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Targeting Parents and Children at Schools in the Treatment of Childhood Obesity: Short-Term Results, Dubai 2016

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Abstract

Background: Obesity and Overweight among children and adolescents is continuously worldwide increasing problem, which put this vital segment of population at greater risk for health problems compared with their normal-weight counterparts and are more likely to become obese adults. Obese children and adolescents are more likely to have serious health conditions, such as cardiovascular, metabolic, and psychosocial illnesses; type 2 diabetes; hypertension; high cholesterol; stroke; heart disease; nonalcoholic fatty liver disease; certain cancers; and arthritis. Other reported health consequences of childhood obesity include eating disorders and mental health issues, such as depression and low self-esteem.

Objectives: To measure the short-term impact of a multi-functional childhood obesity intervention program in Dubai.

Methodology: The study has been carried out in two private schools of Dubai. The total population was 2890 for the first school and 1077 for the second, with age range 5-18 years of both males and females. Initial weight assessment was carried out in both schools using WHO chart for males and females. Prevalence of obesity and overweight were recorded in both school as base-line data. This was followed by 6-month duration intervention conducted by multi functions governmental team, which applied three health initiatives, Student Health File Initiative by Dubai Health Authority, Food Labeling Initiative by Dubai Municipality and Happy Schools Initiative by Dubai Knowledge and Human Development Authority along with Ministry of Health and Dubai Sport Council. All three initiatives targeted all students in schools regardless of the weight. After 6 months of intervention second body weight assessment has been carried out with the same tool.

Results: The study showed that the pre-intervention prevalence of obesity among students in the first school was 14.4%, while the pre-intervention prevalence of overweight was 15.9%. After intervention, the prevalence of obesity was 13.9% and the prevalence of overweight was 15.4%. The study showed obesity and overweight reduction of 1% after the intervention. As for the second school, the prevalence of obesity and overweight among students before intervention were 14.8% and 15.6% respectively, while they were 14.2% and 14.7% respectively after the intervention, which revealed 1.5% reduction of the prevalence and overweight among student of this school. The reduction in both schools was 1.1%.

Conclusion: The effectiveness of school-based interventions that treat childhood obesity is questionable. Student Health File with a family component, Food Labeling and Physical activity interventions in a school-based setting may have impact. This needs more studies and further application in order to have evidence on the effectiveness of such a program. Trials evaluating promising interventions applied over a long period, using responsive outcomes, with longer measurement timeframes are urgently needed. Applying the program component at wider scale to cover other schools in Dubai for the coming five years is needed to be taken into consideration.

Keywords: Parents; Children at schools; Treatment; Short-term; childhood obesity; Dubai

Abbreviations: FLI: Food Labeling Initiative; SHFI: Student Health File Initiative; HIS: Happy Schools Initiative

Background

Obesity and overweight among children and adolescents is continuously worldwide increasing problem, which put this vital segment of population at greater risk for health problems compared with their normal-weight counterparts and are more likely to become obese adults. Obese children and adolescents are more likely to have serious health conditions, such as

cardiovascular, metabolic, and psychosocial illnesses; type 2 diabetes; hypertension; high cholesterol; stroke; heart disease; nonalcoholic fatty liver disease; certain cancers; and arthritis. Other reported health consequences of childhood obesity include eating disorders and mental health issues, such as depression and low self-esteem [1-4].

In United Arab Emirates (UAE), A national study [5] was done to assess the prevalence of obesity among school children, revealed that UAE children are at increased risk for overweight and obesity. Obesity was 2.3 folds higher among UAE boys and girls at 14 years compared to international standards and reached to 3.6 and 1.9 folds higher among UAE boys and girls respectively at the age of 18 years.

Obesity is a complex, multi factorial and chronic condition resulting from interplay between genetics and environment. Genetics influence how the body regulates appetite and metabolism, while certain environmental factors encourage excess calorie consumption [6]. Worldwide, the adoption of industrialized western society lifestyles (an increase in consumption of fats, oils and refined carbohydrates and a decreased intake of complex carbohydrates together with increased sedentariness and car ownership) is associated with increasing obesity. Changes in meal patterns and leisure time are also implicated [7]. The importance of addressing obesity problem comes from the dramatic increase in the prevalence of obesity among school children. This problem is warranting strong and comprehensive prevention efforts. Schools have been identified as a key setting for public health strategies to prevent overweight and obesity [8].

Targeting parents and students at schools for the purpose of obesity management is very important, and this study was designed in order to investigate the issue of multi-sectorial intervention capability. Working in partnership with all concerned partners is expected to have better impact on reducing the problem of obesity and overweight.

Objectives

To measure the short-term impact of a multi-functional childhood obesity intervention program in Dubai.

Methodology

The study has been carried out in two private schools of Dubai. The total population was 2890 for the first school and 1077 for the second, with age range 5-18 years of both males and females. Initial weight assessment was carried out in both schools using WHO chart for males and females. Prevalence of obesity and overweight were recorded in both school as base line data. This was followed by intervention that lasted for six months and conducted by multi-functions governmental team. Three health initiatives were implemented. The first one was implemented by Dubai Health Authority and called Student Health File Initiative (SHFI). The second was called Food Labeling Initiative (FLI) and implemented by Dubai Municipality. The third was called Happy Schools Initiative (HIS) and implemented by Dubai Knowledge and Human Development Authority in cooperation with the Ministry of Health and Dubai Sport Council. All initiatives targeted all students in schools regardless their weight. After 6 months of intervention second body weight assessment has been carried out with the same tool.

In the SHFI, four strategies have been followed for the treatment of Obesity. The first strategy was to refer some cases to Primary Healthcare Centre at Dubai Health Authority to be handled by team of pediatrician and nutritionist. Primary Healthcare doctor and nutritionist were trained on childhood obesity management guidelines. The second strategy was according to family option of some cases who selected to work with family physician at private sector. The third strategy was according to family option of some other cases that preferred to work with school nurse and school clinic. The forth strategy was to handle the obesity within family environment after providing them with parents guidelines. Effective and ethical based communications with families has been well addressed.

In the FLI, foods available in schools were classified according to their nutrient value. They were labeled as healthy and unhealthy foods by giving them three different colors green, yellow and red. In the HIS, different activities including health educations, awareness sessions, competitions, and physical activities was implemented in the schools where the intervention was applied. After 6 months of the intervention second body weight assessment has been carried out with the same tool. Data were collected in two phases. They were entered into a computer system and statistically analyzed.

Results

The study showed that the pre-intervention prevalence of obesity among students in the first school was 14.4%, while the pre-intervention prevalence of overweight was 15.9%. After intervention, the prevalence of obesity was 13.9% and the prevalence of overweight was 15.4%. The study showed obesity and overweight reduction of 1% after the intervention. As for the second school, the prevalence of obesity and overweight among students before intervention were 14.8% and 15.6% respectively, while they were 14.2% and 14.7% respectively after the intervention, which revealed 1.5% reduction of the prevalence and overweight among student of this school. The reduction in both schools was 1.1% (Tables 1 & 2) and (Figures 1 & 2).

Table 1: Distribution of obesity and overweight before intervention.

	First school		Second school		Both	
	No.	%	No.	%	No.	%
Obese	416	14.4	160	14.8	576	14.5
Overweight	459	15.9	168	15.6	627	15.8
Overweight and obesity	875	30.3	328	30.4	1203	30.3
Total	2890	100	1077	100	3967	100.0

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Table 2: Distribution of obesity and overweight after intervention.

	First school		Both		Second school	
	No.	%	No.	No.	No.	%
Obese	403	13.9	153	14.2	556	14.0
Overweight	445	15.4	158	14.7	603	15.2
Overweight and obesity	848	29.3	311	28.9	1159	29.2
Total	2890	100	1077	100	3967	100.0

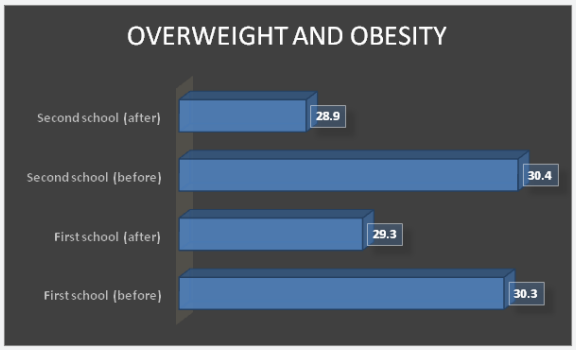

Figure 1: Change in overweight and obesity between before and after the intervention.

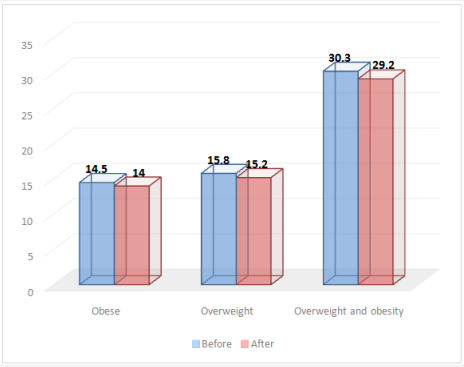

Figure 2: Change in overweight and obesity between before and after the intervention in both schools.

Discussion

Current study showed that the prevalence of overweight and obesity among student in Dubai is high as almost one third of students population in Dubai schools have obesity or overweight which is similar to other studies which showed that the prevalence of overweight and obesity was 26.7%, 12.2% respectively. Male encountered a significant higher percentage of overweight & obesity (30.1% &15.4% respectively) than females (23.1% & 8.9% respectively, $p<0.05$) [9-11].

While current study revealed significant difference in prevalence of obesity and overweight among students in two schools in Dubai before and after interventional program that reached 1% in the first school and 1.5% in the second school, this evidence was not clearly shown in other similar studies due to different reasons. Results of theses that generated evidences are mixed. They were based on the outcomes of previous reviews that investigated the impact of obesity prevention programs on weight outcomes in the school setting. Some did not detect significant intervention effects [12-21]. Most evidence of effectiveness was found for the impact of both nutrition guidelines and price interventions on intake and availability of food and drinks, with less conclusive research on product regulation. Despite the introduction of school food policies worldwide few large scale or national policies have been evaluated, and all included studies were from the USA and Europe [20].

Most reviews described modest or mixed effects of obesity prevention interventions in children across all settings; [22-24] or within schools; [12,19] and there was limited evidence in support of school policies and regulations [19]. The inconsistent findings are largely due to differences in the design of the reviews, their methods, and the quality of the primary literature (e.g., small study size, lack of blinding, short follow-up, and varied statistical analyses [12-24]. Pediatric obesity prevention programs caused small changes in target behaviors and no significant effect on BMI compared with control [23].

The current study showed the importance of intervention at different level, like school food, physical activities, behavioral sciences and policy making is similar with other intervention studies [25] which state that a number of preventive interventions would have substantial population-level impacts and would be cost-saving. An important question for policy makers is, why are they not actively pursuing cost-effective policies that can prevent childhood obesity and that cost less to implement than they would save for society?

Our results also highlight the critical impact that existing investments in improvements to the school food environment would have on future obesity prevalence and indicate the importance of sustaining these preventive strategies. Furthermore, while many of the preventive interventions in childhood do not provide substantial health care cost savings (because most obesity-related health care costs occur later, in adulthood), childhood interventions have the best chance of substantially reducing obesity prevalence and related mortality and health care costs in the long run.

The focus of action for policy makers should be on implementing cost-effective preventive interventions, ideally ones that would have broad population-level impact. Particularly attractive are interventions that affect both children and adults, so that near-term health care cost savings can be achieved by reducing adult obesity and its health consequences, while laying the groundwork for long-term cost savings by also reducing childhood and adolescent obesity.

Conclusion

The effectiveness of school-based interventions that treat childhood obesity is questionable. Student Health File with a family

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component, Food Labeling and Physical activity interventions in a school-based setting may have impact. This needs more studies and further application in order to have evidence on the effectiveness of such a program. Trials evaluating promising interventions applied over a long period, using responsive outcomes, with longer measurement timeframes are urgently needed. Applying the program component at wider scale to cover other schools in Dubai for the coming five years is needed to be taken into consideration.

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