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STUDY ON GROWTH INDICATORS OF CHILDREN UNDER ONE-YEAR-OLD ACCORDING TO NCHS CRITERION IN SOUTHERN IRAN

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ABSTRACT

Introduction: understanding the growth indicators of the children under one-year-old in the small towns and villages and comparing them with large cities, we can recognize the growth disorders and their patterns and do specific planning if required. Therefore, the current study aimed at determination of the growth indicators in children less than one-year-old in 2012. Method: the current study is a cross-sectional-analytical study on 313 children under 1 year who were selected with census method in 2013 from the towns Ahl and Eshkanan and their surrounding villages. The data collection instrument was a questionnaire whose reliability and validity was approved by 6 experts. Also the CVR; /72 and CVI:/73 were calculated and its reliability was calculated as 0.97 by the Kappa coefficient on 10 cases. The data were analyzed and interpreted using SPSS16. Findings: there were no significant relationships between the father and mother age, education, income, number of children, and successful deliveries and the criteria measured in the given period of time using Chi Square and Spearman tests ($p>0.05$). Although there were no significant difference between the girls and boys in body weight, but the difference between height and head circumference was significant ($p<0.05$). Conclusion: The result of the current study affirms the propriety of children growth indicators until they are 6 months old and after this time, the children undergo deviations from the growth percentile. The factors affecting this phenomenon must be studied and analyzed in a prospective study.

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Introduction

Due to its small size and high density of sensory nerves, cornea is one of the most sensitive tissues of the body. The majority of cornea sensory nerves are pain nerves, so that it is said that the density of its pain receptors is 300-600 times of that of the skin and 20-40 times of that of the dental pulp [1]. Pain nerves of the cornea are poly-modal that respond to thermal, mechanical, and or chemical stimuli [2]. Corneal pain is caused by most problems of cornea such as corneal ulcers, corneal abrasion, corneal dryness, after eye surgery, or excessive use of contact lenses [3]. Since cornea sensory Growth is a biological process whose disorder endangers the health of individuals and society. Children are also a vulnerable part of the population in this regard since they have accounted for 12-15% of the population of each country and account for 15-20% of mortality and morbidity with a high rate of pathogenesis. Therefore, maintaining and improving children's health through the assessment of their growth is very important [1, 2]. Therefore, maintaining and improving children's health through the assessment of their growth is very important [3].

Children growth assessment is indicative of the general health status and nutritional status as well as health services in each country. Children growth disorder means the drop in the indices as (height-weight- head circumference) and frequent evaluation and comparison with national standards can prevent any disasters in the future. There are several indicators to compare a child's growth, but the most important are weight based age, height based age, and head circumference based on

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age. These indicators are used as standard at the national level. Therefore, with the indicators of a region available and comparing them with those of another region, their relative status can be measured [4]. There are several methods for measuring the children growth indicators such as percentage of media, percentile and Z-score.

After introduction of growth chart by Prof. Bodwith, the chairman of Harvard University, in 1877, it is used worldwide based on different types of measurement methods, however the WHO decided to integrate a reference growth chart in the world. The World Health Organization prepared some charts in the America's National Center for Health Statistics using the available statistics and accepted it in 1967 as an international standard [3-5]. In Iran, also, the percentile is using for measuring the growth indicator and the percentiles above 97 and fewer than three are known as the abnormal cut-off. In addition to the location of the growth indicators, the direction can be also vital to determine whether it is favorable or unfavorable [6].

What is important in the growth charts is the severe deviation (reduction of more than two big percentile lines) in the growth percentile (Failure FTT) [2, 7]. Several factors affect the infant's growth such as Genetics, nutrition, growth hormones, birth weight, health and environment however these factors alongside with the factors such as the samples' economic and social status for softening the desired instrument, the prevailing nutrition by powdered milk for the samples, differences in sample size at different ages, and aging of the used calculation methods have been able to undermine the reliability of the graph to a large extent, still numerous studies have been conducted in In countries such as Jordan, Saudi Arabia, Dominican, China and Pakistan, using this instrument [8-10].

Services to promote the children growth in Iran include frequent and regular measurement of growth per month in the first year of life, recording the data on growth charts, evaluating and identifying the problems, providing advisory services, and motivating the caregivers and parents [6].

The studies on growth started in 1951 and developed until 1961. Numerous studies have been conducted from 1971 to 2013 in several provinces of the country such as Fars, Tehran, Semnan, Kurdistan, and Kerman which all, just like the similar studies in other countries, indicate the differences in the rate and direction regarding the gender, the family social-economic status, number of household members and local genetics, and emphasize the use of reference growth chart specific to each region [11-13]. Therefore, the current study aimed at evaluation of the children growth indicators for children under 1-year-old in the urban and rural zones of Eshkanan.

Method

The current study is a cross-sectional-analytical study conducted as a consensus on 313 children less than 1-year-old in the Ahl Eshkanan town and its villages in a 1-year period, in 2012. The inclusion criteria were: Complete health records, being full term, a mother and baby are not experiencing obstetric complications, vaccination is complete, pediatrician examined the child and his health is confirmed. The data were extracted from the children health records from birth to 12 months. The data collection instrument was a researcher-made questionnaire whose reliability and validity was approved by 6 experts. Also the CVR; /72 and CVI:/73 were calculated and its reliability was calculated as 0.97 by the Kappa coefficient on 10 cases. Three questioners received the necessary training and collected the data under supervision of the executives. Scale such as kilograms and centimeters were used as the international standard for reporting. The data were analyzed and interpreted using SPSS16.

Findings

Among the 313 children, 157 were boys and 156 were girls. The mean height, weight, and head circumference of the boys during all measurement phases was higher than those of the girls (table 1). By the aid of Chi Square and Spearman tests, it was revealed there were no significant relationships between the father and mother age, education, income, number of children, and successful deliveries and the criteria measured in the given period of time using Chi Square and Spearman tests ($p>0.05$). Although there were no significant difference between the girls and boys in body weight, but the difference between height and head circumference was significant ($p<0.05$).

Table 1: the mean and standard deviation of the children growth indicators

	month	Boys	Girls	Total	T-Test (P value)
Weight	On birth	.43±3.39	.42±3.19	.425±3.29	0.083
	1	.64±4.39	.52±4.01	.58±4.20	0.099
	3	.79±5.96	.63±5.42	.71±5.69	0.098
	6	.75±7.50	.73±7.02	.74±7.26	0.098
	9	.90±8.43	.90±8.02	.90±8.22	0.078
	12	.91±9.06	.97±8.62	.94±8.84	0.074
Height	On birth	3.23±49.55	2.87±49.02	3.05±49.28	0.067
	1	2.88±52.68	3.12±51.97	3.00±52.32	*0.045
	3	3.20±58.20	3.38±56.78	3.29±57.49	*0.043
	6	3.20±64.37	4.16±62.80	3.68±63.58	*0.034

	9	4.16±68.54	4.58±67.09	4.37±67.81	*0.033
	12	4.69±72.07	6.44±70.69	5.56±71.38	*0.028
Head circumference	On birth	2.11±36.55	1.22±35.09	1.66±35.82	*0.034
	1	1.47±37.60	2.28±36.92	1.87±37.26	*0.028
	3	4.08±39.93	1.15±38.97	2.61±39.45	*0.036
	6	1.26±43.04	1.26±41.90	1.26±42.47	*0.012
	9	1.28±44.99	1.25±43.77	1.26±44.38	*0.011
	12	1.22±46.21	6.60±43.96	3.91±45.08	*0.001

*significant in ($p<0.05$) level

Discussion:

Regarding the mean weight of the infants on birth, in 3-month, 6-month, 9-month, and 12-month and comparing them with the standard growth chart, it can be concluded that for both girls and boys' groups, 89% of the measurement indicators placed between 50-75% percentile (normal range) and a deviation was witnessed during the following time in 35% of the cases after 6 month.

The mean height of the infants during the excessive measurements turned out proper in comparison with the standard growth chart and it can be concluded that for both girls and boys' groups, 91% of the measurement indicators placed between 50-75% percentile (normal range) and a deviation was witnessed during the following time in 38% of the cases after 6 month.

The results of the current study are in line with those of Montazarifar in Zahedan, Iran and Heydari et al, Jahrom City. It can be if a great importance, since teaching how to prepare and deliver food aid to children using effective methods of teaching, with regard to identifying key people as well as paying more attention to eating habits, beliefs and culture of each society can be useful. However, there were no significant relationships between the education and children growth in the current study, the other studies emphasize this relationship. Therefore, the people education level and confronting illiteracy can be another important factor in promoting the children growth [11, 13].

The mean measured weight of the girls was lower than boys; however, this difference was not significant. According to several references, this also seems normal regarding the gender and genetic characteristics [14].

In terms of head circumference during the measurement period and comparing those with the standard growth chart, it can be concluded that the measurement indicators are placed between 50-75% percentiles (normal range) and there are no deviations for any of the cases. It can be concluded from the above mentioned that both girls and boys are in the normal range which is indicative of the propriety of the cares during the pregnancy and breastfeeding [15]. However, the deviations witnessed in the growth indicators, especially for the height indicator must be considered by the policy makers. Since the evaluated indicators are in proper level on birth, the studies that expressed the pregnancy caregiving in the country and Fars province as good or very good, can be noted [16-18].

Regarding the above mentioned information, it seems the children growth indicators, especially in the first 6-month, are proper.

Among the limitations, the incomplete records of some samples and the families' migration (which were excluded from the study) as well as the geographical dispersion of the studied region can be noted which prevented a prospective study regarding the time and budget limitations.

Conclusion

The findings of the current study confirms the propriety of the children growth indicators until being 6-month and after this period, the infants undergo deviations from the normal growth percentiles which should be investigated in an analytical and prospective study and the effective factors must be found.

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