Developing multipronged intervention protocols for childhood obesity prevention based on multi-theory model (MTM) of health behavior change: a mini review

Introduction

Childhood obesity is a well-established public health problem confronting the world and United States in present times. The prevalence of childhood obesity has tripled during the last three decades in the United States. \(^1\) Prevalence of childhood obesity in 2011-12 in United States was estimated at 8.1% for infants and toddlers and 16.9% for 2 to 19 year old youth. \(^2\) Within United States, this problem is more severe in Mississippi. A state level study done in 2007 found that Mississippi had the highest prevalence of childhood obesity at 21.9% and overweight at 44.5%. \(^3\) More recent studies also point at this trend. \(^4,5\) Childhood obesity is associated with several short-term negative consequences such as adverse blood lipid profile, altered glucose metabolism, obstructive sleep apnea and long-term negative effects such as greater risk of hypertension, diabetes, cardiovascular disease, gall bladder disease, and osteoarthritis in adulthood. \(^6\)

Sharma & Ickes \(^7\) have analyzed psychosocial determinants of childhood obesity. Some of the non-modifiable determinants of obesity that they identified were genetics, age, height, and having older siblings who were obese. The modifiable factors included physical inactivity, television watching (screen time), and nutritional behaviors and environments. In nutritional behaviors consuming polyunsaturated fatty acids, and larger portion sizes were associated with obesity while consuming adequate servings of fruits and vegetables was protective against overweight and obesity. Maternal smoking during pregnancy, lack of breast feeding, high birth weight, weight gain in first week of life, and rapid growth in infancy were other modifiable factors for overweight and obesity. Final set of modifiable factors was related to parents such as parental overweight and obesity, parental education especially maternal education level, and socio-economic status. Hence, commonly suggested modifiable public health strategies to combat childhood obesity are

a. Promoting physical activity
b. Limiting screen time
c. Increasing fruit and vegetable intake
d. Controlling portion size
e. Limiting eating out
f. Replacing soft drink consumption with water. There is a need to develop behavioral public health interventions to address these six behaviors.

In order to combat childhood obesity Sharma & Branscum \(^7\) have identified five types of interventions:

a. School-based interventions
b. After-school interventions

c. Family and home-based interventions
d. Community interventions
e. Policy interventions.

They contend that for effective impact a synergistic multipronged approach is needed in any community that utilizes all five modalities of interventions. There is an urgent need to develop protocols for all five types of interventions, develop and test process and impact instruments and test these protocols for efficacy using newer theories. The intervention protocols can utilize the newly proposed multi-theory model (MTM) for health behavior change. \(^8,9\) This theory breaks the behavior change into initiation and sustenance. The theory proposes that participatory dialogue in which advantages outweigh disadvantages, behavioral confidence and changes in physical environment are crucial for health behavior change and will be used to predict the five behaviors in this pilot study. For sustenance of behavior change the constructs of practice for change, emotional transformation and changes in social environment are important. The theory is very new and in its initial applications to physical activity behavior in adults, \(^10\) portion size behavior in adults, \(^11\) and sleep behavior \(^12\) has shown very good predictability. There is a lot of promise in utilizing this theory to combat childhood obesity and it behooves both researchers and practitioners to use this theory in this direction.

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Conflict of interest

The author declares no conflict of interest.

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