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The Influence of the Family on Childhood Obesity in Oman

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Introduction: Childhood obesity is a global public health concern. It increases children's risk of developing prediabetes, type 2 diabetes, and cardiovascular disease later in life. Children's characteristics, parenting styles, family characteristics, and community and societal characteristics are important factors to take into consideration when examining children with overweight and obesity. The influence of family impacts children's lifestyle behaviors especially during the middle childhood period of life (e.g., 6 - 10 years). Middle childhood children are very connected to their families and home. Therefore, it is important to understand the influence of family on the development of childhood obesity.

Purpose: The purpose of this study was to understand the influence of family on childhood obesity among 6 - 10-year old Omani children. Family influence was defined as maternal body mass index (BMI), parental educational level, parental working status, family income, and family nutrition and physical activity patterns.

Methods: This study used a cross-sectional design. The study sample included first to fourth-grade Omani children (6 - 10 years old) and their mothers. A total of 197 participants (children and mothers) were conveniently recruited from five public cycle one schools, seven non-governmental community centers and six home visits. Measurement included anthropometrics (i.e., height and weight), demographic data, and the Family Nutrition and Physical Activity (FNPA) questionnaire. Approval for this study was obtained from the Institutional Review Board (IRB) at the XXX, United States (IRB Study number XXX) and the research ethical committee at the XXX in Oman. Data were analyzed with bivariate and multivariate regression analysis.

Results: Among examined children (n = 197), 9.2% were classified as overweight, and 8.2% were classified as obese. Mother's mean BMI was 28.7 kg/m2 (Standard deviation [SD] = 5.52), which was classified as overweight and the prevalence of overweight and obesity combined were 72.3%. Maternal BMI and parental level of education were found to be significantly associated with childhood obesity ($p < .05$). Parental working status, family income, and family nutrition and physical activity pattern (FNPA score) were not significantly associated with children's BMI z-scores nor weight status ($p > .05$). Children's BMI z-scores were positively and significantly associated with maternal BMI ($r = .37$, $p = .001$). As maternal BMI increased, children's BMI z-scores increased. Also, the mean maternal BMI differed significantly between normal, thin, or severely thin children and children with overweight or obesity ($p = .001$), indicating a higher mean maternal BMI among children with overweight and obesity. Independent samples t-tests demonstrated that children of parents with a bachelor's degree or higher had higher BMI z-scores when compared to children of parents with a lower level of education ($p = .02$, for both mothers and fathers). Also, there was a higher percentage of children with overweight or obesity if their mothers had a bachelor's degree or higher compared to mothers with a diploma or a lower level of education. A multiple linear regression model predicted an increase in children's BMI z-scores by .1 (Standard error [SE] = .02) for each increased unit of maternal BMI ($p = .001$) and children of mothers with a bachelor or higher education level had a higher BMI z-score by .65 (SE = .28) when compared to children of mothers with a diploma or a lower education level ($p = .02$). Results of the binary logistic regression indicated a significant association between children's weight status and maternal BMI ($p = .001$) as well as mothers' education level ($p = .02$). Also, increased maternal BMI was significantly associated with higher odds of having a child with overweight or obesity (OR = 1.16, 95% CI [1.07, 1.26], $p = .001$). Being a mother with

a diploma or lower education level was significantly associated with a lower odds of having a child with overweight or obesity (OR = .24, 95% CI [.08, .77], p = .02.

Conclusion: This study examined childhood obesity from the family level. Two strong family factors linked to childhood obesity were identified and included increased maternal BMI and mothers' high level of education. Investing in preventive health care services through well-structured and scientific-based school health programs with the involvement of children's mothers holds promise in promoting children's general health, which in turn will save future health-related costs resulting from childhood obesity such as prediabetes, type 2 diabetes, and cardiovascular disease. In the current study, family nutrition and physical activity patterns were assessed mainly with the FNPA screening tool and demonstrated a poor association with childhood obesity. Future research with observational and qualitative study designs is needed to provide a better understanding of the perspectives and cultural characteristics influencing the families' nutrition and physical activity patterns that lead to obesity. The results of such studies can be used to build culturally tailored obesity assessment tools. Also, future research in Oman may examine childhood obesity at the community level and how family, particularly mothers, characteristics are influenced by the community.

Limitations: This study has some limitations. The study was cross-sectional with a relatively small sample size that were selected conveniently from urban and suburban communities, which limits the generalizability of the study findings. Also, family nutrition and physical activity pattern instruments were self-reported and filled out by mothers.

Title:

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Abstract Summary:

The study has examined the influence of the family on childhood obesity among 6 - 10 years old children in Oman. Two strong family factors linked to childhood obesity were identified and included increased maternal BMI and mothers' high level of education.

Content Outline:

Introduction.

Purpose.

Methods.

Results.

Conclusion.

Limitations.

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