very less.

The socioeconomic class grading was also done among the children studied using Modified Kuppuswami Grade and the socioeconomic class of the children with language delay was analyzed and shown in table 4.

Table 4: Socioeconomic class and language delay

Social Class	No Delay (%)	Delay Present (%)	Total
Class 1	1(100)	-	1
Class 2	19(86.4)	3(13.6)	22
Class 3	50(86.2)	8(13.8)	58
Class 4	17(85)	3(15)	20
Class 5	1(100)		1

Majority of children belonged to 2, 3 and 4 socioeconomic grades. No significant association was seen with lower or higher socioeconomic class and language delay.

DISCUSSION

A cross sectional study in 102 children was conducted using Language Evaluation Scale Trivandrum (LEST 0-6) from the age group birth to 6 years of age to find out the prevalence of language and speech delay.

The total percentage of children with language delay was 13.7. In the study done by Nair MKC et al[5], 6.6 % of language delay was observed for the age group 0-12 months using LEST against 4% prevalence for the same using Receptive Expressive Emergent Language Scale (REELS). In the present study it was 5% below 1 yr age was comparable.

For the age group 13 to 24 months, the study done by Nair MKC et al[5], prevalence of speech and language delay among at risk babies was 29.7% using LEST as

against 6.6% by using REELS and 5.7% using both tests. In the present study it was found to be 4.8%. The difference may be due to the factor that in the present study the babies coming to the well baby clinic were observed and at risk babies were not included in the study.

In a study done by James et al in 1980 the speech and language delay in the age group 0 to 2 years was around 5%[8]. In the present study, it was 4.87% which was comparable.

For the age group 2-3 years, the speech and/or language delay was 6.9% in the study done by Burdon et al, it was 6.9%[9]. The language delay was 2.6 % in the study done by Silva et al in 1983.[10] But in the present study it was 26.7% which was significantly higher that the other studies.

For the age group 3-4 years, in the study done by James et al the speech or / and language delay was 5%.[6] In our study it was 20% which was higher.

For the age group 5-6 years, in the study by Beitchman et al, the speech and/or language delay was 11.78%.[11] In another study by Stevenson et al it was 6.8%.[12] In the present study the speech delay was 13.3% which can be compared to the study done by Beithchman et al.

In a study done by Nair MKC et al[5] in children of age 13 to 24months, 24% had a language delay in the receptive area using LEST as against 5.1% using REELS. Similarly 42% had a language delay in expressive area by using LEST as against 7.4% using REELS. In the study done by James et al the mixed language delay was 2.14%[8], expressive delay was 4.27% and receptive delay was 3.95%. In the present study the mixed language delay was found to be more.

Among the items not done by children in our study, 16% could not do expressive items and 9.1% could not do receptive items. This showed that children have more difficulty in doing the expressive items. In the study done by Nair MKC et al[5] in children of age 13 to 24months, 24% had delay in the receptive language and 42% had delay in expressive language by using Language Evaluation Scale Trivandrum (LEST).

In the study done by Tomblin[13] et al 87% of children with articulation disorders were boys and in the study done by Choudhary et al 70% of the children were males.[14] In the present study though the number of males with language delay was more (57%), the difference was not significant.

In the study done by Broookerhouser et al[15] children born late in family birth order was a significant factor

for language delay. In another study by Nelson et al single child in the family was also found to be a factor.[16] In the present study also first born children had a more language delay. Similarly a single child in the family was also found to be a significant factor.

In the study done by Nelson et al, older parents and younger mother age was found to be a significant factor[16]. From the present study no such association could be made with parental age. The study done by Campell et al showed an association between lower maternal education and language delay.[17] The systematic evidence review done by Nelson et al also showed similar picture. Another study done by Tallal et al also showed an association between lower paternal education level and language delay.[18] This study does not support that fact and all the parents of the children were educated.

Children of house wife mothers had significantly less language delay than children of working mothers. Similarly those living with both the parents had less delay but the difference were not significant. In the study done by Tallal et al[18] lower socioeconomic class was a risk factor for language delay. In our study there was no significant association between socioeconomic status and language delay.

CONCLUSION

The study showed that language delay was more prevalent in below 2 years of age, in first born child and single child in the family. This reveals the importance of early screening and the importance of the stimulation they get from the whole family. The language development does not depend on the age, educational or socioeconomic status of the parents but the quality time the care givers spend with the child.

The prevalence of 13.7% speech and language delay in the normal children enlightens the need for early screening programs. Because communication is central to personal development, social interaction and learning ability of child, delay in the language and speech development should be identified as early as possible. Health workers should make sure that the babies are growing in a language rich environment and parents should be educated about it as well.

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