

# Delayed speech in children of working and non-working mothers in Lahore, Pakistan: Prevalence and associated factors

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## ABSTRACT

**Background:** Before going to school 2-3% of children have language problems and 3-6% have speech delays. This study was carried out to determine the prevalence of delayed speech in children of working and non-working mothers and to determine if speech and language development in children are affected by the working status of the mothers.

**Subjects and methods:** This cross-sectional study was conducted at Mayo Hospital, Services Hospital, Sheikh Zaid Hospital, Lahore College for Women University, and the University of Lahore, Pakistan. A total of 288 mothers were recruited. Among them, 144 were working women (aged 25-40, working hours 6-8 for at least 5 days a week), including all professionals, teachers, doctors, and job holders. The other group included 144 non-working women (aged 25-40 years) having both male and female children from 2 to 5 years of age (with normal developmental milestones mean age of 3.5 years). Data were analyzed using SPSS

**Results:** The results showed that 44 (30.6%) children of working women and 40 (27.8%) children of non-working women had delayed speech. The overall prevalence of delayed speech in children was 29.1%. No significant relationship was found between the working status of mothers with speech delay. The socioeconomic parameter (Kuppuswami scale) of the study revealed that 29% of delayed speech children (late talkers) belonged to the upper class, while 65.5% belonged to the middle class. Of delayed speech children 41.7% lived in a nuclear family and 58.3% in a joint family system. A significant relationship between delayed speech was seen with gender, birth order, social class, and the schooling status of the child.

**Conclusions:** Delayed speech is significantly related to gender, birth order, and schooling status. The working status of mothers plays no significant role in the language and speech development of children in the current study.

### Keywords:

Speech delay, Working mothers, Non-working mothers, Toddlers

## INTRODUCTION

No authentic figures of delayed speech in children with normal development are available in Pakistan, however in India prevalence in one study is 6.2% in Thailand in one study prevalence is 11.95% while a study conducted in Saudi Arabia prevalence of delayed speech in children was 24.5%. Communication is the ability to receive, process, send, and comprehend concepts verbally or non-verbally in symbolic system of the brain. Communication and culture have a reciprocal relationship with each other. Speech is the motor act of communicating by articulations of verbal expressions and language and how symbols are used for interpersonal communication.<sup>1</sup> Speech is articulation of sounds and fluency. An articular disorder is an atypical speech sounds and a fluency disorder is when there is interruption in flow of speech. Language is the comprehension of speech.

Disorders of language may be in the form (phonology, morphology, syntax) or it may be content of language (semantics), or function (pragmatic). Speech is different from language; it is how language is expressed verbally and it includes how sounds and words are produced, i.e. articulation. Speech and language delay in kids is affixed with difficulties in reading, writing attention and socialization.<sup>2</sup> Primary speech and language delays are speech and/or language only, speech only, expression with comprehension expression or comprehension only.<sup>3</sup> If there is delay in speech and language, it will cause an increased difficulty in writing, reading as well as in socialization.<sup>4</sup> It is advocated that language rather than speech skills effect the outcomes of literacy. According to some, speech problems alone may predispose children to problems of reading. Those children who have persistent speech difficulty are more prone to deficits in reading related processes, although speech delay is prevalent in toddlers but some children do catch up with their peers with passage of time.<sup>5,6</sup>

There are a number of medical as well as non-medical factors related to speech (language) delay. Medical factors include hearing loss, persistent otitis

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media, seizure disorder, birth asphyxia, low birth weight, preterm birth, and physical disorder. Amongst different factors responsible for development of language and speech in toddlers is role of caregivers mostly mothers in our social set. Late talkers are the kids who show delayed onset and progression of expressive language having no other developmental delay.<sup>7</sup> Mother's employment is on increase globally but this can increase the family conflicts and quality of parenting needed in early years of life of a child.<sup>8</sup> When a child has speech delay he/she may have negative effects on personality development.<sup>9</sup> Amongst other variables low level of education in mothers can affect the development of language of children. In Pakistan no study done indigenously, so this study may highlight demographic factors (working and non-working mothers) in relation to speech and language delay

### SUBJECTS AND METHODS

It was a descriptive cross-sectional study conducted at Gynecology and Pediatrics Outpatient Departments of 3 Tertiary care hospitals, including Mayo Hospital, Sheikh Zaid Hospital, and Services Hospital, Lahore and 2 Universities, the University of Lahore and Lahore College for Women University. Duration of study was nine months (September 2020 to May 2021), commenced after approval from Institutional Review Board of Faculty of Allied Health Sciences, the University of Lahore, Lahore. Convenience sampling technique was used in this study. Sample size of 288 (144 working mothers and 144 non-working mothers) was taken. After taking verbal consent, each mother having child of age 24 months to 36 months was interviewed in terms of her age, education level, monthly income, working status, caregiver at home, family structure (nuclear or joint) and socioeconomic status. Mother age was measured in years as described by the mother. Family structure was defined as nuclear (both parents living alone) or joint family system (both parents living with in laws). Screen time (2 hours or more with either of smart phones or television). Gender was defined as male or female. Working status (6-8 hours job 5 times a week) nonworking (not away from home for job purpose). Care given at home mean care given by mother, father or both or by grandparents/maid. Socioeconomic status was assessed by Kuppusswami scale as upper, middle, or lower class. Birth order means order in siblings, schooling status means if child attends school or not.

The information was recorded on a structured questionnaire. For index case (aged 24-36 months), the

information of speech development was assessed by asking mother a panel of questions as described in a Developmental Tool described by National Institute on Deafness and other Communication Disorders (NIH).<sup>10</sup> Socioeconomic status was assessed by modified Kuppusswamy scale which is based upon occupation, education and income of the head of the family.<sup>11</sup> Data was analyzed by using SPSS version 24. The descriptive analysis involved finding frequencies and percentages. Bivariate analysis included association of different independent factors with delayed speech children using chi-square and student t test. A p-value  $\leq 0.05$  was taken as significant.

### RESULTS

Total 144 children of working mother and same number of non-working mothers were enrolled in the study. The results showed that 44 (30.6%) children of working women and 40 (27.8%) children of non-working women had delayed speech development. Prevalence of speech delay in children of working mothers was 30.6% (n=44) and for non-working mothers 27.8% (n=40); the overall prevalence of delayed speech in this group of children was 29.1% (n=42).

The mean age of working and non-working mothers and their children is shown in Table 1.

Table 2 shows bivariate analysis of different independent factors affecting speech development of children of working and non-working mothers. The analysis shows that family structure, care giver, socioeconomic status, parents' status and mother's working status have no influence on speech development of children. There is weak association of screen time and speech development. However, school coaching and males' sex are more prone to develop speech retardation as compared to females. Schooling status also influences speech development.

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The study revealed that out of 84 children with delayed speech, 70 (83.3%) had birth order less than 3 and 14 (16.7%) had birth order more than 3. Results

were statistically significant ( $p=0.000$ ) as regards speech delay in children with birth order.

Above table shows that out of 84 children with delayed speech 62 (73.8%) were males while 22 (26.2%) females were with delayed speech, Results are significant ( $p=0.000$ ) as regards delayed speech and male gender.

Above table shows that out 84 children 44 (52.4%) children had speech delay and they were not attending

school 40 (47.6%) children having speech delay were attending school, out of 204 children not having speech delay 62 (39.4%) were not going to school and 142 (69.6%) having no speech delay were attending school. Hence results depict that there is statistically significant ( $p=0.001$ ) relationship of not attending school with speech delay.

Table 1: Descriptive statistics of age of mothers and their children in working and non-working groups. Frequency, mean and standard deviations are shown.

Variable	Groups	Number (N)	Mean	Std. Deviation
Age of mothers (years)	Working	144	32.3958	5.41071
	Non-working	144	31.0833	5.46636
Age of children (months)	Of working mothers	144	31.07931	4.33424
	Of Non-working mothers	144	30.05421	4.34281

Table 2: Bivariate analysis of ten independent variables and development of speech (delayed speech vs normal speech). Chi-square and p-values are also indicated.

Independent Variable	Delayed Speech		Chi-square	p-value	
	Yes	No			
Family Structure	Nuclear	35 (41.7%)	74 (36.3%)	0.735	0.424
	Joint	49 (58.3%)	130 (63.8%)		
Screen Time	6 hours or more	52 (61.9%)	153 (75.0%)	5.443	0.06
	< 2 hours	33(39.3%)	67 (49.0%)		
Gender	2 hours or more	51 (60.7%)	104 (51%)	288	0.00
	Male	62 (73.8%)	140 (68.6%)		
Schooling status	Female	22 (26.2%)	64 (31.4%)	12.36	0.00
	Yes	44 (52.4%)	62 (30.4%)		
Caregiver	No	40 (47.6%)	142 (69.6%)	0.724	0.86
	Mother and/or father	61 (72.6%)	149 (73.1%)		
Kuppuswamy Scale	Grandmother and/or maid	23 (27.4%)	55 (27.0%)	5.412	0.144
	Upper & Upper Middle	57 (34.6%)	43 (27.0%)		
Birth Order	Lower Middle	55 (65.5%)	149 (73.0%)	268.95	0.000
	< 3 children	70 (25.54%)	204 (74.45%)		
Parent's Status	3 or more children	14 (100%)	0 (0%)	0.017	1.00
	Single parent	4 (4.8%)	9 (4.4%)		
Working Status of mothers	Both Parents	80 (95.6%)	195 (95.6%)	0.269	0.604
	Working	44 (30.6%)	40 (27.6%)		
	Non-working	100 (69.4%)	104 (72.2%)		

Table 3: Bivariate analysis of birth order with delayed speech in children with birth order

Variables	Speech Delay		Total	Chi-Square	p-value
	Yes	No			
Birth Order	≤3	70 (83.3%)	104 (50.9%)	288.000	0.000
	>3	14 (16.7%)	100 (49.1%)		
Total	84 (100%)	204 (100%)	288 (100%)		

Table 4: Bivariate analysis of gender with delayed speech in children and normal speech

Variables	Delayed Speech		Total	Chi-square	p-value
	Yes	No			
Gender	Male	62 (73.8%)	100 (49.1%)	288.000	0.000
	Female	22 (26.2%)	104 (50.9%)		
Total	84 (100%)	204 (100%)	288 (100%)		

Table 5: Bivariate analysis of schooling status in children with delayed speech and children with normal speech

Variables	Delayed Speech		Total	Chi square	p-value
	Yes	No			
Schooling Status	No	44 (52.4%)	62 (30.4%)	12.36	0.001
	Yes	40 (47.6%)	142 (69.6%)		
Total	84 (100.0%)	204 (100.0%)	288 (100.0%)		

## DISCUSSION

Many studies have been presented on speech and language delay in children in literature<sup>22,28</sup> but there is sparse data from Pakistan. The present study shows the prevalence of speech delay in children as 29.1%. This finding is in contrast to study from India where prevalence of speech delay among children was 6.2% less.<sup>12</sup> However, another study from India described the prevalence of delayed speech in children as 2.53%.<sup>13</sup> Another study from India concluded that the prevalence rate in children under 3 years of age was 29% and it is not much different from present study i.e., 29.1%.<sup>14</sup> One study, on 159 children of ages between 48-72 months, from Indonesia found that there is no relationship of delayed speech in children with working status of mothers.<sup>15</sup> A previous study reported an incidence of delayed language and speech in Thai children as 11.9%.<sup>16</sup> One more study from Saudi Arabia described prevalence of language and speech delay was 24.5%.<sup>17</sup> A study from Iraq highlighted prevalence of delayed speech as 11.9%.<sup>18</sup> One Chinese study disclosed that prevalence of delayed speech in children up to 3 years is higher in USA as compared to China.<sup>19</sup> A study conducted in 2022 in Thailand revealed prevalence of delayed speech in children as 40.9%.<sup>36</sup> The difference in results in these studies could be due to sample size, ethnic or social differences and cultural values.

Screen time in current study has shown a negligible negative effect on speech development but an African study in 2022 concluded that viewing television by children in early age has significant negative influence resulting in delayed speech.<sup>20</sup>

There was no significant effect of working status of mothers and family type on development of speech of children as found in a study from China in 2020.<sup>21</sup>

The type of caregiver was not associated with the development of speech. A study conducted by Adams et al (2018) from California showed that those children who hear more to caregiver talking at the age of 16 months had better development of speech at the age of 18 months.<sup>22</sup> Nine to twenty four months of age is critical for speech development.<sup>23</sup> So environment of child during this period is vital for speech development. If enriched environment is provided to children in early age it plays some role in speech development. It can be inferred that child having elder siblings is benefited by his elder talk. Increasing birth order is significantly associated with early development of speech in the present study; most probably the index child is exposed to his elder siblings.

Researchers from Turkey in 2020 found a relationship of low socioeconomic status with delayed speech in children.<sup>24</sup> Another study revealed that delayed speech was 3 times more common in children of low income families.<sup>25</sup> However, the current study revealed no association of level of socioeconomic status and development of with delayed speech. Previous study concluded that children living in high socioeconomic areas had a less chance of delayed development of speech.<sup>26</sup> In current study delayed speech is seen more in higher income group. This could be due to increase the screen time, less attention by parents, more time spent with maids. Strong relationship between delayed speech and socioeconomic status was established in a previous study.<sup>27</sup> Late talker should not be neglected because late talking can impact socialization and readiness for school, and can put some toddlers at lifelong disability.<sup>28</sup> Parent status in current study has no association with speech delay. This finding is consistent with other studies.<sup>29</sup>

Study regarding association of delayed speech with male gender is in line with previous literature. One study from Pakistan concluded that in addition to other variables male gender was significantly related with speech delay in children.<sup>30</sup> Delayed speech is three times more common in male children and if there is positive family history.<sup>31</sup>

In current study association of delayed speech and schooling status is seen positively. The results can be interrupted vice versa whether delayed speech caused delayed entry into school or vice versa. Number of factors may put the child at risk of being a candidate of **delayed speech at 2 years of age and children's ability to learn vocabulary, reading, doing mathematics and behavioral abilities during years of preschool.** Evidence showed that there are some modifiable risk factors at the age of two years associated with language delay.<sup>32</sup> Some studies have shown that there is some relationship between level of maternal education and language delay.<sup>33</sup> However, the present study did not reveal such result. Demographic risk such as low socioeconomic status is more valuable as a causal factor for language delay.<sup>34</sup>

## CONCLUSION

Prevalence of speech and language delay in toddlers is 29.1%. There was no significant association between working mothers and delayed speech of children. However, birth order, schooling status and gender were found to have significant relation with delayed speech in

children.

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