Influences of Different Feeding Patterns on Cognitive Development of Infants Aged 12 and 24 months in Primary Health Care Clinics, Nurseries and Public Parks

Abir Knio, Aseel Abdulrahman, Bashayer Al-Isa, Mazen Shammout, Nouf Al-Nasser, and Tala Mustafa

Abstract

Background: Many studies have recommended breastfeeding as the normative model among all alternative-feeding patterns as its composition diverges distinctly from other feedings, making it distinctively superior for infants feeding. Growing evidence is suggesting that breastfeeding improves the child's cognitive and motor development throughout the years of life, as well as improving other health benefits.

Objective: This study aims to investigate the influence of breastfeeding and other feeding patterns on the cognitive development and motor skills of infants aged 12 and 24 months.

Methods: A cross-sectional, observational study conducted among 100 infants aged 12 and 24 months from January until April 2016. A cognitive assessment validated test "Ages and Stages Questionnaire (ASQ)" ®, (ASQ-3^{TM}) was utilized to compare exclusively breastfed, never breastfed and mixed fed infants as well as breastfeeding duration on ASQ scores and domains in multivariable linear models, controlling for a wide range of potential confounders.

Results: After adjustments, results showed a significant positive correlation between breastfeeding duration and cognitive assessment. Mainly, the total ASQ score (P = 0.003) and personal-social domain (P = 0.001) were the most significant variables associated with longer breastfeeding duration. Moreover, a significant difference in the BMI percentiles among the infants was found when compared according to their feeding types (P = 0.005).

Conclusion: This study shows that longer breastfeeding duration was significantly associated with better cognitive and motor skills development at 12 and 24 months-old infants. This highlight the impact of breastfeeding on cognitive development of the infants and the importance of supporting breastfeeding for longer periods in UAE.

Keywords: Breastfeeding, cognitive development, motor skills, feeding patterns, Ages and Stages Questionnaire (ASQ).

Supervisors: Dr. Hadia Radwan and Mrs. Mona Hashem

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Parental Factors and Mass Media Influences on the Onset of Eating Disorders among University Students in University City- Sharjah

Lina Najm, Faridah Jami, Fahimeh Javadi, Sara Zaurub, Lina Adeeb Deeb, and Amani Iskandarani

Abstract

Background: Eating disorder can be influenced by genetic, psychological and socio-cultural factors. There are very few studies investigating eating disorders in UAE; however, influences of family and media on the onset of eating disorders were not studied before.

Objective: The aim of this study is to explore the association between parental factors, media influences and body image concerns on the onset of eating disorder.

Methods: A cross-sectional study was conducted among 697 students, attending University City, Sharjah. A questionnaire with validated scales Eating Attitudes Test-26 (EAT-26), Body Shape Questionnaire (BSQ-8B), Media Influences Scale and Family Influences Scale (FIS) was administered online and sent to the students along with the consent form.

Results: The study included 435 (62.45%) females and 262 (37.55) males. The majority were Arab nationality (50.8%) followed by Emiratis (27.8%), age group ranging from 18-34. The results of this study reported that 242 (34.7%) students who completed the EAT-26 questionnaire scored above the cut-off of 20 (21.5% were females and 13.2 % were males) were at risk of developing eating disorder. It was found that the highest significant correlation was between EAT-26 and FIS ($r=0.44$, $p<0.001$) followed by BSQ ($r=0.40$, $p<0.001$), then Media ($r=0.29$, $p<0.001$). There was a highly significant positive correlation between body shape and family influence ($r = 0.431$, $p<0.001$). Body Mass Index (BMI) (CI: 1.046-1.111; $P<0.000$) and nationality (Arabs) ($P<0.000$) were the main predictors of risk of eating disorders.

Conclusion: There is a strong influence of media and parents on developing eating disorder among young adults (college students). The findings of this research will form a baseline data for future studies investigating the influences of eating disorders. Attempts should be made to screen, identify and target the population at risk of eating disorder at earlier stages for early intervention.

Keywords: eating disorders, mass media, parental factors, body shape, university students.

Supervisors: Dr. Hadia Radwan, Dr. Hayder A. Hasan

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Dietary Habits, Practices and Knowledge among Young Athletes in the United Arab Emirates

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Abstract

Introduction: An appropriate diet is crucial for performance development and recovery in athletes. An insufficient nutrient intake can lead to health disorders. Aim: To describe the nutritional knowledge, Nutritional practices and dietary habits for athletic individual in the United Arab Emirates Methodology: A cross-sectional study was conducted. 59 male soccer players aged from 13 to18 years were recruited from Al Jazira Academic sports clubs in the United Arab Emirates. Nutrition Knowledge, Practices and Habits was evaluated by questionnaire, different components of the nutritional status (Weight, Body composition, Skin Fold Thickness) were assessed, Socio-demographic data were collected. Both questionnaires were administered in groups under the supervision of a trained interviewer. The software SPSS version 23 was used and data are described as mean ± s.d. or percentage (%). Results: Food frequency consumption separated the frequency of consumption of different food per week. Food were separated into the six main food groups: Cereals, legumes, nuts and grains (14.11±4.56), Dairy products (10.00±3.32),Meat, Fish (5.93±2.28), Fruits and vegetables,(11.11±4.55),5) Snack food (7.91±3.23) Beverages(8.25±2.55) .The significant relationship was found between Mothers education level and Milk Group (P-value<0.01), Snack group and Weight(kg) (P- value<0.03), and there was significant relationship for athletes consumed Snack group and Skin Fold Sub-scapular (P-value=0.04) . Knowledge score was (80.73±8.81), score for Self Efficiency (18.88±3.66) and Attitude (21.30±1.88). Conclusion: The majority of the adolescent Soccer players considered in this study fell into the normal weight category and all are of a normal height according to the anthropometric data. The implication of this finding is that the athletes are considered to have an excess of body fat stores and less Skin Fold then it is desirable. A quite good dietary knowledge but limited healthy dietary practices and ability to change were observed, also a significant influence of the family environment.

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Effectiveness of School-based Nutritional Intervention and Lifestyle Modifications among Obese School Children

Ghada Tarik M Alsardi, Jood Abdullah Alangari, Muna Mohamed Abdulla, Raneem Muneer Alawadhi and Safeya Ali Abdullah, Asma Ebrahim Ghazizadeh, and Abeer Majed Al Kusayer

Abstract

Childhood obesity is a major public health concern. Over the last decade, the unhealthy lifestyle and poor dietary habits have been of great concern to the local health authorities in UAE. This is mainly because these factors are among the leading causes of obesity and chronic non- communicable disease. The purpose of the study is to investigate the significance of implementing school-based nutrition intervention program among obese children in Sharjah city public schools. A multistage stratified random sampling technique was used to select the sample. About 91 overweight and obese school children, aged 10-17 years, who were classified according to their body mass index (BMI) were divided into experimental group and control group. A multidisciplinary intervention program was conducted on the experimental group included weekly educational lectures and workshops, with individualized diet counseling planning based on the student food diary. Participants were followed through social media like Whatsapp and Instagram. Anthropometric measurements height, weight, and BMI percentile were measured weekly. Waist circumference, body fat percentage and 24-hr diet recall were recorded pre and post intervention program. Results showed that the BMI percentile for the boys in experimental group has decreased significantly during the intervention period ($P<0.05$). While the waist circumference of the girls in experimental group decreased significantly by the end of the intervention program ($P<0.05$). The percentage of mean macronutrients intakes of both boys and girls were within the acceptable macronutrients distribution range (AMDR). However, the percentage of protein intake was significantly higher in boys after intervention than that of girls ($p < 0.05$). Iron intake for boys ages (9-13 years) was within the RDA normal range. The intervention study showed promising results of multicomponent school based program. Weight management among children contributes to improve future health status of children and decreases risk development.

Keywords: Childhood obesity, life style, school-based interventions, social media, anthropometry.

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Assessing Health Literacy Among University Students in Abu Dhabi

Jawaher Aldhuhoori and Ludmilla F. Wikkeling Scott

Abstract

Background: Health Literacy (HL) has been defined as the ability to obtain, understand and utilize health information to make decisions about, and maintain good health. Young population in the UAE have increasing rates of lifestyle diseases. Previous studies show that HL can influence behavior to maintain health and wellness. Yet little is know about HL in the UAE. Objective: This study was conducted to measure differences in HL using a short survey on a university campus, among female students across levels of education and areas of study. Methods: A cross-sectional design was used to conduct a short survey with 6 questions based on information from a food label. Demographic questions included: exposure to chronic- and lifestyle diseases, nutrition education, major of study, and parents level of education. Students were randomly recruited during the common university midday break. Analysis was conducted using STATA IC14 to describe results. Results: The Newest Vital Sign(NVS) was used to survey 238 female students among whom only 29.41% demonstrated adequate HL. Experience with chronic disease (Diabetes, Obesity and Heart Disease) and natural and health studies were positively associated with adequate HL. Father and mother's level of education were also positively associated with adequate HL ($p<0.05$). Past exposure to nutrition education was not significantly associated with HL. Conclusion: The NVS, a rapid assessment of potential HL was used and additional studies need to be conducted to draw conclusions for both genders. Young persons who are increasingly experiencing chronic disease must be able to obtain, understand and utilize basic health care information to make appropriate decisions about their health and wellness. It is critical that students have capacity to improve HL in a culturally appropriate context. HL should be considered for integration in the education system, considering that students often lack capacity to make healthy choices.

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Vitamin D Supplementation and its Effects on Adiposity and Biochemical Indexes.

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Abstract

Background: Deficinecy of Vitamin D in Gulf countries is very common and may lead to detrimental health issues later in life. Supplementation of vitamin D is a common method to be used to increase serum viatm D levels. Data on vitamin D supplementation in U.A.E. is essentially inadequate.

Objectives: The purpose of this study was to examine the effects of Vitamin D supplementation on adipose tissue and biochemical indexes in 20 female obese and non-obese Emirati students.

Methods: Twenty deficient on vitamin D subjects (10 overweight/obese and 10 normal weight) were given 2000 IU of daily Vitamin D for 1 month. Anthropometrics (weight, waist circumference, hip circumference), blood test (serum Vitamin D, C-Reactive Protein, Thyroid Stimulate Hormone, serum Calcium), were measure and Vitamin while a food frequency questionnaire and 24 –Hour recall was also collected. The exclusion criteria included pregnancy, renal disease, pre-existing parathyroid, thyroid, or calcium metabolism disorders, sarcoidosis, intake of calcium channel blockers, Diabetes, active malignancies (other than non-melanoma skin cancer), Vitamin D supplementation intake in past 6 months. The data accumulated was processed using SPSS version 11 software.

Faculty Supervisor: Dr Dimitrios Papandreou

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1. Results

	Mean	Std. Deviation	Median
Age (yrs)	28.7	9.257	24.5
Calcium (mg/dL)	9.3593	0.28901	9.34
Vitamin D (ng/mL)	17.505	6.47054	16.2
Thyroid Stimulating Hormone (uIU/mL)	2.7741	1.284883	2.99
CRP (mg/L)	2.45	2.11623	2.15
Calorie Intake (Kcal/day)	1248.2	359.80413	1167
Dietary Vitamin D intake (IU/day)	289.25	246.10821	180
Dietary Calcium Intake (mg/day)	1618.6	858.38425	1505
Weight (Kg)	62.63	11.88839	64.3
BMI (Kg/m^2)	24.54	4.663	25.9
Waist Circumference (inches)	29.65	3.95734	29.5
Hip Circumference (inches)	39.75	4.04742	40.5
Waist-to-hip ratio	0.7445	0.05316	0.74

Table 1: Baseline characteristics for all subjects (n=20).

Variables		Vitamin D	Dietary Vitamin D	Dietary Calcium
Age	Correlation	-0.123	0.318	0.11
	Sig. (2-tailed)	0.607	0.172	0.644
Calcium	Correlation	0.297	0.117	0.196
	Sig. (2-tailed)	0.204	0.624	0.407
Vitamin D	Correlation	1	-0.187	-.510*
	Sig. (2-tailed)		0.43	0.43
Thyroid Stimulating Hormone	Correlation	-0.028	.584**	0.297
	Sig. (2-tailed)	0.908	0.007	0.203
C-Reactive Protein	Correlation	-0.168	-0.279	-0.252
	Sig. (2-tailed)	0.479	0.234	0.283
Calorie Intake	Correlation	0.253	-0.174	0.046
	Sig. (2-tailed)	0.282	0.462	0.847
MET-minutes/week	Correlation	0.022	0.037	0.052
	Sig. (2-tailed)	0.926	0.876	0.827
Dietary Vitamin D by day	Correlation	-.276	1	.513*
	Sig. (2-tailed)	0.239		0.021
Dietary Calcium by day	Correlation	-.427	.513*	1
	Sig. (2-tailed)	0.061	0.021	
Weight	Correlation	0.001	-0.276	-0.165
	Sig. (2-tailed)	0.998	0.24	0.487
Body Mass Index	Correlation	0.061	-0.391	-0.31
	Sig. (2-tailed)	0.797	0.088	0.183
Waist Circumference	Correlation	0.004	-0.143	-0.089
	Sig. (2-tailed)	0.986	0.546	0.71
Hip Circumference	Correlation	0.03	-0.377	-0.294
	Sig. (2-tailed)	0.901	0.102	0.208

Correlation coefficients were calculated using Pearson correlation except for data non-normally distributed using Spearman's rho.
*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 2: Correlation between various variables with serum Vitamin D evels, and dietary Vitamin D and Calcium.

		Change is variables (mean change) after intervention							
		All subjects				By subject divisions			
						Group names			
Variables		**Mean change**	**Std. Dev.**	**Confidence Interval**	**% change**	**D1**	**D2**	**A1**	**A2**
Calcium		**0.18**	**0.31**	**0.14**	**-2%**	0.16	0.19	0.24	0.11
p-value		*0.02*				*0.23*	*0.04*	*0.05*	*0.25*
Vitamin D		**-6.76**	**4.11**	**1.92**	**39%**	-7.70	-5.98	-7.50	-6.01
p-value		*0.00*				*0.00*	*0.00*	*0.00*	*0.00*
TSH		**-0.46**	**2.26**	**1.06**	**16%**	0.14	-0.95	-0.93	0.02
p-value		*0.38*				*0.65*	*0.31*	*0.37*	*0.94*
CRP **		**0.37**	**0.83**	**0.39**	**-17%**	0.72	0.07	0.46	0.27
p-value		*0.07*				*0.03*	*0.75*	*0.16*	*0.28*
Weight		**0.20**	**1.27**	**0.60**	**0%**	-0.07	0.42	-0.30	0.70
p-value		*0.49*				*0.89*	*0.27*	*0.15*	*0.20*
BMI		**0.07**	**0.51**	**0.24**	**0%**	-0.06	0.16	-0.12	0.25
p-value		*0.58*				*0.78*	*0.27*	*0.15*	*0.26*
Waist Circumference		**0.25**	**0.85**	**0.40**	**-1%**	0.00	0.46	0.15	0.35
p-value		*0.20*				*1.00*	*0.12*	*0.62*	*0.21*
Hip Circumference		**0.65**	**1.26**	**0.59**	**-2%**	0.50	0.77	0.35	0.95
p-value		*0.03*				*0.36*	*0.03*	*0.17*	*0.09*
Note: Division of Subjects into groups Legend: Vitamin D-based group: Group D1- Vitamin D deficient subjects; Group D2- Vitamin D Insufficient subjects Adiposity-based groups: Group A1- Underweight/ Normal weight subjects; Group A2- Overweight/ Obese subjects. * No heterogeneity was noticed between the groups at baseline using independent samples test.									
P-value indicates statistical significance of mean change in variable specific to groups. TSH: Thyroid Stimulating Hormone; CRP: C- Reactive Protein.									

Table 3: Changes in anthropometric and biochemical values after intervention for all subjects by categorization of subjects in terms of Vitamin D status or obesity.

2. Conclusion

It can be concluded that Vitamin D supplementation has mild effects on reducing weight or BMI, however, as per previous study it supports changes in fat mass by reduction in hip and waist circumference in subjects. This study also evaluates the dietary role of Vitamin D but there was no relationship with serum Vitamin D, hence in this population supplements could be more pivotal. A significant correlation between dietary Vitamin D and TSH was also found in this sample. However, this study surely calls for further investigation for longer period.

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Eating Disorders Among Emirati Female Students Aged 14-19 Years in Ajman

Alia Abdulsalam Abdulwahed Ahmad Kazim and Maryam Saleh Abdulla Mohamed Almarzooqi

Public Health Nutrition Students from Zayed University

Abstract

Objective: To estimate the prevalence of eating disorders (EDs) and its determinants among Emirati female students: ages14 to 19, Ajman.

Methods: A cross-sectional survey on 4 public female high schools. The participants were selected from 3 strata: grade 10, 11, and 12; from each 2 classes were selected randomly. 30% of participants at risk of ED were invited to individual interview on determinants of ED. Outcome measures were Eating Attitude Test, Body Mass Index, Perceived Body Image and Desired Body Image. For the latter 2 a body image scale was adapted from (Bays et al., 2009).

Results: Mean age was 16 ±1.1 years (n=315), 18% of participants were underweight, 49% normal, 18% overweight, 16 % obese. 36% were at risk of ED. There was a significant discrepancy between their actual and perceived body images. Underweight participants perceived their body image as normal; overweight/obese perceived it as one BMI category less than their actual. Dominant determinants of ED were dieting in the family, media's effect, and peer pressure.

Conclusion: The study highlights the severity of the problem in Ajman. The results can be used to plan health awareness campaigns to prevent ED among Emirati youth.

Keywords: eating disorder, perception, body size

Under supervision of Dr. Mirey Karavetian

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Use of Nutrition Supplements and Dietary Perception among People Exercising in Abu Dhabi

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Public Health Nutrition Students from Zayed University

Abstract

Background Athletes often develop and maintain their performance and muscular phenotype by optimizing and enhancing their food dietary intake. In most cases, this includes the use of products to enhance protein balance, macronutrients such as carbohydrates and fats. Athletic performance is influenced by the amount and type of nutrients they consume, training they adhere to, and fluids and sleep adequacy satisfied during the day. Previous studies have shown that possible differences between the use of supplements and perception of performance may differ. Variations in perception and actual use may differ based on knowledge and source of information. Supplement use in the GCC region is a common practice but little is known about the use, and its implications for athletes and their source of information.

Objectives This study was conducted to assess supplement use among persons using the gym in Abu Dhabi, and the factors that influence such use. Methods A cross-sectional study of 65 male and 35 female gym members in Abu Dhabi, between 20 and 50 years of age were randomly selected and interviewed. A 21- question survey tool was used after consent to participate in this anonymous study. Data was analyzed using STATA IC14, to describe demographic patterns, frequency of training, supplement use, source of information and area targeted for such use.

Results This study sample included 48% Middle Eastern gym members, 50.79% of whom used dietary supplements. The highest number of dietary supplement use was found among males gym members, (71.43%). Those members between the ages of 20 and 40 had the highest frequency of dietary supplement use. Association of use by indicators such as gender, smoking, alcohol use, and college education, exercising for more than 2 years, or between 1-2 hours and at least 5 times a week, showed a higher use of dietary supplement among this population ($p<0.05$).

Conclusion This study presented patterns of supplement use among gym members in Abu Dhabi and identified sources of information for such use. Few studies exist to determine rationale for and efficiency of supplement use, or provider understanding of such use and whether sources are reliable. Future studies are necessary to examine

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the use of supplements, their efficiency and their validity. Health care providers should continue to update their evidence-based research used to influence consultation with patients

Microbial Contamination of Treated Wastewater Used for Irrigation of Public Parks in Dubai

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1. Introduction

The treated wastewater(TWW) generated after wastewater treatment process plays an important role as a substitute for fresh water, saving the production of potable water, and contributing to the reduction of carbon footprint generated from the desalination process. There are several public parks in Dubai, which are expanding due to extensive development and urbanization. These public parks use TWW for irrigation. Therefore, there is a risk of contamination of irrigated soil by various types of microbial pathogens. Therefore, investigating the microbial quality of irrigation water used in public parks is important to know whether the wastewater treatment methods employed by the concerned municipalities are adequate to reduce the occurrence of microbial pathogens. This study aimed at investigating the microbial quality of the TWW used for irrigation of public parks in the emirate of Dubai, UAE. The presence of selected protozoan parasites such as Cryptosporidium, Giardia and bacterial species including Legionella, Pseudomonas and traditional fecal pollution indicator microorganisms such as total fecal coliform, total coliform, and heterotrophic bacteria were studied.

2. Experimental

A total 96 samples of TWW and irrigated soils from four public parks were collected and tested for *Legionella*, *Salmonella*, traditional bacterial indicators using membrane filtration method. Immunofluorescence assay was used to detect *Cryptosporidium* oocyst and *Giardia* cysts.

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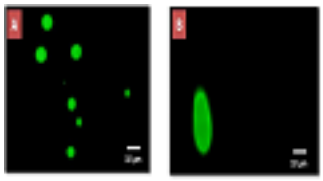

Figure 1: Immunofluorescence image/s of Cryptosporidium oocysts labelled by fluorescent antibodies (A) bright apple green color viewed under the fluorescein filter, (B) Giardia cysts labeled by fluorescent antibodies.

3. Results and Discussion

Most of the irrigated water samples were found contaminated with Legionella, Pseudomonas, and traditional bacterial indicators. Both Cryptosporidium oocysts and Giardia cysts were detected in these samples with a higher occurrence of Cryptosporidium oocysts (96%) than Giardia cysts (35%) (Figure1). The fecal coliform bacteria were detected in 60.8% of water samples and 58% of soil samples. Total coliform bacteria were detected in most of the water and soil samples with a higher occurrence than the fecal coliform bacteria.

4. Conclusions

The results of this study indicate that microorganisms are surviving, and further multiplying in the public parks irrigation network system. Therefore, monitoring the treated wastewater for bacterial pathogens, protozoan parasites and controlling their growth at the point of end use are vital to reducing the risk of environmental contamination with microbial pathogens.

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Arab Journal of Nutrition and Exercise (AJNE)
2nd Public Health and Nutrition Research Forum at Zayed University, 22-23rd, 2017

Health Risks associated with Treated Solid Organic Waste Application to Agricultural Land

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Abstract

Sludge and municipal organic waste are being generated daily by millions of tons. It is important to recover the value of these wastes instead of disposing of in the landfills, to help in preventing environmental issues and health risks associated with their application. In this study, an autoclaved organic fraction of municipal solid waste (OFMSW) obtained from a waste processing technology tested at Masdar Institute, and two treated sewage sludges product (dry and wet) were obtained from Jebel Ali Wastewater treatment plant to analyze the potential risks and benefits of applying these three materials to land. Physical, Chemical and biological characteristics of OFMSW such as the moisture content, pH, EC and heavy metals (Cu, Cd, Pb, and Zn) were examined in addition to quantitatively observing the potential bacterial pathogens growth. The result shows that the moisture content had improved after adding the autoclaved OFMSW and dry sludge. The pH value for the autoclaved OFMSW and dry sludge application seems to decrease, whereas the wet sludge application increased the pH. The EC values of the three materials found in this study were high, compared with the sandy soil. Heavy metal concentrations in sewage sludge (dry and wet) samples were found within the allowable limits set by Dubai Municipality. However, the Cd and Zn concentration in the autoclaved OFMSW exceeded the allowable limits set by European countries standards. There was no pathogenic bacterial growth in the autoclaved OFMSW and dry sludge sample. However, analyses of wet sludge indicated the presence of a high number of faecal pollution indicator bacteria.

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How to cite this article:

Arab Journal of Nutrition and Exercise (AJNE)
2nd Public Health and Nutrition Research Forum at Zayed University, 22-23rd, 2017

The Relationship of Perceived Body Image, Body Mass Index and Physical Activity with Weight Status among Students at the University of Sharjah

Hiba Khalid, Leen Al Fityani, Haneen Ismat, Rawand Mohd, Hala Hakim, Alzahra Ayman

Abstract

Background: The prevalence of obesity and overweight is increasing in many countries around the world, and it's becoming a series event. There is evidence that obesity is linked with poor body image. Moreover, normal weight individual also might experience body dissatisfaction. Therefore, body image perception is an essential factor to be considered among university students.

Objectives: The aim of the present study is to identify the relationship between perceived body image, body mass index, physical activity and weight status among students of the University of Sharjah.

Methods: A quantitative cross-sectional study was carried among students at the University of Sharjah. A sample of 308 students from the University of Sharjah aged between 18 and 25 years was interviewed. Face-to-face interviews were employed with questionnaire consisted of, socio-demographic questions, physical activity questionnaire (IPAQ) to measure physical activity level, the Figure Rating Scale (FRS) developed by Stunkard to measure body image distortion (BID), and body Shape Questionnaire (BSQ) to measure body concern.

Results: A total of 308 Arab students (150 male and 158 female) from University of Sharjah aged18-25 were interviewed. Most of the participants were single and apparently healthy. More than half of the students had normal BMI, about (39.0%) were overweight and obese and (4.5%) were underweight. The results of this study showed a significant association between actual BMI and perceived BMI. Overweight and obese students had significantly higher BSQ scores as compared to other BMI categories. It was noted that (65.9%) and (16.7%) of overweight and obese students respectively had perceived themselves as normal weight. While only (5.4%) of subjects with normal BMI perceived themselves as thin. Females had a higher BSQ mean score than males. Both genders developed body image distortion. Females desired to lose weight while males desired to gain weight.

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Impact of Healthy Schools Programs on Children BMI and Nutritional Knowledge in Lebanon

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Abstract

Background: Urbanization, lifestyle and physical inactivity are now causing severe noncommunicable diseases. Among them, obesity is one of the major issues, especially childhood obesity. The global prevalence of obesity in 2010 was estimated around 6.7%. However, trends are estimating an increase in obesity prevalence making it around 10.8% in 2025. Therefore, interventions among preschoolers are a necessity in preventing obesity and also in preventing lifetime diseases at adult age such as diabetes, cardiovascular diseases and many others.

Aim: In order to implement a healthy lifestyle, school policies have been designed by many government and communities among them, the United States Department of Agriculture (USDA), the School Nutrition–Environment State Policy Classification System (SNESPCS) and the World Health Organization (WHO), aiming all to reduce children obesity. However, in Lebanon few health policies have been implemented among all schools and competitive foods are still sold to children without any condition. This research may influence health professionals and government to take action in preventing non-communicable diseases at adult age.

Design and Methods: Heights and weights will be collected from two schools' records across middle and high school sections in order to calculate their Body Mass Index (BMI). One school some having nutrition policies implemented and another with none based on the SNESPCS scaling system. In addition, a questionnaire will be distributed for the children to assess whether a health policy can increase their knowledge, attitude towards obesity susceptibility. BMI calculated from schools' records of weight and height, a comparative study will show the difference between the mean BMI of children enrolled in healthy schools system compared to the ones with none nutritional prevention and the questionnaire would suggest the influence of health policies on children food and beverages choices.

Results: To compare weight status between each grade of the two schools, mean BMI of each grade has been calculated. BMI data has been analyzed using the Mann Whitney U-test on SPSS statistics; a significant difference has been shown in Grade 5 (p= .007) and grade 11 (p= .0001). Nutritional knowledge was assessed based on the

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number of right answers in the questionnaire given and compared using the Mann Whitney U test because the data were not normally distributed; a higher nutritional knowledge was shown in the school implementing health policies especially in grade 11 ($p = .00001$) compared to grade 5 ($p = .035$). Obesity susceptibility has been compared using the Chi-squared test; a higher susceptibility of becoming obese was noted in the school with none health policies ($p = .003$).

Conclusions: After conducting all the specified tests, results have shown a significant difference in children nutritional knowledge especially in grade^{11th}, in children susceptibility of becoming obese and in BMI mean average between the two schools. The null-hypothesis can now be confirmed, a lower BMI, better nutritional knowledge and better obesity susceptibility were shown in school implementing health policies. This kind of study would show the importance of nutritional school policies on children weight and behavior and the need to implement them in Lebanon as we lack any kind of policies and competitive foods are still sold in school premises as they generate higher profits.