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Developmental Status of Young Children

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Abstract— Development is the child able to perform the particular task at specific age. It is the process of mapping the child performance when compared with the children of similar age. If the child fails to do more than two task, consider as developmental delay. Early identification and prompt treatment will improve the child development and make productive adult in future. Aim of the study is to assess the young children development among mothers. Descriptive survey research was carried out, ethical permission was obtained and formal permission was obtained from the authority and from research participant. Based on the sample size calculation 300 sample was chosen by convenient sampling technique and data was obtained through interview method by using ASQ-3 questionnaire. The results depict that 92% of children were having normal development and only 8% were having risk in developmental delay. Domain wise the risk and delay was identified in all ages (9 6,8,12,18&24 months). the high mean value (46.91± 9.15) was obtained for communication skill, gross motor skill had the value of 45.10 ±10.75, more or less equal value (44.43± 10.27 & 44.15± 8.87) derived for fine motor skill and problem solving abilities. The lowest mean value (43.65± 11.03) obtained for personal social skill. The young children development was associated with selected demographic variables (Table 03) such as age of the children ($\chi 2$=25.133 p=0.001(S)), education of mother ($\chi 2$=14.748 p=0.01**(S)) income of the family ($\chi 2$=15.494 p=0.002***(S)) type of family ($\chi 2$=5.455 p=0.02**(S)) and history of consanguineous marriage ($\chi 2$=11.755 p=0.005***(S)). To recapitulate, the developmental delay was considerably high among young children. Also, delay was remarkable in all five domains. So, it requires the health care professional concentrate more on the developmental screening and early identification and prompt treatment.***

Index Terms— Young Child, developmental delay, developmental assessment, five domains and so on.

I. INTRODUCTION

Early childhood is a critical period during which children acquire various skills including motor, cognitive, language, social, and vision. Developmental milestones represent age-specific tasks that children typically achieve at certain ages. However, the acquisition of these skills can vary from child to child. While genetics play a significant role in providing the framework for brain development, the child's physical and social environment also plays equally important roles.[1] Developmental delay arises when a child fails to reach developmental milestones in comparison to peers within the same age range. A delay may manifest in a single developmental area (referred to as isolated developmental delay) or in multiple domains. When there is a significant delay in two or more developmental domains observed in children under the age of five years, it is termed as global developmental delay (GDD).[2]

Developmental delay in children can manifest as either temporary or persistent and is marked by a substantial lag (i.e., performance falling 1.5 standard deviations or more below age-expected norms) in one or multiple domains, such as gross and fine motor skills, speech and language, social and personal abilities, activities of daily living, and cognition.[3],[4,5]

Globally, one in six children are suffering from some kind of developmental delay and only 60% are detected early by World Health Organization.[6] Worldwide, approximately 200 million children fail to reach their developmental milestones within the first five years of life and 86% of developmental delay found in developing countries like India due to factors such as poverty, inadequate healthcare, and malnutrition. Also,10% of Indian children had affected by developmental delay and 1,5 – 2.5% delay found less than 2 years of age.[5,7] Approximately, 43% of children under the age of 5 years living in Low Income (LIC) and Lower Middle Income Countries (LMICs) are at higher risk of not reaching their developmental potential.[8]

Children with developmental delay less likely to be productive adult in the society when compared with others in future. Early identification of developmental delay and the timely intervention are the basic challenges and concern worldwide as well as in India.[9] Well baby clinic play a crucial role in early recognition and prompt treatment of retarded growth and development and other illnesses. Health care professional screen the child for developmental delay, early identification of any illness, delivering the appropriate treatment and educate the care giver. Only immunization and weight monitoring were performed for all babies and the developmental assessment done for 34% of the babies.[10]

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Volume 11, Issue 1, January 2024

Developmental and behavioral screening will be done for all children during the age of 9, 18, 24 and 30 month recommend by American Academy of Pediatrics. Early identification of developmental delay plays major role on the care, and decaling the disabilities in later part of life, and reduces the disruption and dysfunction of the family, peer issues, scholastic achievements. Prompt in identifying the developmental delay facilitate the skillful screening along with routine evaluation and analysis. Screening is the method of identifying the developmental problems which has not done during the pediatric surveillance care. The purpose of screening is to detection of developmental delay in children who are at risk as early as possible which initiate the remediation when it is beneficial.[11]

II. MATERIAL AND METHODS

The evaluative approach with descriptive survey research was carried out. Convenient sampling technique was adopted to choose 300 sample, the mothers of young children (6 – 24 months) based on the sample size calculation and inclusion criteria. The Ages and stages questionnaire – 3 (ASQ-3) was used to assess the development of young children among mothers which consists of 5 sections namely communication, fine motor, gross motor, problem solving and personal social. Each subsection has 6 questions and the total number of questions was 30 – used to assess the developmental delay among young children. Each item has 3 responses namely yes (10 score), sometimes (5 score), & not yet (0 score). Tool was translated in regional language and the validity was obtained from the experts in the field, reliability was tested r=0.851. IRC- Ref. No: VMCON- IRC- 2022 – 2023 - 138 and IEC - Ref. No: VMCN PDY/IEC 2023/149 was cleared. Formal permission obtained from the concern authority and informed consent was obtained from the mothers of young children. The pilot study was conducted and the result show that the study was feasible and practicable. The main study was carried out, the data was collected through interview schedule and minimum 30 – 40 minutes was taken to complete the assessment for one participant. All the data were synthesized, organized, cleaned and tabulated for further analysis.

III. RESULTS

The personal data revealed that around 22% of the children were in the age group of 6, 8 and 18 months respectively. The calculated mean age of the young children (6 – 24 months) was 13 months. Female children were higher (69.67%) than the male (30.33%) children. Parents of young children were completed minimum of primary school education, 64% of children were living in nuclear type of family and 44% of the children were second born child. Regarding the consanguinity of marriage show that 48% of the parent were married in third degree of consanguinity.

Regarding the developmental assessment, figure 01 show the overall assessment of young children. Only 8% hare having the risk of developmental delay and 92% of the young children are normal.

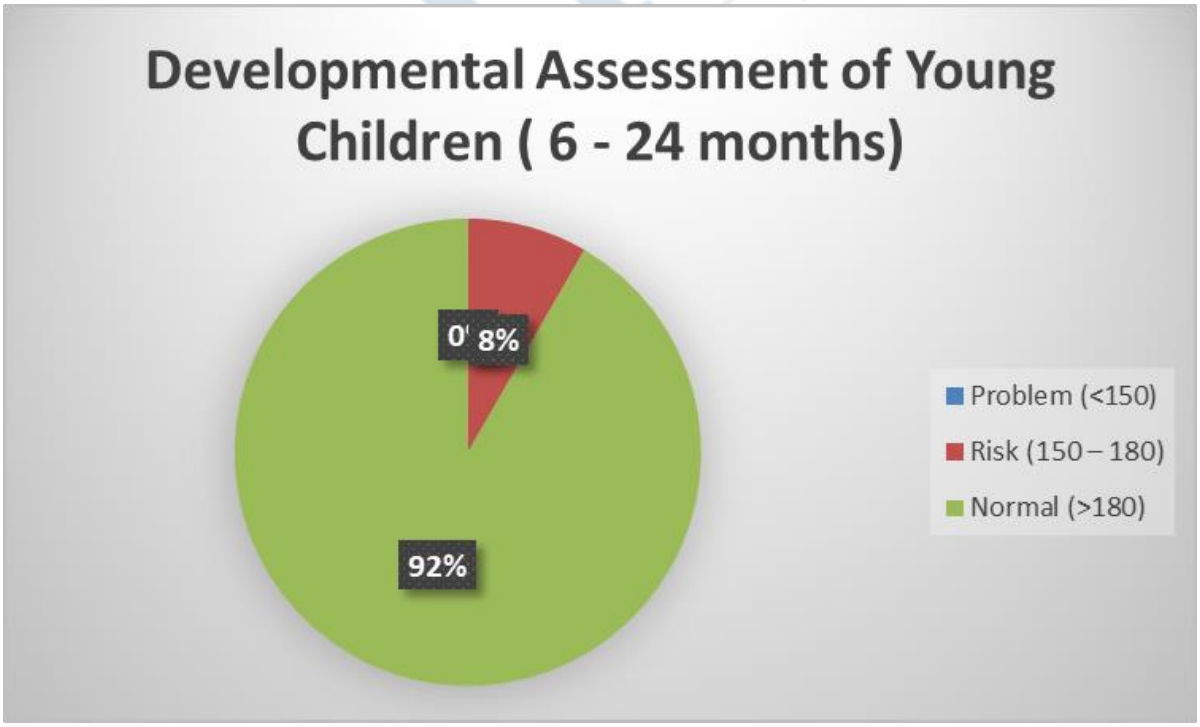


Figure 1

Figure 02 show the developmental assessment based on the age in month specifically at the age of 6, 8, 12, 18 & 24 months. The risk category was identified in all ages. At the age of 8, 6 & 12 month the risk was 12%, 20.9% & 4.9% respectively. When the child cross one year, the progress of risk also started declining.

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Volume 11, Issue 1, January 2024

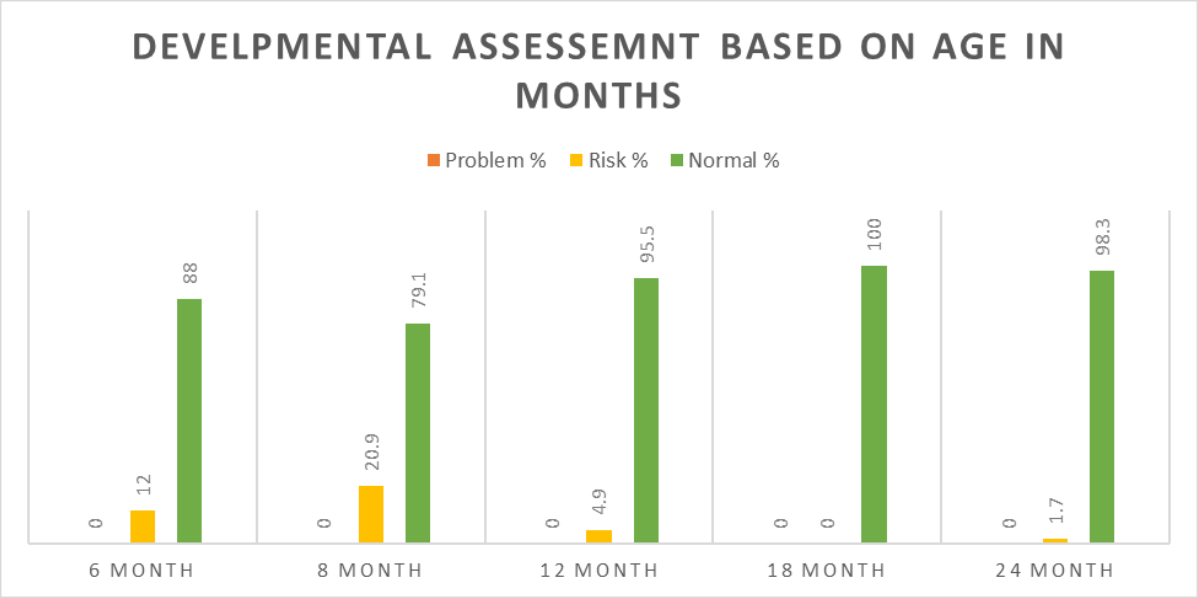


Figure 2

Based on the five domain the development was assessed in children of various age group. The area wise assessment result depicts frequency and percentage in below table 01. Among five domains, the young children of various age group show almost all children are in normal category of development (87.7 % & 84.7%) in the area of communication skill and problem solving abilities. In the area of gross motor development 41.7% of children falls in the problematic and 12.7% in risk category. 23% of children falls in problematic category in personal social skill.

Table 01. Areawise, frequency and percentage distribution of young children development in various age groups

Areas of Developmental Assessment	Categories	6 Month		8 Month		12 Month		18 Month		24 Month		Over All	
		F	%	F	%	F	%	F	%	F	%	F	%
Communication Skills	**Problem**	0	0	4	6	0	0	2	3.1	0	0	**6**	**2.0**
	Risk	12	18.2	11	16.4	6	13.6	0	0	2	3.4	**31**	**10.3**
	Normal	54	81.8	52	77.6	38	86.4	63	96.9	56	96.6	**263**	**87.7**
Gross Motor Skills	**Problem**	37	56.1	32	47.8	20	45.5	18	27.7	18	31	**125**	**41.7**
	Risk	15	22.7	5	7.5	5	11.4	4	6.2	9	15.5	**38**	**12.7**
	Normal	14	21.2	30	44.8	19	43.2	43	66.2	31	53.4	**137**	**45.7**
Fine Motor Skills	**Problem**	6	9.1	24	35.8	3	6.8	8	12.3	5	8.6	**46**	**15.3**
	Risk	19	28.8	26	38.8	13	29.5	8	12.3	11	19	**77**	**25.7**
	Normal	41	62.1	17	25.4	28	63.6	49	75.4	42	72.4	**177**	**59.0**
Problem Solving Abilities	**Problem**	6	9.1	0	0	0	0	0	0	0	0	**0**	**0**
	Risk	19	28.8	18	26.9	6	13.6	3	4.6	7	12.1	**46**	**15.3**
	Normal	41	62.1	49	73.1	38	86.4	62	95.4	51	87.9	**254**	**84.7**
Personal-Social Skills	**Problem**	0	0	22	32.8	5	11.4	4	6.2	14	24.1	**69**	**23.0**
	Risk	12	18.2	19	28.4	9	20.5	7	10.8	8	13.8	**50**	**16.7**
	Normal	54	81.8	26	38.8	30	68.2	54	83.1	36	62.1	**181**	**60.3**

The area wise over all mean and SD of young children development depicts that the high mean value (46.91± 9.15) was obtained for communication skill, gross motor skill had the value of 45.10 ±10.75, more or less equal value (44.43± 10.27 & 44.15± 8.87) derived for fine motor skill and problem solving abilities. The lowest mean value (43.65± 11.03) obtained for personal social skill. Age wise and domain wise mean and SD was given in the table 02.

ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)

Volume 11, Issue 1, January 2024

Table 02. Area wise, mean and standard deviation (SD) of young children development in various age groups

Areas of Developmental assessment	6 Month		8 Month		12 Month		18 Month		24 Month		Over All	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Communication Skills	43.03	7.48	41.86	9.1	49.2	8.55	50.23	7.93	51.72	8.09	**46.91**	**9.15**
Gross Motor Skills	40.98	10.19	42.53	12.04	45.5	10.55	48.54	8.78	48.62	9.77	**45.10**	**10.75**
Fine Motor Skills	42.8	6.63	36.94	9.92	47.05	9.54	48.31	10.32	48.62	9.59	**44.43**	**10.27**
Problem Solving Abilities	40.98	7.29	39.47	9.38	46.36	8.51	47.15	5.08	48.1	9.95	**44.15**	**8.87**
Personal-Social Skills	40	10.07	38.13	10.51	47.16	9.74	49.08	8.05	45.43	12.36	**43.65**	**11.03**
Over All	**207.87**	**26.89**	**199.7**	**28.68**	**235.34**	**31.39**	**244**	**24.27**	**242.5**	**37.38**	**224.6**	**35.14**

The young children development was associated with selected demographic variables (Table 03) such as age of the children ($\chi 2=25.133$ p=0.001***(S)), education of mother ($\chi 2=14.748$ p=0.01**(S)) income of the family ($\chi 2=15.494$ p=0.002***(S)) type of family ($\chi 2=5.455$ p=0.02**(S)) and history of consanguineous marriage ($\chi 2=11.755$ p=0.005***(S))

Table 03. Association between young children development and selected demographic variables

Demographic variables		Overall						Chi square & p - value
		Problem		Risk		Normal		
		F	%	F	%	F	%	
Age of children	6 months	0	0%	8	2.66	58	19.33	**$\chi 2=25.133$ p=0.001***(S)**
	8 months	0	0%	14	4.66	53	17.66	
	12 months	0	0%	2	0.66	42	14	
	18 months	0	0%	0	0	65	21.66	
	24 months	0	0%	1	0.33	57	19	
Sex of children	Male	0	0%	11	3.66	80	26.66	$\chi 2=2.411$ p=0.30(NS)
	Female	0	0%	14	4.66	195	65	
Education of mother	Illiterate	0	0%	0	0	0	0	**$\chi 2=14.748$ p=0.01**(S)**
	Primary school	0	0%	0	0	35	11.66	
	Secondary school	0	0%	13	4.33	58	19.33	
	Higher school	0	0%	4	1.33	75	25	
	Diploma	0	0%	6	2	60	20	
	UG & PG	0	0%	2	0.66	47	15.66	
Education of father	Illiterate	0	%	0	0	0	0	$\chi 2=8.531$ p=0.08(NS)
	Primary school	0	0%	9	3	53	17.66	
	Secondary school	0	0%	0	0	42	14	
	Higher school	0	0%	6	2	42	14	
	Diploma	0	0%	4	1.33	60	20	
	UG & PG	0	0%	6	2	78	26	

ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)

Volume 11, Issue 1, January 2024

Demographic variables		Overall						Chi square & p - value
		Problem		Risk		Normal		
		F	%	F	%	F	%	
Birth order of the child	First	0	0%	2	0.66	72	24	χ2=4.630 p=0.10(NS)
	Second	0	0%	12	4	120	40	
	Third	0	0%	4	1.33	33	11	
	Above Third	0	0%	7	2.33	50	16.66	
Baby soon after delivery baby cried immediately	Yes	0	0%	25	8.33	275	91.66	χ2=1.82 p=0.10(NS)
	No	0	0%	0	0	0	0	
Income of family	<Rs.5000	0	0%	2	0.66	59	19.66	**χ2=15.494 p=0.002***(S)**
	Rs.5,001 - 10,000	0	0%	0	0	73	24.33	
	Rs.10,000 – 15,000	0	0%	11	3.66	74	24.66	
	>Rs.15,000	0	0%	12	4	69	23	
Type of family	Joint family	0	0%	11	3.66	97	32.33	**χ2=5.455 p=0.02**(S)**
	Nuclear family	0	0%	14	4.66	178	59.33	
History of any family developmental disorder	Yes	0	0%	0	0	0	0	χ2=.183 p=0.46(NS)
	No	0	0%	25	8.33	275	91.66	
History of any consanguineous marriage	First degree	0	0%	4	1.33	34	11.33	**χ2=11.755 p=0.005***(S)**
	Second degree	0	0%	17	5.66	101	33.66	
	Third degree	0	0%	4	1.33	140	46.66	

IV. DISCUSSION

The current research study revealed that around 22% of the children were in the age group of 6, 8 and 18 months respectively. The calculated mean age of the young children (6 – 24 months) was 13 months. This was similar to Gulati et.al., who assessed the sociocultural adaptation and validation of the ages and stages 3 questionnaire and found that the mean age of children was 13 months.[12] Female children were higher (69.67%) than the male children this results was contradict to the Olusanya et.al., & Gupta et.al., found that the developmental delay was higher in boys than the girls.[18,19] Parents of young children were completed minimum of primary school education, 64% of children were living in nuclear type of family and 44% of the children were second born child. Regarding the consanguinity of marriage show that 48% of the parent were married in third degree of consanguinity.

Regarding the developmental assessment, the overall assessment of young children only 8% hare having the risk of developmental delay. This result was consistent with Bhattacharya et. al., who found that prevalence of developmental delay 7.9 % (C.I 4.9-10.9) among rural children aged below two years. The study findings revealed that 6 out of 10 children had developmental delay. Early detection at the younger age provide better outcome.[5] Similarly, Agarwal et.al., his research study on Prevalence of Developmental Delay and Factors Affecting the Development Status among Under 5 Children found that 12.2% of under-five children are developmentally delayed.[13] In par with another a community-based cross-sectional study (Dabar et.al.,) on Developmental assessment using the Indian Council for Medical Research Development Screening Test, 10.6% of children less than 5 years of age were developmentally delayed.[14]

Regarding the area wise developmental assessment in various age group depicts that among five domains, the young children of various age group show almost all children are in normal category of development (87.7 % & 84.7%) in the area of communication skill and problem solving abilities. In the area of gross motor development 41.7% of children falls in the problematic and 12.7% in risk category. 23% of children falls in problematic category in personal social skill. This was similar to the research study on the prevalence of developmental delay in the areas of five domains such as communication (N-85.1%, R – 9.1% & D – 5.8%), gross motor skill (N- 85.1%, R – 8.2%, & D-6.7%), fine motor skill (N- 77.3%, R – 13% & D – 9.7%), problem solving (N-79.4%, R – 10.6% & D-10%) and social personal interaction (N- 73.1%, R- 14.5% & D-12.4%).[15] the same was found in the another research on developmental delays and its predictors among infants- a cross sectional study in rural

areas revealed the domain specific prevalence of delay was observed as 132 (17%) in communication, 176 (22.6%) in gross motor, 212 (27.2%) in fine motor, 291 (37.3%) in problem solving and 234 (30%) in personal social domain. Overall 32 (4.1%) infants had delay in all 5 domains.[5]

The ASQ-3 was administered to the mothers of young children. Mother observation on child only recorded. If the mothers are failed or lack of knowledge on development of the children will affect the result. This was accepted by Shrestha et.al., who stated that if the mothers are not adequately trained mothers may not accurate report on their child abilities, in such scenario they could be a tendency to simply agree the question. Also mothers may interpret their child abilities based on their previous observations and memories. Since the questionnaire response were limited to yes, sometimes and Not yet, there is a chance of over or under score. Sometimes children fail to perform the task parent might overvalue to avoid the perceived value on their child developmental performance.[16] Roshanfekr stated in his study that child development will be promoted while train and motivate the mothers to involve in the developmental assessment.[17] Government of India launched the Rastriya Bal Swasthya Karyakram (RBSK) with the aim of screening the children 0 – 18 years for 4Ds (defects at birth, diseases, deficiencies and developmental delays). Anganwadi workers are utilizing the age appropriate developmental checklist to identify the developmental delay and the detected cases are reassessed by trained health care personal at the secondary and tertiary care level.[20,21]

The young children development was associated with selected demographic variables (Table 03) such as age of the children ($\chi2$=25.133 p=0.001***(S)), education of mother ($\chi2$=14.748 p=0.01**(S)) income of the family ($\chi2$=15.494 p=0.002***(S)) type of family ($\chi2$=5.455 p=0.02**(S)) and history of consanguineous marriage ($\chi2$=11.755 p=0.005***(S)). Many research studies revealed that maternal education significantly associated with the developmental delay. Low maternal literacy leads to poor understanding of the child development.[5] A research study by Saleem et.al., found that only a younger age (6–24 months vs. 25–59 months) of the child (AOR = 4.53, 95% CI: 1.56–13.10, p < 0.01 significantly associated with the developmental delay. Several research studies proven that maternal literacy, family socioeconomic status, type of family had significant association with the developmental delay.[22] In contrast Bhattacharya et.al., stated that there was no statistically significant found between developmental delay and maternal education, type of family and socio-economic status.[5]

V. LIMITATION OF THE STUDY

ASQ 3 questionnaire administered to the mothers to assess their children development. Lack of knowledge and understanding of the child development leads to misinterpretation which gives falls prevalence of developmental delay. Non-Approach to the health care professional and non-acceptance of their child age specific developmental delay may be another reason for the increase of prevalence of developmental delay.

VI. CONCLUSION

The developmental delay was considerably high among young children. Also, delay was remarkable in all five domains. So, it requires the health care professional concentrate more on the developmental screening and early identification and prompt treatment. ASHA worker needs to be trained for the developmental assessment and further referral to the primary, secondary and tertiary care center. Special screening camps need to be organized for case findings at remote areas and sensitize the health care providers regarding various screening tools for this purpose. Special attention to be given on RBSK and its services through IEC activities. The modifiable risk factors need to identify and address accordingly.

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