



SUMMARY

Overweight and obesity has become as much of an epidemic worldwide, as it is in North America, affecting approximately 1 in 10 children. "In 2007, an estimated 22 million children under the age of 5 years were overweight throughout the world." (WHO, 2009). There has been a substantial increase in child obesity in developing countries due to the adoption of the unhealthy lifestyles and behaviors of the Western world. Recently, high rates of childhood overweight have been reported in many transitional societies including countries in the Middle East because of their unique prevailing cultural and social factors. For example, adult overweight and obesity rates in many countries of the Eastern Mediterranean now exceeds 65% (A. Alwan, personal communication, WHO, 2008). "The prevalence of overweight in the United Arab Emirates (U.A.E.) is one of the highest in the world: over 30% of all children in the U.A.E. are overweight or obese" (Malik & Bakir, 2007, p. 17) with studies showing a consistent increase in both conditions occurring amongst male and female 2 to 18 year olds (Khader et al., 2009).

This brief will examine the meaning of childhood overweight and obesity, and discuss how it is affecting the United Arab Emirates (UAE). Using the case of Ras Al Khaimah, the northernmost Emirate, it will also address some of the challenges children face in regards to physical activity and healthy eating. The brief will conclude by providing recommendations for policy makers on ways to reduce obesity and promote healthy lifestyles in Ras Al Khaimah and the UAE in general.

Teachers', Parents' and Children's Perceptions of Childhood Obesity in Ras Al Khaimah

Kelly Stott, Teachers College, *Columbia University*

What is Childhood Obesity?

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Body mass index (BMI) is a simple index of weight-for-height that is commonly used in classifying overweight and obesity in adult populations and individuals. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m^2). BMI provides the most useful population-level measure of overweight and obesity as it is the same for both sexes and for all ages of adults.

The World Health Organization (WHO) defines 'overweight' as a body mass index (BMI) equal to or more than 25, and 'obesity' as a BMI equal to or more than 30. These cut-off points provide a benchmark for individual assessment, but there is evidence that risk of chronic disease in populations increases progressively from a BMI of 21 (WHO, 2009). Although the WHO launched Child Growth Standards in April 2006 which included BMI charts for infants and young children up to age 5, there is no standard definition of childhood obesity for children aged 5 to 14 yet (WHO, 2009). WHO is currently developing an international growth reference for school-age children and adolescents. Currently, for those aged 2–19 years *overweight* is defined as a BMI at or above the 85th percentile and lower than the 95th percentile, and *obesity* is defined as a BMI at or above the 95th percentile for children of the same age and sex. After BMI is calculated for children and teens, the BMI number is plotted on a BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. Percentiles are the most commonly used indicator to assess the size and growth patterns of individual children (WHO, 2009).

Consequences of Childhood Obesity

To better understand the severe consequences of obesity, it is extremely important to identify key risk factors. Undertaking such a task is not an easy one as the etiology of childhood and adolescent obesity is not clear. "Obesity is a complex condition with metabolic, behavioral, genetic and environmental factors all contributing to its development"

(Baur, 2002, p. S526). As a result of obesity being on the rise the trend of non-communicable diseases such as cardiovascular disease, hypertension and Type II Diabetes Mellitus have demonstrated an upward trajectory (Must et al., 1992). "Of special concern is the dramatic rise of childhood obesity. Children have a limited ability to understand the long-term consequences of their behavior like the risk of diabetes or disability. Children, therefore, require special attention when fighting the obesity epidemic" (Alwan, 2008, p. 3). Childhood obesity, like adult obesity, is a risk factor with many potential health problems. It is associated with morbid lipid profile changes, glucose intolerance, hypertension and coronary heart disease in adults (Must, 1996). Obese children are at greater risk of developing coronary vascular disease, Type II Diabetes Mellitus, hypertension, certain cancers and respiratory diseases as adults. According to Statistical News (2006):

Diabetes is one of the most common non-communicable diseases in children. When diabetes strikes during childhood, it is routinely assumed to be Type I. However, the end of the 20th century witnessed a dramatic rise in the incidences of Type II Diabetes in children. Type II Diabetes in adolescents now represents one of the most rapidly growing forms of diabetes worldwide. Not surprisingly, the incidence of Type II Diabetes in adolescents has paralleled the epidemic of childhood obesity now occurring in Westernized societies. (p. 1)

Childhood Obesity in the Middle East

Although the Middle East has been truly blessed with an abundance of natural and human resources they have also faced a major increase in obesity and diseases related to obesity such as high blood pressure, heart disease and diabetes. "Recent research in the U.A.E. suggests that the prevalence of childhood obesity is increasing dramatically, surpassing the high levels of obesity found amongst children and adolescents in the U.S. and Europe" (bin Zaal et al., 2009, p. 437). A study conducted by Al-Haddad, Al-Numaimi, Little, and Thabit (2000), reported finding a two to three times greater frequency of obesity in the U.A.E. than the recently published international standards.

Data from the United Arab Emirates Ministry of Health Annual Report "showed that of the 304 persons with diabetes mellitus among school age

children, 4-19 years old in 2005, 229 (75.3%) were Emiratis and 24.7% Expatriates" (Statistical News, 2006, p. 1). One of the main contributing factors to diminished exercise tolerance in overweight children with Type II Diabetes is the lack of physical activity in schools (Statistical News, 2006). Al-Hourani et al., (2003) looked at the prevalence of overweight among females aged 11-16 years in the U.A.E. Their study showed 33% of the subjects aged 11 and 12 years had the highest prevalence of overweight and were at greatest risk for being overweight. Furthermore, the high prevalence of overweight adolescents may be due to inadequate physical activity programs available in schools. Families and schools working together have the ability to prevent and control overweight by promoting healthier lifestyles through improved nutrition and increased physical activity.

Cultural and weather restrictions in addition to rapid social change all play a major role in the patterns of physical activity. In the U.A.E. these three factors are not conducive to physical activity, especially for adolescents and may explain, in part, the rise in the rate of obesity in this population (Henry et al., 2004). In a study on the UAE by Henry et al. looked at energy expenditure in female adolescents. They found that although there was less watching of television on school days (less than 2 hours a day) compared to weekends (3 hours) there was no significant difference in any energy expenditure parameters (physical activity level, or activity-related energy) between school days and weekends. It is difficult to participate in outdoor physical activity when temperatures often exceed 30°C during daylight hours. In addition, female children find it difficult to wear clothes suitable for exercise and this may impede their interest and participation in physical activity. Research has indicated that as children grow older, they tend to spend less time sleeping and more time on physical activities. However, Henry et al.'s (2004) results found:

This was not apparent in adolescent females living in the U.A.E., as the time spent sleeping and the amount of physical activity undertaken were similar in the two age groups (11-13 years and 14-16 years) and, in fact, the number of hours spent sleeping was high in both groups. (p. 351)

Sedentary lifestyles are not the only contributing factors to the global epidemic of childhood obesity. The nutritional environment is also widely believed to contribute to the epidemic. The key drivers to

overconsumption are flavor, variety, large portions, visibility, cost, time pressure and proximity (Schwartz & Brownell, 2007). "These factors interact with the current environment in several ways" (Schwartz & Brownell, 2007, p. 79). Throughout the world, advertisements for fast food restaurants, inexpensive snacks, and soft drinks have been targeting children and enticing them to purchase cheap processed foods containing large amounts of fats and sugars (Ebbeling, Pawlak, & Ludwig, 2002).

The significant change in U.A.E. society over the last 20-30 years has brought about profound increases in the number of overweight individuals (Al-Hourani, Henry, & Lightowler, 2003). Must and Strauss' (1999) study showed that the U.A.E. is experiencing an epidemic of childhood obesity causing serious public health consequences and concerns and where it is likely that childhood obesity persists into adult life. "Obese adolescents are at increased risk of being overweight at age 35 years, with probabilities of overweight estimated at 78% and 66% for males and females, respectively" (Must, 1996, p. 446).

Purpose of the Research

The purpose of the current study was to collect data from teachers/principals, parents and students on their perceptions of childhood overweight and obesity in Ras Al Khaimah. In order to develop appropriate and effective policies it was critical to get an in-depth understanding of how these key groups in schools perceive the issues of causation, responsibility, and prevention for childhood overweight and obesity. The specific aims of the study were to identify the barriers that students living in Ras Al Khaimah face, which prevent them from engaging in physical activity. The study explored the challenges children face regarding accessibility and availability of healthy food choices. The study also looked at possible solutions to increase awareness about childhood overweight and obesity.

The three main research questions were:

1. To what extent do school teachers/principals, parents, and students perceive childhood obesity as an important issue in Ras Al Khaimah?
2. What are the eating habits, community practices, cultural and physical activity practices in school, home and community environments in Ras Al Khaimah, and are these associated with childhood obesity?
3. Do teachers, principals, parents and students perceive any challenges or barriers in their

schools or communities that prevent children from engaging in physical activity and lifelong healthy eating habits?

Limitations

There were some limitations to this study. First, as it is based on preliminary analysis from research about obesity conducted in Ras Al Khaimah the sample population is limited to individuals living in this Emirate only. Further analysis is required for more conclusive data and recommendations. Second, Emirati students and Indian participants in this research were overrepresented. Of the students interviewed, all were Emirati. Third, teacher and parent sample sizes were small in both the qualitative and quantitative sections. Fourth, the fathers of students did not take part in the interview process. Finally, only students in grades four, eight and twelve were surveyed and interviewed.

Methods

Quantitative Methods

The study population for the quantitative component consisted of 198 participants - 162 students, 41 parents and 15 teachers/principals from 6 different schools (3 public, 3 private). Each school had at least 350 students with the largest having more than 1500 students. The method of data collection was a paper and pencil questionnaire in which students, parents, and teachers/principals answered questions related to demographics, food and nutrition behavior, physical activity, family, school and community environment and perceptions of childhood obesity.

Children were randomly selected in each grade to complete the questionnaire and were instructed to do so without sharing answers or conferring with their friends. Students and teachers were informed that the questionnaire would take approximately 15-20 minutes and researcher and translator were available in each class to clarify any questions and collect completed questionnaires. In order to maintain anonymity, individual participants were also instructed not to write their names or any identifying indicators on the questionnaire. Teachers of each class were given a separate teacher's questionnaire to fill out at the same time.

An administrator at each school was provided with parent surveys and was instructed to hand out surveys to parents and asked to have them returned in a sealed envelope back to the administrator. Quantitative analysis was carried out using Statistical

Table 1: Demographics – Ethnic Comparisons of Participating Students in the Study

Variable	Emirati No. (%)	Indian No. (%)	Other No. (%)	Total No. (%)
Gender				
Male	44 (43%)	11 (23%)	6 (50%)	61 (38%)
Female	58 (57%)	37 (77%)	6 (50%)	101 (62%)
School Level				
Elementary	30 (29%)	0 (0%)	0 (0%)	30 (18%)
Middle	27 (27%)	32 (67%)	8 (66.6%)	67 (42%)
Secondary	45 (44%)	16 (33%)	4 (33.4%)	65 (40%)

Table 2: Parents Demographics

Gender	Male	Female
Nationality		
UAE	0 (0%)	18 (52.9%)
Other	7 (100%)	16 (47.1%)
Age		
<30	0 (0%)	0 (0%)
31-35	1 (15%)	3 (9%)
36-40	1 (15%)	11 (32%)
41-45	3 (42%)	6 (18%)
>45	0 (0%)	1 (3%)
N/R	2 (28%)	13 (38%)
Education		
High School Diploma	0 (0%)	11 (32%)
Higher Education (i.e. Bachelors)	5 (72%)	13 (38%)
Masters	1 (14%)	3 (9%)
N/R	1 (14%)	7 (21%)

Package for the Social Sciences (IBM SPSS Statistics 19 released August 2010).

The total sample size for students was 162 and consisted of 102 Emirati, 48 Indian, and 12 other nationalities, with respondents ranging in age from 9 to 18 years old. 62% of the students participating were females and 38% were males.

A total of 41 parents were surveyed, 34 of whom were females and 7 were males. Table 2 breaks down the demographic information of this population.

Other demographic information noted related to language spoken by parents, number of family members, occupation, religion, housing ownership, number of vehicles, number of television, and income barriers. More than 50% of parents surveyed could only speak Arabic only, 20% spoke English, 10% could speak both English and Arabic, the remaining 20%

spoke English and other languages. The number of family members in a household ranged from 2 to 13, with 5 members being the most frequent at 23.3%. Statistical significance was noted between education and nationality ($p=0.656$). The majority of Emiratis (81%) received only a high school diploma whereas 77.3% of other nationalities received higher education (i.e. bachelor degree). Occupations included physicians, optometrists, writers, bankers, teachers, psychologists, nurse, librarian, teacher, business supervisor, and others; however, the occupation of housewife (36.6%) was the most common.

A total of 15 teachers with at least 4 or more years of teaching experience were surveyed. There were 9 (60%) females and 6 (40%) males from 4 different private schools.

Table 3: Interview Demographics

	Male	Female
Elementary Students (6-9 years)	8 (14%)	4 (7%)
Middle School Students (10-14 years)	5 (9%)	7 (13%)
Secondary Students (15-18 years)	8 (14%)	1 (2%)
Parents	0 (0%)	12 (21%)
Teachers	6 (11%)	5 (9%)

Qualitative Methods

The qualitative portion of this study attempted to examine the relationships between factors related to obesity in children in terms of how students, parents and teachers perceived obesity to be an issue in Ras Al Khaimah. This included community, school and family factors that affect children's ability to eat healthy and be physically active, and possible solutions to help increase the awareness of childhood obesity. This was done by conducting one-on-one interviews with various students, parents and teachers involving different genders and age groups.

Qualitative methods were used in this research as a way to gain more in-depth data to assist in the interpretation of the quantitative data and to generate some possible suggestions for policy implementation. The qualitative method in this research was based on semi-structured interviews including transcribed recording of interviews, written record and brief observations of the population sample.

The study population consisted of 56 individuals from four participating schools - two public and two private schools. These included thirty-three students (12 females, 21 males), twelve parents (all female), and eleven teachers (6 males, 5 females).

The qualitative research software NVivo 9 (developed by QRS International) was used to assist in the qualitative data analysis. NVivo is intended to help organize and analyze non-numerical or unstructured data. NVivo allows for the researcher to determine the existence of statistical significance with qualitative data.

Demographics

The sample of participants, including students, parents and teachers shown in Table 3 has been broken down into gender and school level. The study population consisted of 56 individuals, held at

four participating schools. The student participants included only Emirati students, 12 in elementary, 12 in middle, and 9 in secondary schools, 21 of which were male and 12 female. All parents were Emirati and teachers were a mix of ethnicities.

Findings

Attitudes to Obesity

Findings indicate statistical significance between students, parents and teachers perception of childhood obesity within the school, however no significant difference was found among these groups regarding obesity within the community or within their families. More than 60% of parents and teachers perceived obesity to be a problem in their schools while less than 40% of children viewed it as an issue. Within the community, 85% of parents, 73% of teachers and only 57% of students thought Ras Al Khaimah had a childhood obesity problem. Interestingly more than 52% of parents indicated their families had an issue of obesity while only 28% of children saw it as a problem.

When asked whether they thought obesity was a serious issue 68% of parents identified it to be a problem (44% strongly agreed while 24% agreed). Two-thirds of the teachers surveyed believed childhood obesity was a serious problem while the remaining quarter either did not respond or remained neutral. In terms of obesity being a concern in the community and in schools parents and students (56%) had similar responses believing it was a serious issue within their community. In relation to obesity in schools 42% of parents and 38% of students felt it was a problem. There was a slightly higher response from the teachers with 69% responding obesity was a serious issue in the community and 56% viewing obesity as a problem within their schools.

A statistically significant difference was found between parents and teachers in their view on whether they thought childhood obesity in general was a serious issue. It should be noted that while both parents and teachers considered childhood obesity to be a serious problem, only 27% of teachers strongly agreed in comparison to 65% of parents.

Challenges and Barriers to Physical Activity

When posed the question about financial income and whether it was a barrier to physical activity no significant difference was found relating to gender, ethnicity, or education level. A quarter of the parents surveyed felt that income was a barrier to their children participating in physical activity. Of those parents surveyed 32.1% indicated income was a barrier to accessing healthy eating patterns. There was no significant difference in gender or education level in regards to barriers affecting healthy eating, however significant difference was noted between ethnicity and income affecting healthy eating habits ($p=0.487$). More than half (53.3%) of Emirati parents surveyed believed income was a barrier to healthy eating, while only 7.7% of other nationalities felt income was a barrier to healthy eating habits. The final question asked was if parents thought their educational background and income influenced the health of their children. More than 82% of parents surveyed indicated that they felt their education and income influences their child's health.

Students, parents, and teachers were interviewed about the challenges and barriers they faced to physical activity. Participants interviewed mentioned barriers to physical activity and healthy eating in the community and in schools could be due to lack of parent supervision, education, and awareness. A secondary school teacher stated, "In school I think children are affected by the people around them. They don't have a support team, they are not encouraged, they get bullied about it [being fat] or the school doesn't offer a variety of foods or activities. You see a lot of schools in western countries they offer extra-curricular activities and fitness but the ones here you know they just started and they are not as big and they are not as involving. I think the whole society or community should help engage children and not make them feel like they don't belong. We should also educate the parents. A lot of parents are just not aware." Similarly another male secondary school teacher added, "Parents don't encourage it [physical activity] as much because they think it will distract the students from their studies. I think, as they [the

parents] get older they realize they should have been more physically active. People here are very concerned about their health so if you tell them something simple as exercise is beneficial then hopefully they will start doing it instead of relying on drugs."

Students, parents and teachers who were interviewed indicated barriers to accessing healthy foods in the school and community had to do with the serving of unhealthy foods in school canteens (Appendix A), supermarkets and restaurants

Participants interviewed mentioned a major challenge or barrier to physical activity in the community and schools was the lack of available and accessible facilities. "I think the children need to be exposed to more physical activity so as a school we have a staffing issue, if we increase our staff we increase our provision. If you look at a campus we have two gyms and one field that has been in place for a few years but has not reflected the growth in our school. We have to develop other spaces. I think there are 850 [students] in primary and we share a pool with the secondary school so that really limits the amount of swimming time," stated a teacher.

Students and teachers interviewed added that another barrier in schools was due to how few physical education classes were offered in school. A female teacher argued that although "there are P.E. lessons once a week but they are fewer than what children should have."

Findings showed that most participants believed lack of education, unhealthy foods and limited access to physical activity were the primary challenges or barriers for children to be physically active and eat healthy in the community and in schools. Other barriers participants mentioned included attire, and weather. A male teacher mentioned, "If you take initiative there are plenty of natural resources but local people don't make use of them. This is partly due to the hot weather and partly because of practicality. For women it's hard to climb a mountain in an abaya and even the men in the dishdash. I just think it's a lack of awareness about environment around them." A secondary school male student similarly stated that, "The weather here is really hot and it deters kids from playing outside."

Improving Lifestyles

This section explores the participants' recommendations, ideas and suggestions for changes to be taken by the community and schools in the future to help reverse the childhood obesity

epidemic that threatens their community in RAK. Some participants mentioned better canteen menus in the school, with one male teacher suggesting that "The food served in the canteen needs to be more policed maybe a student committee that lets the students take more leadership." Others interviewed stated that increasing the number of physical activity options in the community and at school would be good. One male teacher said that "The corniche has started to be used and it is a nice place to walk, but it is the only place to get away from the road and not get run over. They also walk around the mosque. And these are Emiratis, so they are aware that you need exercise and somewhere to exercise safely. They could also have more public beaches and not just the resorts."

Students also mentioned increasing the number of healthy foods available at restaurants in the community as well as having more fitness clubs. They indicated they would like to see more activities in Ras Al Khaimah similar to the ones found in Dubai or Abu Dhabi. A female middle school student stated that "RAK doesn't have a lot of activities like Dubai or Abu Dhabi so you have to go there for that. RAK needs more of these activities."

Most teachers and parents who were interviewed mentioned introducing health policies or formal curriculum that teaches health education in classes.

I think the health education needs to be more formal. We need someone to be directly responsible for that so that they are creating resources that teachers can use because at the moment it's up to the individual teachers. There are overviews and outlines but it needs to be restructured and supported so staff can implement it. Schools should also send in someone who has expertise to analyze the food because I am sure some of it is very unhealthy. Then substitute the unhealthy stuff with tasty alternatives. (Teacher, Male)

Ultimately, it is the responsibility of parents to modify their own lifestyles, along with encouraging their children to lead healthy lifestyles by decreasing sedentary activity and encouraging them to be physically active.

Recommendations

After analyzing the data a key recommendation is to suggest a health promotion approach for the community of Ras Al Khaimah based on the findings of this research to help improve the health and

well-being of students living in Ras Al Khaimah in regards to obesity risk factors. "As lifestyles and behaviors are established early in life, it is important to focus on adoption of health-conscious behaviors by young people" (Malik & Bakir, 2007, p. 19). A health promotion approach could consist of the five following components:

1. Holding a Quarterly Health Fair

The researcher suggested putting a health fair in a communal area where an abundance of people could congregate in order to provide the greatest amount of exposure. The health fair could consist of individual booths promoting healthy eating and physical activity, physicians' booths, school booths where children showcase their healthy eating promotional campaigns and much more. The idea is to have schools join forces with the community to present a health fair once every three or four months. There would be prizes and incentives for individuals taking part and draws for those who came to booths and so forth. The questions posed were if they thought it was a good idea, where it should be held and who should be paying for it.

Students and parents felt it was the government's responsibility to fund this type of project, but students and teachers indicated that if the government endorsed such a campaign then people would react positively to the decision. One male teacher stated that "...it would be good to see the top ends of government be involved by sponsoring it. They have already introduced similar events like the RAK marathon. Those types of events are well attended. We have a role to play to make sure we produce healthy citizens" (Teacher, Male). Another parent said, "I think it's a good idea. The health care sector and parents should participate to pass on the message and pass on nutrition and stuff like and then partner with the health sector. Give parents brochures at places like Manar Mall" (Arabic Parent, Female)

Community action is imperative for bringing durable, long lasting changes in lifestyle habits. Events such as health fairs are excellent ways to invest in individual's lives by raising awareness, providing knowledge and promoting strategies to empower individuals with the necessary tools to lead healthier lifestyles.

2. Constructing a Community Center

The research also asked what students, teachers, and parents thought about constructing a community

center for Emiratis and expatriates alike, the purpose of which is to provide multi-purpose fitness centre that also allows for community events to take place in. The community center would offer healthy eating cooking classes, fitness classes, pool, gymnasiums, first aid and CPR courses and many more activities.

Participants felt community centers were a good idea. Parents and teachers interviewed indicated there was ample of available space for buildings such as community centers. "Yet you have all these wasted ground patches that won't take much to put on a little turf and get 1000lbs of equipment to play with. That would boost activity levels. As far as I know there are no leisure facilities, no sports halls for these guys to use. If you drive around RAK especially this time of year around 8pm there are sand pitches used as football pitches that are flood lit but again that is it, that is all there is for any sort of sports facilities", said a female teacher. Participants interviewed also said that community centers would be used by children as there are currently few places for indoor activities in the community and with the extreme weather conditions that may entice children to be more physically active. A female middle school student said, "it's a very good idea because it encourages people to be healthy. Lots of people would go. I would go."

3. Introducing Childhood Obesity Prevention Programs

A Childhood Obesity Prevention Program would help to raise awareness regarding childhood obesity and promote healthy lifestyles in schools and the community as a whole. In order to do that there need to be identifiable risk factors, plan, implement, evaluate and maintain a health promotion policy and program. This type of program would also need to be culturally sensitive and relevant and address specific needs to the community of Ras Al Khaimah

by not only considering the needs of Emiratis, but also that of other ethnic groups that are prominent in RAK.

4. Encouraging Physical Education

Providing more physical education classes at school, incorporating accessible and affordable gender-segregated fitness centers, and making porting activities in the community more available is another way in which healthy lifestyles would be encouraged.

5. Developing infrastructure conducive to exercise such as constructing bike lanes, sidewalks, and fitness centers across the city.

Conclusion

In summary, in order to implement a successful health promotion program for children living in Ras Al Khaimah, a community, family and school centered approach focusing on behavioral, environmental and contributing factors needs to be recognized with local ownership being the principal concept of the program. The aim of this research is to suggest a program that will increase awareness and will cultivate an environment that can bring about change in lifestyles and behaviors to students and their families. It is not designed to limit what people can and cannot eat or can and cannot do but to increase their opportunities to engage in interesting, enjoyable, fun programs that will motivate them to lead healthier lives. By incorporating the family, schools and community it allows students to be involved in the process with their friends and family. The programs would require regular evaluations by a team of trained local experts in order for them to be maintain and sustained. It would also require the support from governing bodies including the school boards, Ministry of Healthy, Ministry of Education, and the Ministry of Youth, Sports, and Culture.

Kelly Stott is a doctoral candidate at Teachers College Columbia University.

Editors: Samar Farah & Natasha Ridge

REFERENCES

- Al-Hourani, H.M., Henry, J.K., & Lightower, H.J. (2003). Prevalence of overweight among adolescent females in the United Arab Emirates. *American Journal of Human Biology*, 15, 758–764.
- Alwan, A. (2008). *Arab Children Health Congress 2008. World Health Organization*. Retrieved from <http://www.who.int/nmh/Arab%20Children%20Congress.pdf>
- Amine, E.K, & Samy, M. (1996). Obesity among female university students in the United Arab Emirates. *Journal of the Royal Society of Health*, 116, 91–96.
- Baur, L.A. (2002). Child and adolescent obesity in the 21st century: An Australian perspective. *Asia Pacific Journal of Clinical Nutrition*, 11(3), S524–528.
- Ebbeling, C.B., Paulak, D.B., & Ludwig, D.S. (2002). Childhood obesity: Public-health crisis, common sense cure. *Lancet*, 360(9331), 473–482.
- Foroughian, S. (2010) A Quantitative and qualitative study of lifestyle and obesity in Asian adolescents in New Zealand. University of Auckland.
- Henry, J.K., & Lightowler, H.L., & Al-Hourani, H. (2004). Physical activity and levels of inactivity in adolescent females ages 11–16 years in the United Arab Emirates. *American Journal of Human Biology*, 16, 346–353.
- Khader, Y., Irshaidat, O., Khasawney, M., Amarin, Z., Alomari, M., & Batiha, A. (2009). Overweight and obesity among school children in Jordan: Prevalence and associated factors. *Maternal and Child Health Journal*, 13(3), 424–431.
- Malik, M., & Bakir, A. (2007). National prevalence of overweight and obesity among children in the United Arab Emirates. *Obesity Reviews*, 8(1), 15–20.
- Must, A. (1996). Morbidity and mortality associated with elevated body weight in children and adolescent. *American Journal of Clinical Nutrition*, 63, S445–S447.
- Must, A., Jacques, P.F., Dallal, G.E., Bajema, C.J., & Dietz, W.H. (1992). Long term morbidity and mortality of overweight adolescent – A follow up of the Harvard Growth Study of 1922 to 1935. *New England Journal of Medicine*, 327(19), 1350–1355.
- Must, A., & Strauss, R.A. (1999). Risk and consequences of childhood and adolescent obesity. *International Journal of Obesity*, 23(2), S2–S11.
- Schwartz, M.B., & Brownell, K.D. (2007). Actions necessary to prevent childhood obesity: Creating the climate for change. *The Journal of Law, Medicine and Ethics*, 35(1), 78–89.
- Statistical News. (2006, April–June). Government of Dubai. Retrieved from http://www.dohms.gov.ae/NR/rdonlyres/4B82DDEB-AAED-47FC97FFF6FA53106D3E/404/Issue6_E1.pdf
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- World Health Organization. (2009) Fact sheet: Obesity and overweight. Retrieved from <http://www.who.int/en/print.html>

APPENDIX A
School canteen assessment form

No:	Food allowed in the canteen	Available	Assesment	Score
		√ or x		75
1	Cheese , yoghurt, beans, eggs, peanuts, falafel, turkey and chicken sandwiches			5
2	Croissant with cheese or butter or chocolate.			5
3	Pastry with cheese or yoghurt or falafel or spinach			5
4	Normal milk and yoghurt, or milk and yoghurt with fruits (all types free from chemical dyes)			5
5	Normal milk, or milk with chocolate or fruit flavour			5
6	100% natural juice			5
7	Mineral water			5
8	Pastry with thyme			5
9	Cupcake and dried fruit cake			5
10	Wrapped dates			5
11	Wrapped dried fruit			5
12	Nuts (peanuts and cashew nuts)			5
13	Plain biscuits			5
14	Wafers(Crackers)			5
15	Fresh fruit (apple, orange, pear...)			5
	Total Score			

No:	Prohibited Food	Yes	No	Score
				25
1	All kinds of chips			
2	Energy drinks			
3	All kinds of sweets and chocolate			
4	Chewing gum and popcorn			
5	Soft drinks			
	Total Score			

The views expressed in this policy paper are those of the author(s) and do not necessarily reflect those of the Sheikh Saud Bin Saqr Al Qasimi Foundation for Policy Research.

Copyright © 2012 Sheikh Saud Bin Saqr Al Qasimi Foundation for Policy Research

THE SHEIKH SAUD BIN SAQR AL QASIMI FOUNDATION FOR POLICY RESEARCH

DEVELOPING RESEARCH, SUPPORTING MINDS

Based in the Emirate of Ras Al Khaimah, the Sheikh Saud bin Saqr Al Qasimi Foundation for Policy Research is a non-profit foundation that was established in 2009 under the patronage of His Highness Sheikh Saud bin Saqr Al Qasimi, Ruler of Ras Al Khaimah. The Foundation has two broad functions:

- to inform policy making by commissioning high quality research, and
- to enrich the local educational outlook by providing educators in Ras Al Khaimah with the tools to make a positive impact on their own society.

Log onto alqasimifoundation.com to learn more about our research, grants, and programmatic activities.



SHEIKH SAUD BIN SAQR AL QASIMI
FOUNDATION FOR POLICY RESEARCH

Al Qasimi Foundation for Policy Research | P.O.Box 12050 | Ras Al Khaimah | Tel.: +971 7 233 8060

Email: info@alqasimifoundation.ae