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Effect of Mothers Nutritional Knowledge and Attitudes on Omani Children's Dietary Intake

Ali Al-Shookri,[1] Layla Al-Shukaily,[1] Fouad Hassan,[2] Sadeq Al-Sheraji,[3] Saif Al-Tobi[4]

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Abstract

Objectives: The study investigates the dietary intakes of Omani preschoolers and associations with both socio-demographic characteristics and the mother's nutritional knowledge and attitudes.

Methods: A sample of 154 parents of preschoolers completed a questionnaire including socio-demographic characteristics, a food-frequency questionnaire to assess children's food intake, nutritional knowledge and attitudes towards healthy eating.

Results: The results showed a lower dietary adequacy of children's food intake in mothers with low educational levels, high-ranked occupation, and lower levels of both nutritional knowledge and food related health attitudes. The highest food intake and healthy eating attitude scores were found in children of mothers with high education level and mother without a job. The association of the dietary adequacy with socio-demographic background can help the Omani healthcare decision makers to develop better-tailored nutrition interventions which are more suitable for the Omani community.

Conclusion: The results from this study of mothers' nutritional knowledge and attitudes support the inclusion of knowledge and attitudes in dietary interventions.

Keywords: Dietary Intake; Nutritional knowledge; Mothers Nutritional Attitudes.

Introduction

Healthy eating habits in children are important in preventing under nutrition, growth retardation, and acute child nutritional problems. In addition, it is important to preventing chronic, long term health problems such as; obesity, coronary heart disease, type-2 diabetes, and stroke.[1]

As with many developing countries, Oman is facing a transition in the childhood nutritional status. Statistics show a decrease in the prevalence of malnutrition with the coexistence of overweight children in Oman. According to Oman's Ministry of Health, the prevalence of underweight preschool children in Oman was found to be 15% in 2007, and decreased to 9.5% and 8.6% in 2008 and 2009 respectively.[2] Another study examined the body weight of Omani children at different age groups and found that obese and overweight children increased from 7.3% to 16% and 23.3% at 6-7, 12-13, and 15-16 years of age respectively.[3]

The Ministry of health in Oman played a great role in expanding programs to promote healthy eating habits among children in all healthcare centers in Oman. Programs of nutrition within the ministry of health in Oman are available in all hospitals and health centers for all children living in Oman. Healthcare in Oman is subsidized by the government. However, nutritional interventions require identification of nutritional problems, groups at increased risk, and influencing factors. Nutritional programs are based on studies concerning determinants of the intake of food items.

Food consumption behavior however, is complex and focusing on single food or nutrients does not take into account the complexity of food-consumption patterns and their multidimensional nature.[4,5] Studies on the determinants of food-consumption patterns in children are important; however, more insight into correlations with these patterns might help identify specific target groups and determinants for interventions.

The dietary guidelines for preschool children not only include an adequate intake of the main foods such as fruits and vegetables, but also encourage moderation, especially in intakes of nutrient-poor energy-dense foods.[6] The aim of this study is to investigate the dietary intake in Omani preschool children and to investigate the psychosocial correlations that measure the compliance of children with the food-based dietary guidelines.

Methods

The data for this study were collected at Izki in Al-Dhakhylyah region in Oman. The data collection process was carried out from May to August, 2009. All methods and questionnaires were in accordance with the ethical standards and ethical approval for the study was obtained from the Research and Research Ethics

Ali Al-Shookri ✉, Layla Al-Shukaily
Bahla Hospital, Bahla, Sultanate of Oman.
E-mail: Alii072001@yahoo.com

Fouad Hassan
College of Medicine and Health Sciences, Universiti Purta Malaysia, Selangor, Malaysia.

Sadeq Al-Sheraji
Department of Nutrition and Food Science, Ibb University, Ibb, Republic of Yemen.

Saif Al-Tobi
Izki Hospital, Izki, Sultanate of Oman.

Committee in Al-Dhakhylyah region.

Parents of preschool children attending the out patients pediatric clinic in Izki hospital were asked to complete a quantitative food-frequency questionnaire (FFQ), entailing socio-demographic characteristics, and several constructs that could influence their children's diets. Parents who agreed to participate were requested to provide informed consent together with the completed questionnaire. Parents were permitted to call and contact the investigators at anytime for further information.

The questionnaire was developed to investigate the dietary habits of Omani preschool children and the factors that influenced these habits. Questions were based on socio-demographics (gender of the child, birth date, and parents' education and occupation), children's food consumption, and parents' nutritional knowledge and attitudes.

Parents' education was categorized into high (bachelor's degree or more), medium (secondary school certificate) and low (lower than secondary school certificate) levels. Occupation classification was determined according to the International Standard Classification of Occupation (ISCO) as follows; high (managers and professionals); intermediate (technicians, clerks, and service workers); and low (skilled and unskilled workers).[7]

To investigate food consumption in children, parents were asked to complete the FFQ based on the average consumption of food for the previous month. Food items selection process was based on a previously developed 46-item calcium-FFQ for preschoolers.[8] The 46-item calcium-FFQ was modified to include special Omani food items.

For each food group, a score was calculated to estimate the level to which the dietary guideline was met by dividing the estimated intake of a food group (including preferred items and items to be consumed in moderation) with the recommended minimum intake, multiplied by 100, with a maximum possible score of 100.

A short nutritional knowledge questionnaire, focusing on the diet of young children, was used within the frame of the current study. For each questioner statement, parents had to mark one of the following responses: "RIGHT," "I think it is right," "I think it is wrong," "WRONG," and "I do not know." Correct responses were scored +2 if respondents were sure about them, and +1, if not sure ("I think …"); incorrect responses were respectively scored as -2 if they were sure, and -1 if unsure. Missing values and "do not know" responses were scored as zero. A single score for the nutritional knowledge was then created from the summation of the pervious ten scores.

Attitudes towards healthy eating were estimated by the mothers' ratings of eight statements on a five-point scale, ranging from "completely disagree" (-2) to "completely agree" (+2) (scores from -2 for a negative attitude to +2 for a positive attitude). The importance of healthy diet, food price, food taste, convenience, weight control, prevention of disease, general wellbeing, and reading of food labels were the topics addressed.

The FFQ items were aggregated into 24 food groups. The mean values (± SD) were computed for food groups. Analysis of the continuous variables was done by analysis of variance (ANOVA). The level of significance was $p<.05$ for all tests. All evaluations were completed using the Statistical Package for Social Sciences PC+ (version 15.0, 2008, SPSS, Chicago, II).

Results

Of the 220 parents approached for participation, 154 (70%) completed the questionnaire and informed consent. Fifty-two percent of the children were boys. The children were aged between 2 to 5 years (mean age was 3.6±1.0 years). Of the distributed questionnaires, 55.2 were completed by the fathers. Majority of fathers (50%) were aged between 35 and 45 years, while 35% of the fathers were aged between 25 to 35 years and 15% of the fathers were aged above 45 years. Most of the children (81.2%) lived in an extended family (more than one family living in the same house); majority of the families (53%) had five or more members, 26% of the families had four members and 21% of the families had only three members. The study revealed that 4.5% of the mothers and 22.1% of the fathers had at least a bachelor's degree; 59.7% of the mothers and 45.5% of the fathers had a general degree, and 35.7% of the mothers and 32.5% of the fathers had a vocational level education or lower. On the other hand, 7.1% of the mothers were classified into the high-occupation category, 28.6% were in the medium category, 30.5% belonged to the low-level occupation group, and 33.8% were unemployed.

Table 1: Young children's dietary intake: descriptives of food group intake (g/day) (n = 154).

Food Group	Mean	Standard deviation
Water	492.6	6.8
Tea	4.7	1.6
Fruit juice	263.2	4.1
Soup	52.8	3.3
Sugared soft drinks	20.5	2.5
White bread	41.4	2.9
Brown bread	19.8	3.9
Omani bread	33.0	5.0
Rice and Pasta	150.3	5.9
Vegetables	97.4	7.7
Fruits	98.6	10.0
Milk	201.3	11.8
Sweetened milk drinks	148.7	9.0
Yoghurt and Cheese	64.4	6.6
Fish	23.6	3.7
Meat and chicken	60.3	6.9
Sweets, chocolate	27.9	5.9
Biscuits	29.3	5.8

The estimated average energy intake was 1007 (SD = 273) kcal/day. The mean values and standard deviation for each food group are presented in Table 1. The percentages of subjects meeting the dietary guidelines are presented in Table 2.

In terms of the mothers' nutritional knowledge and attitudes; the knowledge score of the mothers varied from -13 to 10. Percentages of right answers for each of the items varied between 85.1% and 18.8%, including correct guesses, and between 65.6% and 7.1%, excluding correct guesses, (Table 3). Figure 1 shows the effect of both levels of mother's education and work on their attitudes toward healthy eating. It was found that there was an inverse relationship between maternal work level and scores of healthy eating attitudes; although the difference between high and low maternal work level in their effect on healthy eating attitudes were not significant (p=.04). In contrast, the results showed that as the educational level of the mother increased, their attitudes towards healthy eating also increased.

Table 2: Dietary guidelines,[9] and percentage of total children meeting these guidelines and children with different mother education levels.

Dietary guidelines	% Meeting the minimum recommended dietary guideline			
	All Subjects	Mothers Education		
		high	intermediate	low
Water (1 L)	42.2	61.8[a]	42.9[b]	30.40[c]
3-5 slices of bread (90-150 g)	31.2	45.7[a]	14.3[b]	9.10[c]
Rice (240 g)	86.4	100[a]	94.5[b]	80.4[c]
Vegetables (100-150 g)	59.1	85.7[a]	70.7[b]	36.4[c]
Fruit 1-2 pieces (125-250 g)	48.7	81.8[a]	42.9[b]	29.3[c]
Meat, fish, chicken, eggs (75-100 g)	72.7	96.4[a]	59.8[b]	57.1[c]
Fish (1-2 times per week)	85.1	98.2[a]	78.3[b]	71.4[c]
Milk products (500 ml)	48.7	57.1	55.4	36.2

Means within the same column with different letters are significantly different ($p<0.05$).

Table 3: Item descriptions, frequencies of mother's responses.

Item Description	Right	I think it is right	I think it is wrong	Wrong	I don't know
If one should pay attention to the body weight of a child, it is preferable to substitute pasta by rice	10.4	33.1	24.7	24.0	7.8
Whole meal bread contains apart from fiber also more other nutrients than white bread	65.6	19.5	3.9	11.0	0
It is preferable that child below the age of 4 take whole fat milk rather than semi-skimmed milk	55.8	25.3	9.1	5.2	4.5
Fruit juice contains as much sugar as cola	19.5	23.4	26.6	13.0	17.5
Spreadable fats such as margarine and butter should be avoided from an early age.	9.1	9.7	27.9	35.7	17.5
A bottle of smoothy is a complete replacement for 200 g fruit and/or vegetables	9.7	11.7	33.1	23.4	22.1
Fruit and vegetables deliver us the same nutrients	20.1	20.8	23.4	26.0	9.7
When the child consume fish, it should preferably be low fat fish	14.3	12.3	33.1	33.1	7.1
Daily milk strawberry beverages instead of milk is not advised	50.6	16.2	9.1	10.4	13.6
It is recommended that preschool child drink 1 l of water daily	7.1	25.3	24.0	28.6	14.9

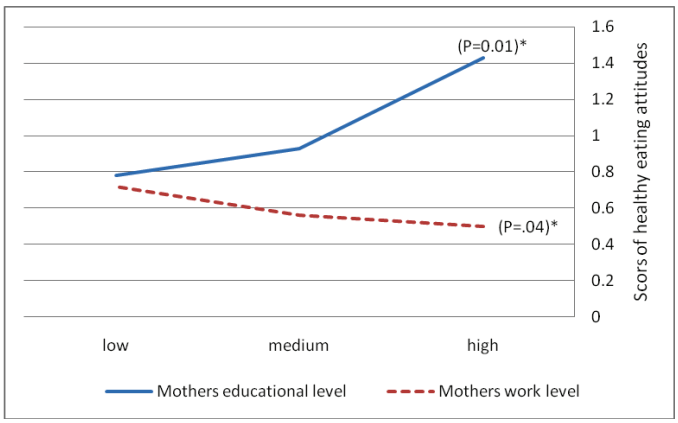

Figure 1: Effect of levels of mother's education and work on their attitudes toward health eating.

** = difference between high and low levels of mothers education and work level.*

Discussion

This study describes the food habits of young children in Oman and investigates to what extent the mothers' nutritional knowledge and attitudes are associated with compliance to dietary guidelines. According to our knowledge, no studies have previously investigated the influence of maternal nutritional knowledge and attitudes on children's dietary intake/habits in an Omani population. The results indicated that many children did not meet the dietary guidelines for most food groups, highlighting the importance of enhancing interventions to promote healthy eating in this age group.

Furthermore, education appeared to have an important effect on both scores of mothers' nutritional knowledge and attitudes. These results are in accordance with a study investigating the consumption of specific food items in Flemish preschool children, where differences in consumption of fruits, vegetables, and soft drinks were found to be related to the mothers' educational levels.[10]

Concerning occupation, the results revealed that Omani mothers' work had an inverse effect on their nutritional knowledge and healthy eating attitudes. Children's nutritional intake in relation to their parental occupational status has been reported in other studies. In contrast to our study findings, Vereecken and Maes studied the dietary intake in adolescents and found a higher intake of more healthy items and a lower intake of less healthy items such as soft drinks and coffee in children whose parents had higher levels of occupation.[11]

The family structure (single/extended) was found to be significantly associated with children's food intake. The children's intake of vegetables, fruits, meat products and milk was significantly higher in extended families compared to single families. In the same context, the healthy eating scores were significantly higher for mothers from extended families compared to mothers from single families. This can be explained by the effect of other family members in extended families. It was also observed that siblings and other family members had an effect on children's dietary intake; older children may introduce their younger siblings to different types of snacks and foods.[12]

The results showed that there was a positive relationship between children's dietary food intake scores with the mothers' nutritional knowledge and attitude scores. Nutritional knowledge was related to dietary intake, highlighting the fact that nutrition-related education and information for mothers can improve their offspring's dietary intake in Oman.

Many studies have discussed the effect of mothers' knowledge and children's dietary intake. In a study by Variyam et al. (1999), substantial beneficial associations were found with the intakes of total fat, saturated fat, cholesterol, and sodium in preschool children.[13]

Our findings of the significant effect of mothers' educational level on their nutritional knowledge and attitudes scores add to the evidence of the knowledge-enhancing role of education reported in other studies.[14]

Mothers who considered healthy diet preparation as extra work load could be expected to prepare less of traditional meals. In the study by Lennernäs et al. only 12% of the subjects surveyed considered convenience as one of the three most important factors.[15-17] While Lennernäs et al. found that working mothers (in particular those of high and intermediate occupational levels) agreed to a greater extent that healthy food was an extra workload. These mothers spend less time at home and find it more difficult to prepare a healthy meal and consequently perceive it as a time-consuming burden. With the worldwide increase of women's labor force participation rates, redistribution of domestic tasks between husband and wife may help improve child nutritional problems. However, the major limitation of the food frequency method is that it contains a substantial amount of measurement error. Many details of food intake are not measured, and the quantification of intake is not as accurate as with 24 hour recalls or records. Inaccuracies result from an incomplete record of all possible foods and from errors in frequency and usual serving size estimations. The estimation tasks required for an FFQ are complex and difficult. As a result, the scale for nutrient consumption estimates from an FFQ may be shifted considerably, yielding inaccurate estimates of the average intake for the study group.

Conclusion

Our study did not address relevant information such as household income, working hours, number of children, social support and parental nutritional status (BMI), therefore more studies need to be conducted in other parts of Oman investigating lager study populations in order to give researchers and policy makers a general idea about parent's nutritional knowledge and its effect on the nutritional status of children.

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