

REGULAR ARTICLE

OBESITY INTERVENTION AT SCHOOL SETTINGS, SOCIAL MOBILIZATIONS, FAMILY ENGAGEMENT AND BEHAVIOURAL APPROACH

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ABSTRACT

Background: Obesity and overweight are recognized as major global public health phenomena. Its long term consequences are many chronic conditions like hypertension, Diabetes mellitus, and many more. Childhood obesity is complex and multidimensional, which has been identified as a public health priority.

Objective: To assess the impact of a multi-approach population-based childhood obesity intervention over three years at school population in Dubai.

Methods: Follow up was conducted on about 260000 students in the age range of 5-18 y (grades 1-12) over about 180 private schools in Dubai, United Arab Emirates in three consequence academic years 2014-2015, 2015-2016 and 2016-2017. BMI measurement as per WHO growth charts was used at the beginning of each academic year (September). Wide variety of interventions have been designed an applied like health promotion, school nutritional education activities, Food labelling, happy schools initiatives, 10/10 initiative physical activity platform, parents awareness, students health file initiative, City Makers (blue team initiative), community participation (private-public partnership, Governmental stockholders intersect oral collaborations school canteen policy and guideline.

Results: The current study revealed that about 10.1% of the total students in private schools in Dubai in the academic year 2014-2015 were obese. Obesity prevalence during the academic year 2015-2016 was 9.88%. The study reflected that prevalence of obesity among student population at private schools in Dubai during the academic year 2016-2017 was 8.9%. The study revealed that the trend of obesity prevalence among students population at private schools in Dubai is declining over that last three academic years (2014-2015, 2015-2016 and 2016-2017) showing that about 1.2% total reduction during the three year period of applying effective intervention program.

Conclusion: Multi approach public health intervention for childhood obesity is significant. Maintaining intervention need to be revised, re assessed, monitored and there is a need for strengthening sustainable long term approach through governmental and nongovernmental accountability.

Keywords: Obesity, Intervention, Population based, School setting

INTRODUCTION

One of the major public health concern worldwide is obesity and overweight which considered as global public health phenomena [1, 2]. The end result of obesity and overweight are number of serious chronic disease like hypertension, diabetes mellitus and many more [3] that has significant cost healthcare spending, and leading to disability, and deaths [4, 5]. It has been shown that significant difficulties usually associated with treating obesity once started [4, 6]. Evidences showed [2, 7] that, childhood obesity is a serious problem and has multiple

factors to take care for its management [8, 9]. Decline of quality of life has been also recognized and life expectancy as well as it will be a huge economic problem with the management usually concerned with obesity [4, 8].

Childhood obesity is still recognized as is complex and multidimensional issue which needs to be addressed through applying various control measures. The social context of obesity management assuming that, there should be a strong participation from the side of the community as well as family [10]. More to note that, basic measures should start from the family itself which will

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then aid to shape the child behaviors daily [11, 12]. Controlling of early childhood and adolescent overweight and obesity should be considered for different aspects. Experts recommend encouraging specific eating and physical activity behaviors through multiple approach interventions [13-23].

The purpose of this study is to assess the state of overweight and obesity in the light of the application of a wide range of interventions targeting childhood and adolescent overweight. To study the effect of intervention of multi-approach population oriented obesity among childhood over three years at school population in Dubai, United Arab Emirates.

Methodology

Follow up was conducted on about 260000 students in the age range of 5-18 y (grades 1–12) over about 180 private schools in Dubai in three consequence academic years 2014-2015, 2015-2016 and 2016-2017. BMI measurement as per WHO growth charts was used at the beginning of each academic year (September). Wide variety of interventions have been designed an applied like health

promotion, school nutritional education activities, Food labelling, Happy Schools initiatives, 10/10 initiative physical activity platform, parents awareness, students health file initiative, City Makers (blue team initiative), community participation (private–public partnership, Governmental stockholders intersect oral collaborations school cantin policy and guideline.

RESULTS

The current study revealed that about 8.7% of the total student population in private schools in Dubai in the academic year 2014-2015 were obese, and about 1.4% of the total students were morbid obese. A total of 10.1% of all students were obese of different severity as reflected by table (1).

The study showed that the prevalence of obesity among student population at private schools in Dubai during the academic year 2015-2016 was 9.05% and about 0.83% of the total students were morbid obese. A total of 9.88% of all students were obese of different severity as reflected by fig. (1).

Table 1: Obesity and overweight among students population in private schools in Dubai in th academic year 2014-2015

Grade	Gender	Nationality	Underweight	%	Normal	%	Overweight	%	Obese	%	Morbid obese	%	Total
G 1-4	M	UAE	521	10	3613	69.4	611	11.7	429	8.2	30	0.6	5204
		Ex.	2943	8.3	25529	71.9	4325	12.2	2616	7.4	66	0.2	35479
	F	UAE	433	10.1	2959	68.9	569	13.2	317	7.4	19	0.4	4297
Total		Ex.	2892	8.5	25292	74.7	3780	11.2	1849	5.4	58	0.2	33871
			6789	8.6	57393	72.8	9285	11.8	5211	6.6	173	0.2	78851
G 5-8	M	UAE	222	5.1	2765	63.9	794	18.3	509	11.8	40	0.9	4330
		Ex.	1411	5.2	18465	67.8	4241	15.6	3006	11	117	0.4	27240
	F	UAE	210	5.8	2313	63.5	646	17.7	425	11.7	47	1.3	3641
Total		Ex.	1236	4.8	18945	73.1	3619	13.9	2065	7.9	66	0.3	25931
			3079	5	42488	69.5	9300	15.2	6005	9.8	270	0.4	61142
G 9-12	M	UAE	151	5.3	1758	61.6	481	16.8	315	11	150	5.3	2855
		Ex.	688	3.6	13294	69.9	2913	15.3	1911	10	221	1.2	19027
	F	UAE	156	6.2	1637	65.5	406	16.2	246	9.8	55	2.2	2500
Grand Total		Ex.	568	3	14173	75.3	2615	13.9	1295	6.9	182	0.9	18833
			1563	3.6	30862	71.4	6415	14.8	3767	8.7	608	1.4	43215

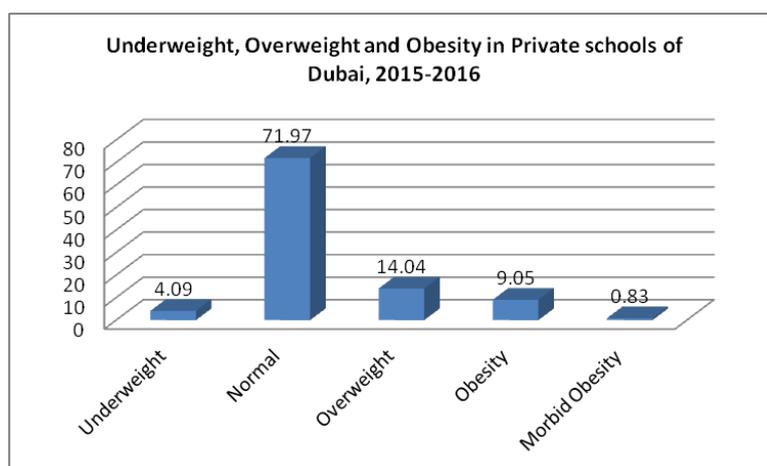


Fig. 1: Prevalence of obesity among students population at private schools in Dubai for the academic year 2015-2016

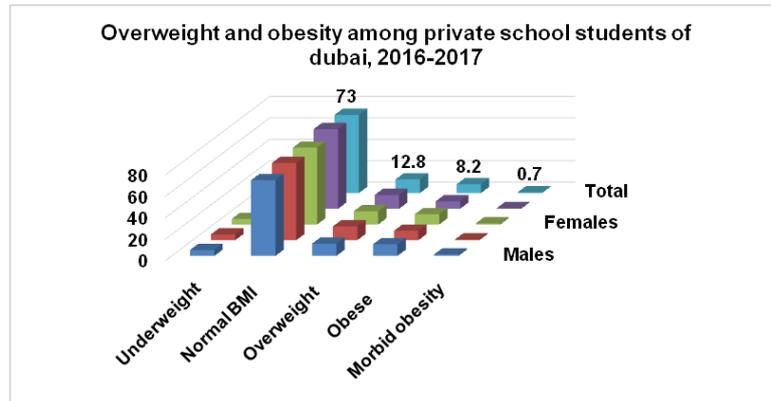


Fig. 2: Prevalence rate of obesity among student population at private schools in Dubai for the year 2016-2017

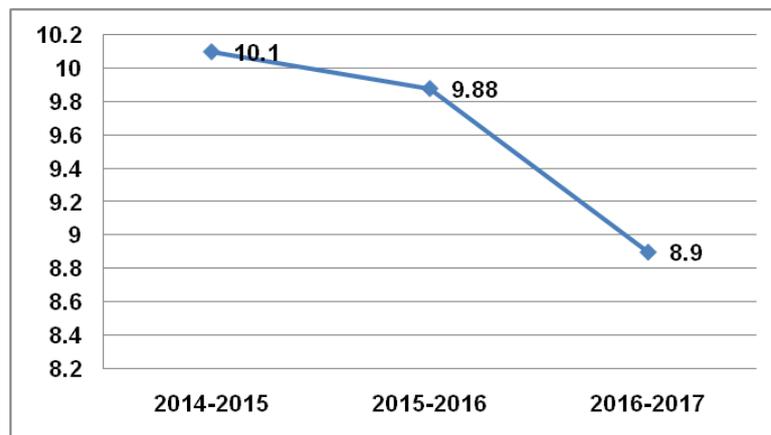


Fig. 3: Obesity prevalence trend across the last three academic years of intervention (2014-2015, 2015-2016, 2016-2017)

The study showed that the prevalence of obesity among student population at private schools in Dubai during the academic year 2016-2017 was 8.2% and about 0.7% of the total students were morbid obese. A total of 8.9% of all students were obese of different severity as reflected by fig. (2).

The study revealed that the trend of obesity prevalence among students population at private schools in Dubai is declining over that last three academic years (2014-2015, 2015-2016 and 2016-2017) showing that about 1.2% total reduction during the three years period of applying effective intervention program as shown in fig. (3).

DISCUSSION

Prevalence of obesity in this study was less in comparison to some other study results carried out in Saudi Arabia, that revealed obesity for the age groups 5 to 18 y 11.3%. As for 5-12 y group, the obesity was 11.0% in females and 7.8% in males. 13-18 y group, prevalence was 12.1% in female and 13.8% in males. Schools environment considered to act as a platform for monitoring obesity through adopting a multi approach

strategy from home which includes raising the education of parents relevant to obesity. There should be obvious action plans for healthy diet and active physically [24, 25].

The study showed that reduction in the prevalence of childhood obesity among student population at private schools in Dubai was 1.2% over three year of comprehensive intervention program implementation. Some other studies showed that there are no effects on anthropometric index [26-33]. On reverse there was noticed reduction in this study telling that the multi approach intervention may be more effective than individual approach.

The current study showed that the multi intervention approaches through applying different intervention strategies was significantly effective in prevention and management of childhood obesity which managed to reduce obesity prevalence in 1.2% among study population over three successive years. This results were similar to many other results reflected by different international studies [34-38]. Our research uncovered that school-based weight avoidance and control programs are proposed to be

doable and successful; on the grounds that understudies spend a significant piece of their opportunity in school, also instructors and associates can be occupied with such projects. They are described by healthful instruction and changes in dietary habits, and also increment in physical action through organized projects [39, 40].

CONCLUSION

Multi approach public health intervention for childhood obesity is significantly successful in producing weight reduction in the short and long term, by bringing stakeholders on board and implementing effective intervention program with wide variety of tasks. Maintaining intervention need to be revised, re assessed, monitored and there is a need for strengthening sustainable long term approach through governmental and nongovernmental accountability.

CONFLICT OF INTERESTS

The authors declare that they do not have any conflict of interest

REFERENCES

- Al-Othaimeen AI, Al-Nozha M, Osman AK. Obesity: An emerging problem in Saudi Arabia. Analysis of data from National Nutritional Survey. *East Mediterr Health J* 2007;13:441-7.
- Lobstein T. Prevalence and trends of childhood obesity. In: Crawford D, Jeffrey R, Ball K, Brug J, editors. *Obesity Epidemiology*. 2nd ed. London: Oxford University Press; 2010. p. 3.
- Musaiger AO. Overweight and obesity in the Eastern Mediterranean Region: Can we control it? *East Mediterr Health J* 2004;10:789-93.
- Obesity: Preventing and managing the global epidemic. Report of a WHO consultation. *World Health Organ Tech Rep Ser*; 2000. p. 100-42.
- Sturm R. The effects of obesity, smoking, and drinking on medical problems and costs. *Health Affairs* 2002;21:245-53.
- Lobstein T, Baur L, Uauy R. IASO International. Obesity in children and young people: A crisis in public health. *Obesity Rev* 2004;5:4-85.
- El-Hazmi MA, Warsy AS. The prevalence of obesity and overweight in 1-18-year-old Saudi children. *Ann Saudi Med* 2002;22:303-7.
- Amin TT, Al-Sultan AI, Ayub A. Overweight and obesity and their relation to dietary habits and socio-demographic characteristics among male primary school children in Al-Hassa, Kingdom of Saudi Arabia. *Eur J Nutr* 2008;47:310-8.
- World Health Organization. Childhood overweight and obesity. Available from: <http://www.who.int/dietphysicalactivity/childhood/en/> [Last accessed 2017 sept10].
- U. S. Department of Health and Human Services. The Surgeon General's call to action to prevent and decrease overweight and obesity. Rockville, MD: Office of Disease Prevention and Health Promotion; Centers for Disease Control and Prevention, National Institutes of Health; 2001
- Berge JM. A review of familial correlates of child and adolescent obesity: What has the 21st Century Taught us so Far? *Internat J Adolesc Med Health*. 2009;21:16
- Kitzmann KM, Beech BM. Family-based interventions for pediatric obesity: methodological and conceptual challenges from family psychology. *J Fam Psychol*. June 2006;20:175-189
- Procter KL. The etiology of childhood obesity: A review. *Nutr Res Rev*. 2007;20:29-45.
- Marcus MD, Levine MD, Kalarchian MA, Wisniewski L. Cognitive behavioral interventions in the management of severe pediatric obesity. *Cogn Behav Pract*. 2003;10:147-56.
- Barlow SE, Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: Summary report. *Pediatrics*. 2007;120(Suppl 4):S164-92.
- Knowlden AP, Sharma M. Systematic review of family and home-based interventions targeting paediatric overweight and obesity. *Obes Rev*. 2012;13:499-508.
- Tounian P. Programming towards childhood obesity. *Ann Nutr Metab*. 2011;58(Suppl 2):30-41.
- Higgins V, Dale A. Ethnicity and childhood overweight/obesity in England. *Pediatr Obes*. 2012;7:E22-6.
- D'Auria JP. Weighing in: Prevention of childhood overweight and obesity. *J Pediatr Health Care*. 2011;25:E26-30.
- Haynos AF, O'Donohue WT. Universal childhood and adolescent obesity prevention programs: Review and critical analysis. *Clin Psychol Rev*. 2012;32:383-99.
- Roy M, Millimet DL, Tchernis R. Federal nutrition programs and childhood obesity: Inside the black box. *Rev Econ Househ*. 2012;10:1-38.
- Huus K, Ludvigsson JF, Enskär K, Ludvigsson J. Risk factors in childhood obesity-findings from the All Babies In Southeast Sweden (ABIS) cohort. *Acta Paediatr*. 2007;96:1321-5.
- Pelone F, Specchia ML, Veneziano MA, Capizzi S, Bucci S, Mancuso A, *et al*. Economic impact of childhood obesity on health systems: A systematic review. *Obes Rev*. 2012;13:431-40.
- Musaiger AO. Overweight and obesity in Eastern mediterranean region: Prevalence and possible causes. *J Obes* 2011;2011:2-17.
- El-Mouzan MI, Foster PJ, Al Herbish AS, Al Salloum AA, Al Omer AA, Qurachi MM, *et al*. Prevalence of overweight and obesity in Saudi children and adolescents. *Ann Saudi Med* 2010;30:203-8.
- Bayer O, von Kries R, Strauss A, Mitschek C, Toschke AM, Hose A, *et al*. Short-and mid-term effects of a setting based prevention program to reduce obesity risk factors in children: A cluster-randomized trial. *Clin Nutr*. 2009;28:122-8.
- Neumark-Sztainer D, Story M, Hannan PJ, Rex J. New Moves: A school-based obesity prevention program for adolescent girls. *Prev Med*. 2003;37:41-51.
- Thivel D, Isacco L, Lazaar N, Aucouturier J, Ratel S, Doré E, *et al*. Effect of a 6-month school-based physical activity program on body composition and physical fitness in lean and obese schoolchildren. *Eur J Pediatr*. 2011;170:1435-43.
- Caballero B, Clay T, Davis SM, Ethelbah B, Rock BH, Lohman T, *et al*. Pathways: A school-based, randomized controlled trial for the prevention of obesity in American Indian schoolchildren. *Am J Clin Nutr*. 2003;78:1030-8.
- Bean MK, Wilson DB, Thornton LM, Kelly N, Mazzeo SE. Dietary intake in a randomized-controlled pilot of NOURISH: A parent intervention for overweight children. *Prev Med*. 2012;55:224-7.

31. Taveras EM, Gortmaker SL, Hohman KH, Horan CM, Kleinman KP, Mitchell K, *et al.* Randomized controlled trial to improve primary care to prevent and manage childhood obesity: The High Five for Kids study. *Arch Pediatr Adolesc Med.* 2011;165:714–22.
32. Looney SM, Raynor HA. Are changes in consumption of "healthy" foods related to changes in consumption of "unhealthy" foods during pediatric obesity treatment? *Int J Environ Res Public Health.* 2012;9:1368–78.
33. Waling M, Lind T, Hernell O, Larsson C. A one-year intervention has modest effects on energy and macronutrient intakes of overweight and obese Swedish children. *J Nutr.* 2010;140:1793–8.
34. Lofrano-Prado MC, Antunes HK, do Prado WL, de Piano A, Caranti DA, Tock L, *et al.* Quality of life in Brazilian obese adolescents: Effects of a long-term multidisciplinary lifestyle therapy. *Health Qual Life Outcomes.* 2009;7:61.
35. Kalavainen MP, Korppi MO, Nuutinen OM. Clinical efficacy of group-based treatment for childhood obesity compared with routinely given individual counseling. *Int J Obes (Lond)* 2007;31:1500–8.
36. Garipağaoğlu M, Sahip Y, Darendeliler F, Akdikmen O, Kopuz S, Sut N. Family-based group treatment versus individual treatment in the management of childhood obesity: Randomized, prospective clinical trial. *Eur J Pediatr.* 2009;168:1091–9.
37. Barlow SE, Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: Summary report. *Pediatrics.* 2007;120(Suppl 4):S164–92.
38. Gately PJ, King NA, Greatwood HC, Humphrey LC, Radley D, Cooke CB, *et al.* Does a high-protein diet improve weight loss in overweight and obese children? *Obesity (Silver Spring)* 2007;15:1527–34.
39. Lubans DR, Morgan PJ, Callister R, Collins CE, Plotnikoff RC. Exploring the mechanisms of physical activity and dietary behavior change in the program x intervention for adolescents. *J Adolesc Health.* 2010;47:83–91.
40. Plachta-Danielzik S, Landsberg B, Lange D, Seiberl J, Müller MJ. Eight-year follow-up of school-based intervention on childhood overweight–The Kiel Obesity Prevention Study. *Obes Facts.* 2011;4:35–43.