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A Cross-sectional study to compare the prevalence & causes of delayed milestones in children(0-3years) of rural & urban Jaipur

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Abstract:
Background: A developmental delay refers to a child who has not gained the developmental skills expected of him or her, compared to others of the same age. Delays may occur in the areas of motor function, speech and language, cognitive, play, and social skills.
Methodology: A Cross-sectional Community based study was conducted on delay in developmental milestones among children's of 0-3 years residing in Goner(Rural) and Pratapnagar(Urban), Jaipur during august 2018-july 2019 using thirty cluster sampling technique and sample size is calculated using the prevalence in NFHS-4 which was around 300 for each group(Rural & Urban).
Result: In present study total number of children examined were 301 in rural area of Jaipur, out of which 152 (50.49%) were males and 149 (49.50%) were females and children examined were 300 in urban area of Jaipur, out of which 146 (48.66%) were males and 154 (51.33%) were females. In present study it was found that 4.31% of rural children show delayed milestones as compared to 3% or urban slum, but 1.5% showed global developmental delay in rural as compared to urban where 4.4% children showed global developmental delay.
Conclusion: Although the value of this delay was low, awareness campaigns should be implemented to promote timely identification of children with development delays.
Keywords: Children, Developmental delay, Milestones

INTRODUCTION:

According to United Nation's Declaration of Rights of the child– *"CHILDREN'S ARE NATION'S SUPREMELY IMPORTANT ASSET"*. The teaching of Ayurveda also stresses much on child's health and its preservation. *"KASHYAP TANTRA"* has a Chapter on *"KUMARA BHRITYA"* which means "services to children". *DE HASS (1958)* stated that there is no creature at mercy of his environment than human child.(1) child development involves the biological, psychological and emotional change that occur in human beings between birth and the conclusion of adolescence

Child development stages are the theoretical milestones of child development, some of which are asserted in nativist theories. This article discusses the most widely accepted developmental stages in children. There exists a wide variation in terms of what is considered "normal," caused by variation in genetic, cognitive, physical, family, cultural, nutritional, educational, and environmental factors. Many children reach some or most of these milestones at different times from the norm.[1-2]

A developmental delay refers to a child who has not gained the developmental skills expected of him or her, compared to others of the same age. Delays may occur in the areas of motor function, speech and language, cognitive, play, and social skills. Global developmental delay means a young child has significant delays in two or more of these areas of development, There is not one cause for delays in development. Factors that may contribute can occur before a child is born, during the birth process, and after birth. These could include:

- Genetic or hereditary conditions like Down syndrome
- Metabolic disorders like phenylketonuria (PKU)
- Trauma to the brain, such as shaken baby syndrome
- Severe psychosocial trauma, such as post-traumatic stress disorder

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- Exposure to certain toxic substances like prenatal alcohol exposure or lead poisoning
- Some very serious infections
- Deprivation of food or environment

In some cases, it may not be possible to find the cause of the developmental delay[3-5].

Aims and Objective:

(1) To find delay in developmental mile stones in rural area in 0-3 years of children
(2) To find delay in developmental mile stones in urban area in 0-3 years of children
(3) To compare developmental delay in milestones among rural and urban 0-3 years of children.

MATERIAL AND METHODS

STUDY DESIGN - Cross – sectional community based study

STUDY POPULATION Children under three years of age and the information was obtained from child's mother and by examination of the children's

STUDY AREA Rural area Goner village of Jaipur and Pratapnagar a urban area of Jaipur, Rajasthan, India

SAMPLE SIZE Based on reported prevalence of wasting in 23 percent of children under three NFHS-4 (2015-16), A sample size of 273 was arrived at by standardized sample technique. To cater for non-response a sample of 300 children under three years each in rural and urban area would form the study group. Thus a total of 600 children were studied.

N=1.96 X 1.96 Pq/L2 [5]

3.8416 X 0.23X0.77 / 0.0025 = 272.13

SAMPLING TECHNIQUE

Thirty Cluster Sampling technique[6] for selecting sample in Goner (rural area) was used. All wards, which are eleven in number were listed with their 2011 censes population. Subsequently cumulative population was found. On the basis of thirty clusters to be selected, a sampling interval (by dividing summation of population by thirty) was found. In this case it was found to be 5043/30= 168.1. A random number between 001—168 was generated with the help of currency note (Rs. 5 note no. 443148) in the present sample random number ward was 148, for selection of second cluster, sampling interval was added and ward with cummulative population, corresponding to random no + sampling interval was second cluster selected, third cluster was the number which identified the second cluster plus the sampling interval.(79) Likewise, thirty cluster were selected from the eleven wards of Goner and various sectors namely 3,6,8,35 of pratap nagar.

STUDY DURATION – From August 2018 to July 2019.

STUDY PLACE/ POPULATION

The Study was conducted at rural area Goner and urban area Pratapnagar of Jaipur. According to 2011 census, it has total population of 5043, out of which 2663 are males and 2380 are females. A randomly selected sector of Pratapnagar was taken for study. The present study was carried out in eleven wards of Goner and urban area Pratapnagar, Jaipur.

RESULT

MILESTONES: Observation related to milestones (normal and delayed) of study group is shown in following section, it also contains information regarding causes of delayed milestones in respective areas. In children aged 0-36 months , sex ratio was found to be 980:1000, number of male children being higher than females.

Proportion of males is more in age group of 6-12 months being 70.7% followed by 54.54% in age group of 24-30 months, 50% in 18-24 months and 46.42% and 47.57% in age groups of 12-18 months and 30-36 months respectively. While females are maximum in age group of 0-6 months constituting 72% followed by 53.57% in age group of 12-18 months, and 52.42%, 50% and 45.45% in age groups of 30-36 months, 18-24 and 24-30 months respectively. Total number of children examined were 301, out of which 152 (50.49%) were males and 149 (49.50%) were females. Out of 25 (8.3%) children in age group of 0-6months, 7 (28%) were males and 18 (72 %) were females. Out of 41 (13.62%) children in age group of 6-12 months, 29 (70.7%) were males and 12 (29.2%) were females. Out of 56 (18.6%) children in age group of 12-18 months, 26 (46.42%) were males and 30 (53.57%) were females. Out of 10 (3.32%) children in age group of 18-24 months, 5 (50%) were males and 5 (50%) were females. Out of 66 (21.92%) children in age group of 24-30 months, 36 (54.54%) were males and 30 (45.45%) were

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females. Out of 103 (34.21%) children in age group 30-36 months, 49 (47.57 %) were males and 54 (52.42%) were females.

Table-1: Age and Sex Distribution of children under three years of age (RURAL AREA)

Age (months)	Male (no)	Male (%)	Female(no)	Female (%)	Total (no)	Total (%)
0-6	7	28	18	72	25	8.3
6-12	29	70.7	12	29.2	41	13.62
12-18	26	46.42	30	53.57	56	18.6
18-24	5	50	5	50	10	3.32
24-30	36	54.54	30	45.45	66	21.92
30-36	49	47.57	54	54.42	103	34.21
Total	152	50.49	149	49.50	301	100.00

The sex ratio was found to be 1054:1000. Proportion of males are maximum (59.52%) in 24-30 months of age, followed by (57.5%) in age group of 6-12 months, while females are maximum in 0-6 months of age (65.51%) followed by (60.0%) in age group of 12-18 months, thereafter it is least in age group of 24-30 months (40.47%). It could be noted that females are more in 0-6 months of age group in both rural (72%) and urban slum (65.51%). Total number of children examined were 300, out of which 146 (48.66%) were males and 154 (51.33%) were females. Out of 29 (9.66%) children on age group 0-6 months, 10 (34.48%) were males and 19 (65.51%) were females. Out of 40 (13.33%) children in age group 6-12 months, 23 (57.5%) were males and 17 (42.5%) were females. Out of 45 (15.0%) of children in age group of 12-18 months, 18 (40.00%) were males and 27 (60.00%) were females. Out of 27 (9.00%) of children in age group of 18-24 months 14 (51.8%) were males and 13 (48.18%) were females. Out of 42 (14.00%) children in age group of 24-30 months, 25 (59.52%) were males and 17 (40.47%) were females. Out of 117 (39.00%) children in age group of 30-36 months, 56 (47.86%) were males and 61 (52.13%) were females

Table –2 :Age and sex wise distribution of children under three years of age (URBAN SLUM)

Age (months)	Male (no)	Male (%)	Female (no)	Female (%)	Total (no)	Total (%)
0-6	10	34.48	19	65.51	29	9.66
6-12	23	57.5	17	42.5	40	13.33
12-18	18	40.00	27	60.00	45	15.0
18-24	14	51.8	13	48.18	27	9.00
24-30	25	59.52	17	40.47	42	14.00
30-36	56	47.86	61	52.13	117	39.00
Total	146	48.66	154	51.33	300	100.00

Rural Area - Out of 301, majority 288 (95.6%) are normal for milestones development and 13 (4.31%) are having delayed milestones.
Urban Slum - Majority 291 (97.0%) were normal and 9 (3.0%) showed delayed milestones

Table - 3 : Distribution of study population according to milestones

Milestones	Rural No. (%)	Urban Slum No. (%)
Normal	288 (95.6)	291 (97.0)
Delayed	13 (4.31)	9 (3.0)
Total	301 (100)	300 (100)

It is obvious that out of 13 children with delayed milestones, majority 10 (76.9%) were males and only 3 (23.0%) were females.2 (1.5%) showed global developmental delay in Goner. In Goner the causes for delayed milestones were low birth weight in 46%, unknown causes in 46% and twin delivery in 8%.

Table - 4 : Sex wise distribution of children with delayed milestones (Rural Area)

Delayed	Male	Female	Total
Sitting (>8mth)	4	0	4
Walking (>17 mth)	4	1	5
Speech (>17mth)	2	2	4

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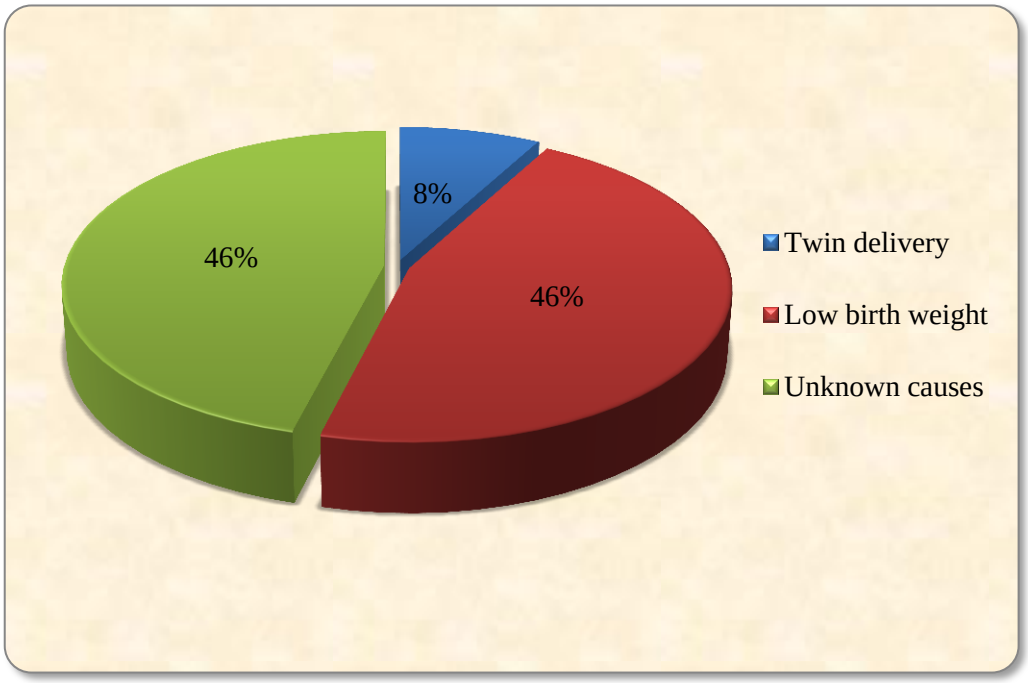
Total	10	3	13

It is obvious that out of nine children with delayed milestones in urban slum, majority 7 (77.7%) were males and 2 (22.2%) were females. 3 children (3.3%) showed global developmental delay (delayed for both walking and speech). There was one case of (1.1%) Down's syndrome, one mental retardation along with deaf /dumb child and one deaf dumb with no mental retardation may be because in Muslim community there is more prevalence of Consangious marriages. In total 3.3% showed global developmental delay in Pratapnagar as compared to 1.5 % in Goner.

Table - 5 : Sex wise distribution of children with delayed milestones (Urban Slum)

Delayed	Male	Female	Total
Sitting (>8mth)	1	0	1
Walking (>17 mth)	1	2	3
Speech (>17mth)	1	0	1
Walking +speech	1	0	1
Dumb/deaf	2	0	2
Down's syndrome (delayed walking / speech)	1	0	1
Total	7	2	9

Cause for developmental milestone delay in rural area of Jaipur



Cause for developmental milestone delay in urban area of Jaipur

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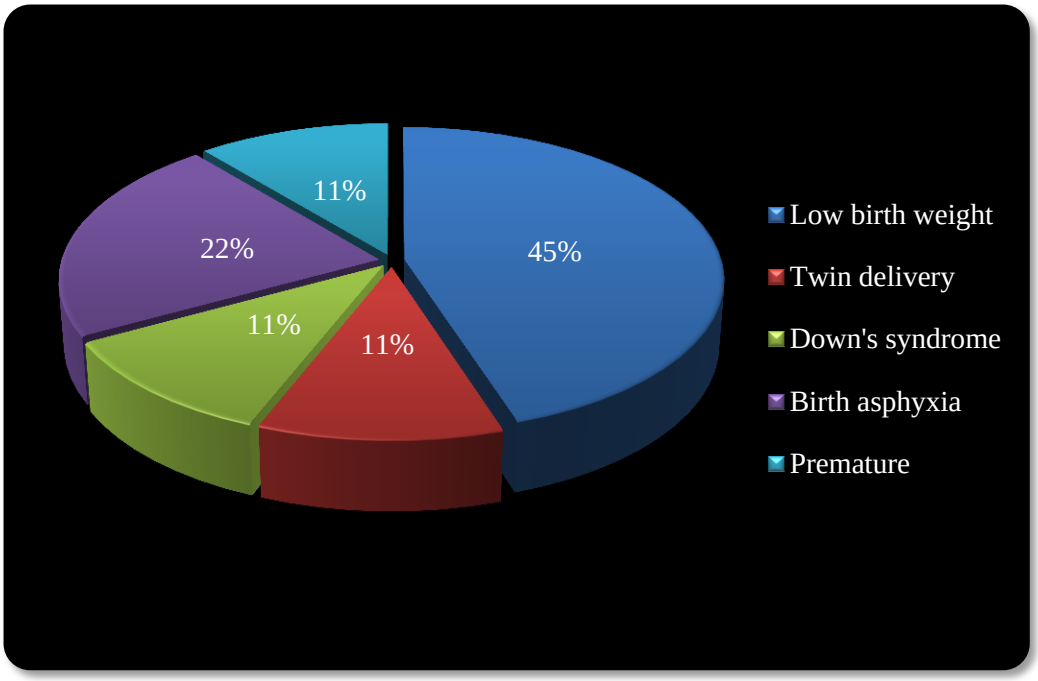

In Pratapnagar reasons for delayed milestones were low birth weight in 45%, birth asphyxia in 22% and premature birth, Down's syndrome and Twin Delivery each constituted 11%.

DISCUSSION:

In present study total number of children examined were 301 in rural area of Jaipur, out of which 152 (50.49%) were males and 149 (49.50%) were females. Out of 25 (8.3%) children in age group of 0-6months, 7 (28%) were males and 18 (72 %) were females. In children aged 0-36 months , sex ratio was found to be 980:1000, number of male children being higher than females. Proportion of males is more in age group of 6-12 months being 70.7% followed by 54.54% in age group of 24-30 months, 50% in 18-24 months and 46.42% and 47.57% in age groups of 12-18 months and 30-36 months respectively. In this study Total number of children examined were 300 in urban area of Jaipur, out of which 146 (48.66%) were males and 154 (51.33%) were females. The sex ratio was found to be 1054:1000. Proportion of males are maximum (59.52%) in 24-30 months of age, followed by (57.5%) in age group of 6-12 months, while females are maximum in 0-6 months of age (65.51%) followed by (60.0%) in age group of 12-18 months, thereafter it is least in age group of 24-30 months (40.47%). It could be noted that females are more in 0-6 months of age group in both rural (72%) and urban slum (65.51%).

In present study it was found that 4.31percent of rural children show delayed milestones as compared to 3 percent or urban slum, but 1.5 percent showed global developmental delay in rural as compared to urban where 4.4 percent children showed global developmental delay. Nair MKC (2004) [(59)] found that global development delay was present in 2.5 percent of children under two years. Higher prevalence was noted by Zafar meenai (2009) [(62)] where 9.5 percent children showed developmental delay, Meenakshi Malik (2007) [(61)] showed developmental delay in 9.4 percent, Sandeep Sachdeva (2010) [(17)]showed 7.1 percent children had developmental delay.

Conclusion-

Although low, the prevalence of delayed gross motor milestone achievements supports the need for a health facility-based awareness campaign to promote the timely identification of and interventions for children with delayed milestones. A further evaluation of the problem of the delay in achieving milestones needs to be performed and should utilize a mixed methods approach to facilitate understanding of issues related to both identification and management

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