RELATIONSHIP BETWEEN FAMILY LIFE –STYLE AND NUTRITIONAL STATUS AMONG KINDERGARTEN CHILDREN IN NINEVAH GOVERNORATE

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Abstract

A descriptive study was carried out to determine relationship between family life-style and nutritional status among kindergarten children in Nineveh Governorate for the period 25th December/ 2006 to 29th March /2007. The sample of the study consisted of (450) child. The data were collected by using questionnaire and checking the BMI (Wt/Ht^2). The result of the study indicated that there are some significant differences between life-style and variables undertaken in the study. There are also highly significant differences between BMI and the variables. Consequently, the study concluded that family life-style reflects obviously on the BMI of the children. The study recommends that parents and families may pay attention to their life-style and make healthy modifications.

Introduction

The family is the basic unit within which health behavior including health values, health habits, and health risk perceptions are developed, organized, and performed. Families maintain major responsibility for determining what food is purchased and prepared [1]. Inequalities in health, for example between social groups, are partly explained by deference's in life-style and living conditions, and life-style can vary between groups depending on economic circumstances [2]. Good nutrition is essential for achieving and preserving health while helping the body to protect itself from infection. Because good nutrition can contribute to a person's well-being at all stages of illness and may prolong life, it is an important part of holistic palliative care [3]. The study aims to find out the relationship between family life-style and the nutritional status among kindergarten children in Nineveh Governorate.

Methodology

Descriptive design was carried out through the period from 25th December 2006 to 29th March 2007. All private kindergarten children inside Mosul city (150 child) were purposively included in the study. Equal number of kindergarten children was selected randomly by stratified technique (Number) from kindergartens outside Mosul city (150 child), and another equal number was selected from governmental kindergartens inside Mosul city (150 child); they were gathered through:

A. Special dichotomous questionnaire structured by the researchers. It was completed by the children's parents (Sample of the study).

B. Measuring weight, height and age of the children and compared them with the International Centiles depended by WHO; CDC; 2000 [4].

The researchers exposed the instrument to a committee of specialized experts in different related fields to ensure the validity of the observational tool, and for testing the reliability of the checklist through it's internal consistency ten children were involved in a pilot study from Al-Fardouse kindergarten, and by Cronbach Coefficient Correlation to compute the reliability, it was r= (0.861).

Number, Frequency, Mean, Standard Deviation, Analysis of Variance (ANOVA), Fisher Freeman Halton Test and Z-test were used to analyze the data.

Results

Table (1) Socio-demographic characteristics of the studied sample.

Variables	Urban				Rural	
	Governmental		Private			
	No.	%	No.	%	No.	%
Sex						
Male	79	52.7	93	62.0	83	55.3
Female	71	47.3	57	38.0	67	44.7
Maternal age (year)						
15-25	18	12.0	15	10.0	13	8.7
26-35	86	57.3	87	58.0	83	55.3
36-45	44	29.3	46	30.7	49	32.7
46-55	2	1.3	2	1.3	5	3.3
Child order						
1	49	32.7	62	41.3	31	20.7
2-4	71	47.3	62	41.3	66	44.0
>4	30	20.0	26	17.4	53	35.3
Later child spacing (year)						
<1	54	36.0	52	34.7	49	32.7
1-2	55	36.7	66	44.0	67	44.7
>2	41	27.3	32	21.3	34	22.7
Socio-economic status						
Low	47	31.3	28	18.7	70	46.7
Moderate	66	44.0	63	42.0	68	45.3
High	37	24.7	59	39.3	12	8.0

The table (1) shows that the percentage of males is higher than females in all types of kindergartens. Maternal ages ranged between 15-55 years with a highest percentage in the children with mother ages of 26-35 years in the three types of kindergarten. Child order of 2-4 represents the highest percentage in the governmental urban and rural kindergartens. Additionally, the children of 1-2 year latter brother spacing constituted the highest percentage in the three types of kindergartens. For socio-economic status, the highest percentage of children in the urban kindergarten has moderate status, while the low socio-economic is the highest in rural kindergartens.

Table (2) Relationship between sex and life-style parameters

Sex / Parameters	Male (n=255)		Female (n=195)		p-value
	Mean	SD	Mean	SD	
Child feed	19.63	2.65	19.82	2.38	0.574 (NS)
Disease symptoms	13.52	1.69	13.41	1.89	0.408 (NS)
Child activity	7.43	1.49	7.08	1.42	0.010
Child cleanness	8.22	1.50	8.45	1.54	0.044

NS = Not significant, according to Z-test

df= 448   Z= 1.96

Table (2) shows significant relationship between child sex and each of activity and cleanness at p= 0.01 and p<0.05, respectively.

Table (3) Relationship between maternal age and life-style parameters

Maternal age (yr) Parameters	15-25 (n=46)		26-35 (n=256)		36-45 (n=139)		46-55 (n=9)		p-value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Child feed	20.30	2.78	19.63	2.46	19.71	2.59	19.22	2.64	0.372 (NS)
Disease symptoms	13.54	1.81	13.52	1.65	13.37	2.00	13.11	1.76	0.769 (NS)
Child activity	7.39	1.50	7.26	1.52	7.30	1.35	7.00	1.66	0.878 (NS)
Child cleanness	8.80	1.22	8.32	1.49	8.12	1.64	8.78	1.56	0.046

NS = Not significant, according to ANOVA test

For the relationship between maternal age and life style parameters, table (3) shows non-significant relationships except with child cleanness at p<0.05.

Table (4) Relationship between child order and life-style parameters

Child order Parameters	1 (n=142)		2-4 (n=199)		>4 (n=109)		p-value
	Mean	SD	Mean	SD	Mean	SD	
Child feed	19.59	2.69	20.04	2.4	19.28	2.52	0.032
Disease symptoms	13.1	2.1	13.65	1.49	13.61	1.76	0.011
Child activity	7.25	1.58	7.33	1.45	7.23	1.37	0.799 (NS)
Child cleanness	8.45	1.4	8.30	1.56	8.18	1.61	0.375 (NS)

NS = Not significant, according to ANOVA test

Table (4) shows significant relationship between child order and each of feed and disease symptoms at p<0.05 and p<0.01 respectively.

Table (5) Relationship between later child spacing and life-style parameters.

Child spacing Parameters	<1 (n=155)		1-2 (n=188)		>2 (n=107)		p-value
	Mean	SD	Mean	SD	Mean	SD	
Child feed	19.86	2.7	19.72	2.37	19.49	2.59	0.506 (NS)
Disease symptoms	13.43	1.94	13.45	1.78	13.55	1.54	0.856 (NS)
Child activity	7.48	1.47	7.3	1.5	6.96	1.36	0.020
Child cleanness	8.03	1.51	8.36	1.63	8.66	1.27	0.004

NS = Not significant, according to ANOVA test

The effect of spacing with the later child, has significant effect on child activity and child cleanness at p<0.05 and p<0.01 respectively (table 5).

Table (6) Relationship between socio-economic level and life-style parameters.

Socio-economic Parameters	Low (n=145)		Moderate (n=197)		High (n=108)		p-value
	Mean	SD	Mean	SD	Mean	SD	
Child feed	19.19	2.63	19.87	2.51	20.12	2.38	0.008
Disease symptoms	13.22	2.12	13.46	1.76	13.82	1.17	0.028
Child activity	6.90	1.48	7.44	1.47	7.51	1.35	0.001
Child cleanness	8.30	1.63	8.59	1.42	7.85	1.46	0.001

NS = Not significant, according to ANOVA test

Table (6) shows significant relationship between socio-economic levels and all studied life style parameters at p<0.01 for feed, p<0.05 for disease symptoms, p=0.001 for child activity and p=0.001 for child cleanness.

Table (7) Relationship between BMI and selected variables.

BMI classification / Characteristics	Under weight (n=27)		Normal (n=182)		Over weight (n=91)		Obese (n=150)		p-value
	No.	%	No.	%	No.	%	No.	%	
Sex									
Male	13	5.1	83	32.5	56	22.0	103	40.4	<0.001
Female	14	7.2	99	50.8	35	17.9	47	24.1	
Maternal age (year)									
15-25	3	6.5	17	37.0	6	13.0	20	43.5	<0.001
26-35	14	5.5	106	41.4	54	21.1	82	32.0	
36-45	10	7.2	53	38.1	29	20.9	47	33.8	
46-55	0	0.0	6	66.7	2	22.2	1	11.1	
Child order									
1	5	3.5	54	38.0	27	19.0	56	39.4	0.029
2-4	9	4.5	87	43.7	46	23.1	57	28.6	
>4	13	11.9	41	37.6	18	16.5	37	33.9	
Later spacing (year)									
<1	9	5.8	69	44.5	26	16.8	51	32.9	3.3 (NS)
1-2	11	5.9	73	38.8	42	22.3	62	33.0	
>2	7	6.5	40	37.4	23	21.5	37	34.6	
Socio-economic status									
Low	11	7.6	63	43.4	28	19.3	43	29.7	2.824 (NS)
Moderate	11	5.6	79	40.1	40	20.3	67	34.0	

| High | 5 | 4.6 | 40 | 37.0 | 23 | 21.3 | 40 | 37.0 | |

NS = Not significant using c^2 test or Fisher Freeman Halton test
df = 3 c^2 =19.544 , df = 9 c^2 = 7.131 , df = 6 c^2 = 14.087

Table (7) shows the relationships between BMI and many selected variables for the children and mothers. A significant relationship was recorded among BMI categories and many variables at different significancy level "Sex at $p<0.001$;Maternal age at $p<0.001$ & Child order at $p<0.05$", while the other variables hadn't any significant relation-ship " Later spacing and Socio-economic status".

Table (8) Relationship between child age and life-style parameters according to kindergarten type.

Child age (year) Parameters	4-4.5 (n=148)		4.6-5 (n=122)		5.1-5.6 (n=122)		5.7-6 (n=58)		p-value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Child feed	19.96	2.64	19.49	2.59	19.66	2.31	19.66	2.63	0.496 (NS)
Disease symptoms	13.91	1.39	13.34	1.93	13.25	2.01	13.07	1.64	0.002
Child activity	7.05	1.4	7.16	1.54	7.46	1.43	7.74	1.45	0.007
Child cleanness	8.27	1.47	8.19	1.63	8.44	1.6	8.45	1.25	0.52 (NS)

NS = Not significant, according to ANOVA test

For the age of children in the kindergarten, table (3) shows significant relationship at $p<0.01$ between child age and each of disease symptoms and child activity, while the relationship with feed and child cleanness were not significant.

Table (9) Relationship between weight at birth and life-style parameters according to kindergarten type.

Wt. at birth (kg) Parameters	<2.5 (n=62)		2.5-3.5 (n=329)		>3.5 (n=59)		p-value
	Mean	SD	Mean	SD	Mean	SD	
Child feed	19.45	2.53	19.72	2.52	19.95	2.68	0.558 (NS)
Disease symptoms	13.9	1.61	13.48	1.81	12.93	1.67	0.010
Child activity	7.03	1.28	7.24	1.51	7.76	1.34	0.015
Child cleanness	8.39	1.66	8.32	1.48	8.24	1.61	0.864 (NS)

NS = Not significant, according to ANOVA test

Weight at birth of the children in the studied kindergarten has significant relationship with disease symptoms and child activity at $p=0.01$ and $p<0.05$, respectively (table 7). On the other hand, the relationships with feed and child cleanness was not significant ($p>0.05$).

Discussion

Many variables (child sex, maternal age, child order in the family, child spacing, eight, socio-economic status) investigated universally with life-style and also with the child BMI, while the socio-economic status variable itself composed of interrelated or overlapping variables, Occupation of father and of mother, Level of education for father and mother, Crowding index, Property [4], which consider mainly the cornerstone variable in any family life-style. The demographic characteristics of the study sample are demonstrated in Table (1).

The life-style in the study is categorized into four domains "child nutrition since birth till nowadays, child activity, presence or absence of such illnesses symptoms, and some cleanness. Significance differences are identified in the life-style domains in relation with variables as: Sex as activity (p.=0.01) and cleanness (p.<0.05)- Table (1); Maternal age as cleanness (p.= 0.05)- Table (3); Child order as feeding (p.<0.05) and disease symptoms (p.= 0.01)- Table (4); Child spacing as activity (p.<0.05) and cleanness (p.<0.005)- Table (5); Socio-economic status as all domains (feeding, p.<0.001 disease symptoms, p.<0.05; activity, p.= 0.001 and cleanness, p.= 0.001); Table (6).

Growth is generally steady and slow during the preschool and school-age years, but it can be erratic in individual children, with periods of no growth followed by growth spurts. Periods of slow growth and poor appetite can cause anxiety and such disease symptoms, leading to meal time struggles [27].

A balanced diet gives children the nutrition necessary for optimal growth and development and the energy for the exploration they want to do. Through eating right and playing a lot, preschoolers can maintain a healthy weight and stay energized as they get ready for the next big step in their young lives: kindergarten [21].

Proper nutrition and opportunities to play and be physically active are critical to ensure that the child grows properly and adopts healthy behaviors for lifelong health[24].

The position of a child in the family, whether a first born child, a middle child, the (baby) only child, or a one within a large family, will have some bearing on his or her growth and development [23].

Interventions that promote healthy eating and physical activity behaviors during childhood may not only prevent some of the leading causes of illness and death but also decrease direct health care costs and improve quality of life [28].

The problems obviously vary according to age and include breast feeding, weaning, nutrition in the following months and years with changes in life and feeding habits relating to its frequency, or lack of, in the home and then kindergarten [25].

Physical activity is an essential component of any strategy that aims to seriously address the problems of sedentary living and obesity among children and adults [26].

Poor diet and physical inactivity are major contributors to obesity, and the early childhood years are an important period for developing healthy food preferences and motor skills [22].

This can be perhaps due to many reasons; Less perception and awareness of this age, High activity such as in rural residence and sedentary life in urban residence, Disunion between males and females in nurturing, care, also nutrition as our customs and tradition imposed, Deficient knowledge and unqualified practices due to many mothers are of early motherhood expertise, also fatigue of the others of advanced age, Higher child order among family children, Less child spacing period, Abnormal birth weight of the child; decreasing or increasing, and Deviation of many families from the mediate level of socioeconomic status; low or high.

These factors anywhere present they can had a tremendous consequences on the family and on child especially which can be later reflected on his behavior, health, care, follow-up and. A time of heightened vulnerability when disease patterns, interacting with inadequacies of care, can seriously undermine that foundation, often resulting in compromised growth and development, and even death, also Physical activity is an essential component of any strategy that aims to seriously address the problems of sedentary living and obesity among children and adults [5].

In adults, Body Mass Index "BMI" is widely, used as a measure of normal weight (BMI < 25 kg/m^2), overweight (BMI=25 – 30 kg/m^2) and obesity (BMI ≥ 30 kg/m^2) [6].

In children, BMI changes substantially with age, and it is shown that at birth the median BMI is around 13 kg/m^2, at age of one year it is 17 kg/m^2 and it decreases to 15.5 kg/m^2 at age 6 yrs., and then increased to 21 kg/m^2 at age 20 yrs [7].

The problems obviously vary according to age and include breast feeding, weaning, nutrition in the following months and years with changes in life and feeding habits relating to its frequency, or lack of, in the home and then kindergarten [8].

Grima and Genebo (2002) founds that children's nutritional status is also more sensitive to factors such as feeding, weaning, practices, care and exposure to infection at specific ages. Accumulative indicator of growth retardation (Height-for-Age) in children is positively associated with age [29].

Local and regional studies in Ethiopia have also shown an increase in malnutrition with increase in age of the child [30].

Middle childhood is a time of increased mobility and independence for children. It is during this stage that children are taught and expected to behave according to customary gender roles [31].

Mei and others, (1998) said that the prevalence of overweight is higher for girls compared with boys. Also, they observed a parallel increase in the prevalence of overweight between boys and girls among the low-income preschoolers, whereas data from NHANES showed a greater, increase for girls (2.8 percentage point at 2 to 3 years, and 5.0 percentage point at 4 to 5 years than for boys,1.0 percentage point decrease at 2 to 3 years and only a 0.6 percentage point increase at 4 to 5 years) [9]. Such studies found that time spent outdoors resulted in higher activity also the males are more active than females [10]. Table (7) shows that there is assignificant differences at (P.<0.001) among Body Mass Index and Sex of the children.

The care of the child is the responsibility mainly of the mother, so the mother at it's early motherhood has less knowledge, poor practices of caring, nurturing, feeding and preventing of her child from harms, on the other hand mothers at later age or advanced motherhood period are less able to care and follow their children. Table (7) shows that there is assignificant differences at (P.<0.001) among Body Mass Index and Maternal age.

The position of a child in the family, whether a first born child, a middle child, the (baby) only child, or a one within a large family, will have some bearing on his or her growth and development [11]. Recent studies have started to indicate adverse effects on later childhood development in large families, especially where socio-economic conditions were especially adverse [12,13]. Birth ordinal is that parents give less attention to order children when they give birth to a new child who needs much attention and care [14]. Jeyasselan (1997) said that higher birth order (5+) is positively associated with child malnutrition [15]. Table (7) shows that there is assignificant differences at (P.<0.05) among Body Mass Index and child order in the family.

Mozumder et. al.,(2000) indicated the potential importance of longer birth intervals in reducing malnutrition in children, also showed that the proportion of children who were under-weight-for-age decreased with the increase in the length of the subsequent birth interval [16]. Girma and Genebo,(2002) said that higher birth spacing is also likely to improve child nutrition, since the mother gets enough time for proper child care and feeding. Studies in developing countries showed that children born after a short birth interval (less than 24 months) have higher levels of stunting in most countries. Preceding birth is also another important demographic variable affecting nutritional status of children. The significant and higher risk of stunting among children of lower preceding birth interval could be due to uninterrupted pregnancy

and breast feeding, since this drains women nutritional resources. Close spacing may also have a health effect on the pervious child, who may be prematurely weaned if the mother becomes pregnant again too early [17]. Table (7) shows that there is no a significant differences among Body Mass Index and Later spacing of the child.

Socio-economic status (SES) is determined by age, sex, education, occupation and related social position and income, marital status and living conditions. Health status declines with each decline in SES. According to most literature sources life-style and risk behavior have a close relationship to SES. Life-style is determined by leisure time activities, social contacts. Some studies indicate that healthy life-style is determined by educational level, social position and culture values of the childhood family, rather than being viewed in more individualistic terms in relation to behavioral patterns [18]. It is found that women's educational level and status within the household affects the nutritional status of children. Both adults and children from lower economic groups are found to be less physically active than those of a higher socio-economic status [19]. Socio-economic conditions and life-style factors have been found to be related to health, which are an established predictor of morbidity and mortality [13]. In most countries, lower socio-economic groups have a significant lower prevalence compared to the middle and high socio-economic groups as well as environmental and other factors which seem to play a considerable influencing role [20]. Table (9) shows that there is no a significant differences among Body Mass Index and Socio-Economic Status of the family.

Conclusions

On the basis of the objectives of the present study and the results of data analysis, the following conclusions have been inferred; Most of the life-style domains have significant relation with the variables undertaken in the study; Effect of family life-style is reflected obviously on the BMI of the children; Obese is a nutritional problem among this age period; Significant differences were identified in relation between BMI of the whole children and many variables (child age, maternal age, birth weight and child order in the family).

Recommendations

According to the results in the study, the researcher puts forward the following recommendations, Enhance family life-style and healthy modification may be consolidated financially and socially; The families may plan their parity; Child spacing may be increased at least for 2 years and more; Socio-economic status of the families may be enhance; In-depth researches regarding the nutritional problems especially obesity among preschooler children may be carried out.

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