

A Pilot Study On Cognitive-behavioral Approach For Combatting Childhood Obesity In Qatar

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Abstract

Levels of overweight and obesity have reached alarming proportions in Qatar and other Gulf nations. In Qatar, the need to establish national strategies for the prevention and treatment of obesity was recognized in the National Health Strategy 2011-2016, which stresses the need for prevention. The treatment and prevention of childhood obesity is largely through lifestyle changes- encouraging health eating and physical activity. However, changing such behaviors is complex and requires integrated approaches to tackle such a multifaceted problem. In this study, we sought to implement and evaluate a novel weight management program for Qatari school children at the vulnerable age of 9-12 years. The program uses a cognitive-behavioral approach that involves developing social and emotional competences, promotion healthy dietary habits, and development of physical literacy, while enlisting family involvement in an attempt to maintain long term weight loss. This study also sought to take things further by integrating cutting edge insights from behavioral economics.

The pilot study was conducted by an interdisciplinary team of collaborators from Qatar (Qatar University, Supreme Education Council, Aspire, Hamad Medical Corporation) and external partners (Imperial College and Leeds Metropolitan University/MoreLife, UK). The study was branded Agdar/ and involved development of intervention materials, questionnaires, neuropsychological measures, and other study components such as training manuals and virtual world program. A sample of 100 overweight or obese Qatari children (age 9-12) from 5 independent schools participated in the intervention along with a control group. The intervention was conducted in Arabic and consisted of three phases (1) intensive weight loss camps, (2) after-school clubs as consolidation phase, and (3) a maintenance phase using virtual world program. Variables measured included anthropometric (BMI, Fat composition, and Waist circumference, and Blood pressure), Lifestyle (Physical Activity and Dietary questionnaires), and Psychometric assessments (Self-esteem, Subjective well-being, and Impulsivity, including heart monitoring).

Overall, 100% of children who participated in the camp lost weight with a significant reduction BMI-SDS ($p < 0.001$). The camp led to a significant improvement in subjective wellbeing in all five dimensions ($p < 0.01$). The afterschool clubs showed a synergistic effect on children who lost weight at camp where further weight loss was achieved in the after school club phase. The overall percentage BMI-SDS reduction (-8.7%) was significantly higher than the required reduction for health benefits in both adolescents (-3%) and adults (-5%). Girls continued to outperform boys in terms of weight loss reduction and maintenance (-11.9 vs. -5.6%, respectively). This success occurred despite pre-camp surveys showing nearly two thirds of children not meeting their daily requirements of fruits and vegetables while consuming calorie-dense fast foods and over half of the participants not engaging in physical activity.

Physiological parameters such as standard deviation of the heart beat-to-beat intervals, used as proxy for impulsivity, correlated significantly with BMI-SDS ($p < 0.035$). Children with a higher BMI were less able to withhold their choices (proxy for impulsivity) and the physiological control of their heart rate