

Developmental Delay and Its Effective Factors in Children Aged 4 to 12 Months

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Abstract

Introduction

Developmental delay occurs when children do not reach their developmental milestones at the expected time. The main causes of developmental delay are often unknown. Investigation of the prevalence of developmental delay and its effective factors in children from 4 to 12 months old in Pakdasht County was the aim of this study.

Methods and Materials

This cross-sectional study was carried out among 210 children from 4 to 12 months old in Pakdasht County in 2014. For collecting the survey data, the Questionnaires of demographic and Ages and Stages (ASQ) have been used. Collected data were analyzed with descriptive statistics, chi-square test and independent t-test by SPSS18 software.

Results

The study participants in the study consisted 97 girl (46.2%) and 113 boy (53.8%). The average age of children was 7.96 ± 2.83 months. There were significant relations between developmental delay with child nutrition and the mother's education level ($P < 0.001$).

Conclusion

According to the findings, further studies are necessary to understand the factors influencing children's developmental delays.

Key words: ASQ, Children, Developmental delay.

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Introduction

Developmental delay occurs when children do not reach their developmental milestones at the expected time (1). The main causes of developmental delay are often unknown, but biological factors, complications of pregnancy, and environmental factors are some of the possibilities.

Children are the most valuable asset of any society, and their health can be considered as an index of the Nation's prosperity (2).

The growth in childhood is one of the important components of health throughout their life.

Whether a child has a developmental delay or disorder, early identification and intervention are essential for achieving the best possible outcome (3-5). After infection and trauma, developmental and behavioral disorders are the most common problems in pediatric medicine. Approximately 15%–18% of children in the US suffer from developmental or behavioral disabilities (6). Developmental screening for children from 4 to 60 months in a study conducted in Tehran showed prevalence of developmental delay was 18 percent (7), also in a study conducted in Isfahan prevalence was 18.7% (8).

There are various studies have been done on factors that affecting developmental delay in children (9-10). In the study of Ryan-Krause et al., low maternal age at birth was considered an important factor affecting child development (11). Hediger et al. reported that low levels of parental education, age of the mother, low birth weight, and preterm labor are significantly associated with delayed development (12). In some studies conducted in Iran, the factors such as diabetes, hypertension, pregnancy, familial marriage, history of abortion, high risk pregnancy, and low birth weight have influenced in creating developmental delay of children (13-15).

Investigation of the prevalence of developmental delay and its influencing

factors in children from 4 to 12 months years old in Pakdasht County was the aim of this study.

Methods and Materials

This cross-sectional study was carried out among 210 children from 4 to 12 months years old in Pakdasht County in 2014. Inclusion criteria included: children from 4 to 12 months who had not congenital anomalies and their parents were consent to participate in the study. For collecting the survey data, the questionnaires of demographic and Ages and stages questionnaire (ASQ) have been used.

The demographic question included gender, child nutrition, number of children, parental education and occupation and family income. ASQ questionnaire has been used in many studies.

This test consisted of 19 questionnaires at ages 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 27, 30, 33, 36, 42, 48, 54, and 60 months. There were 30 questions for each age group that consisted of six questions for each of the five areas such as gross motor skills, fine motor skills, problem-solving skills, communication skills and personal-social skills. Three options were available for each of the 30 questions: "yes" for when the baby was fully able to perform the activity in the question, "not yet" for the activities in question that have never been done, and "sometimes" for the ability to perform the activity in some cases. The answer "yes" was awarded 10 points, the answer "sometimes" was awarded 5 points, and the answer "no" with zero points. After completing the questionnaires, the scores were compared with predetermined cut-off points based on standardization. Adaptation and standardization of this questionnaire in Iran was performed from the years 2002 to 2007 under the supervision of the Iranian Ministry of Health and Medical Education, United Nations Children's Fund,

International Council for the Education of Exceptional Children, Office of Population and Family Health, and Institute for Exceptional Children. The validity and reliability of the questionnaire have been established as 0.84 and 0.94, respectively, and its ability to determine developmental disorders is reported as .96% (16).

It has been mentioned to the parents that the given information from their children will be confidential. In addition, the participation in the study was voluntary or in another word, no force was applied on the children to take part in the study. After

completing the questionnaire data were analyzed with descriptive statistics, χ^2 test and independent t-test by SPSS-18 software.

Results

The study participants in the study consisted 97 girl (46.2%) and 113 boy (53.8%). The average age of children was 7.96 ± 2.83 months. The frequency and the Percent of each age group are shown in (Table.1).

Table 1: Frequency and the percent of study population based on gender and age

Age groups	Gender	Frequency	Percent
4 months	boy	25	58.1
	girl	18	41.9
6 months	boy	21	50.0
	girl	21	50.0
8 months	boy	24	57.1
	girl	18	42.9
10 months	boy	19	45.2
	girl	23	54.8
12 months	boy	24	58.5
	girl	17	41.5
Total	boy	113	53.8
	girl	97	46.2

Frequency of demographic characteristics of children such as mother's occupation, mother's age, and mother's education,

number of children, child nutrition, and place of living and familial marriage reported in (Table.2).

Table 2: Frequency and percent of demographic characteristics of study population

Variables		Frequency	Percent
Occupation of mother	Housekeeper	203	96.7
	Employed	7	3.3
Age of mother	Less than 18 years	6	2.9
	18 to 39 years	198	94.3
	More than 39 years	6	2.9
Education of mother	Illiterate	10	4.8
	Diploma and Under diploma	105	50.0
	Diploma and above	95	45.2
Familial marriage	Yes	70	33.3
	No	140	66.7
Number of children	1	113	53.8
	2	58	27.6
	3 and more	39	18.6
Child nutrition	Exclusive Breastfeeding	152	72.4
	Breastfeeding with bottle milk	11	5.2
	Bottle milk	47	22.4
Place of living	City	145	69
	Village	65	31

The highest prevalence of developmental delay was in the personal–social skills (8.6%) and the lowest prevalence was in the Communication skills (3.8%). Mean and standard deviation of ASQ is showed in (Table.3).

Statistical analysis showed that the domain of communication skills has a significant correlation with the mother's educational ($P = 0.04$) and child nutrition ($P = 0.02$).

Also gross motor skills correlate with child age ($P = 0.001$) and child nutrition ($P = 0.005$).

The domain of fine motor skills has a significant relationship with the child age ($P = 0.000$), mother's educational ($P = 0.01$), mother's occupation ($P = 0.006$) and child nutrition ($P = 0.000$). Problem-solving skills has a statistically significant relationship with child age ($P = 0.001$), mother's education ($P = 0.02$) and child nutrition ($P = 0.000$). Personal–social skills correlate with mother's education ($P = 0.000$).

Table 3: Mean and standard deviation of ASQ Domains based on age group

Age group	Gross skills		Motor skills		Fine skills		Motor skills		Problem-solving skills		Personal–social skills		Communication skills	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
4 months	50.35	10.93	49.88	12.12	52.21	9.95	53.26	9.05	53.60	7.74				
6 months	45.71	13:00	53.93	7.37	54.64	7.27	50.60	10.72	50.83	9.74				
8 months	55.00	8.337	57.98	6.72	58.10	3.81	54.88	8.65	54.52	8.89				
10 months	53.57	6.922	57.74	4.30	57.26	5.96	53.21	6.51	51.90	8.33				
12 months	52.80	12.50	55.73	6.28	54.02	8.15	52.44	9.56	51.22	9.06				

Discussion

According to the importance of children growing at their first year of life, the developmental delay in children under one year old was studied by using Ages and Stages questionnaire.

The results showed that the highest rate of developmental delay was 8.3%. Also in the studies of AliAkbari and Shahshahani prevalence of developmental delay was 18 and 18.7 percent, respectively (7-8).

There were significant relations between developmental delay and some of the factors mentioned in this study such as child nutrition and the mother's education level.

Quinn et al. conducted a study with the aim of the effect of breastfeeding on child development; they showed the strong and positive relationship between duration of breastfeeding and cognitive development of children (17).

World Health Organization (WHO) recommends breast milk as the best source of nutrition during infancy, and emphasizes the importance of child growth and development (18).

In this study, there was a significant relationship between mothers' educational level and developmental delay in children which confirmed the Hediger's study that showed the low level of education of

parents led to the developmental delay in children (12).

Any significant statistical association has not been observed between developmental delay and other variables that were examined in this study, such as the sex of the child, familial marriage, mother's age, number of children and children living place.

AliAkbari et al. showed in their study that the sex of child (male) had relationship with developmental delay (8). Also Kerstjens et al. claimed that developmental delay in boys was 1.5 to 4.7 times more often than girl's (19).

Although some studies showed more developmental disorder in boys, gender was not identified as the cause of developmental delay in Piek's study (20).

Unlike our study, AliAkbari et al. demonstrated that familial marriage was related with developmental delay in children. In their study, the developmental delays of children whose parents had consanguinity were 8.1 times more likely than other children (8).

According to the findings, further studies are necessary to understand the factors influencing children's developmental delays.

Conflict of Interest: None

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