

# Understanding Family Dynamics of Obesity: Do Parents and Children Lose and Gain Weight Together?

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## INTRODUCTION BACKGROUND

- **Prevalence of obesity** in US: 19.7% for children, 42.4% for adults
- **Parental obesity is a significant risk factor** for childhood obesity, as children of parents with obesity are up to 12 times more likely to be obese
- **Little is known** about the relationship between parent's and child's weight trajectories

## OBJECTIVE/HYPOTHESIS

- 1) To assess whether **undesirable** parental BMI change is associated with **undesirable** BMI z-score change in their children
- 2) To assess whether **parental BMI category** is associated with the **degree of modified BMIz (mBMIz) changes** in their children

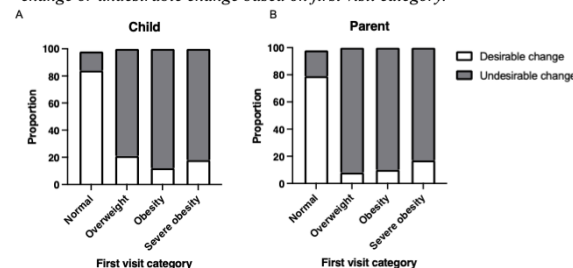
## METHODS

- Multi-step matching algorithm developed to identify **parent-child dyads** within electronic health records of **NYC Health + Hospitals**
- Criteria: 1) **matched demographic information** such as phone number and address; 2) **≥ 2 well-child or adult visits** between 03/2020 and 12/2021; 3) **complete BMI records**
- Multivariable regression models were used to test whether **parental BMI category** or **desirability of parental BMI status** were associated with the **desirability and magnitude of mBMIz change** in their children, controlling for age, sex, and time between visits
- **Desirable change** was defined as individuals with overweight, obesity, or severe obesity who **stepped down a category**, such as from overweight to normal weight, or those who **maintained** a normal weight, and **undesirable change** was the reverse

## RESULTS

- A total of **3821 parent-child dyads** were identified
- **53.52% of children** and **81.94% of parents** presented with overweight/ obesity/ severe obesity at baseline
- Mean annual BMIz change in **children** was **0.072** (SD=0.785)
- Mean BMI change in **parents** was **0.205** (SD=3.888)
- Children of parents with **undesirable change** were **more likely to have undesirable change** (Adjusted OR: 1.7, 95% CI [1.45, 2.01], p<0.001, Table 1)
- **Parents with obesity** (Coef: 0.076, 95% CI [0.004,0.147], p<0.038) and **severe obesity** (Coef: 0.1317, 95% CI [0.024,0.239], p<0.016) demonstrated **greater change in mBMIz in children** compared to parents with normal or underweight (Table 2)

Figure 1. Proportion of children (A) and parents (B) with desirable change or undesirable change based on first visit category.



## DISCUSSION/ CONCLUSION

- **Linking** parental and pediatric health records is **feasible and beneficial** in conducting in-depth epidemiologic analysis of **weight and obesity** in families
- This is the **first study** to demonstrate that **elevated parental BMI** and **undesirable weight gain** are **correlated with undesirable mBMIz change** in their children in a **dose/response manner** in the same period
- Future directions: following parent-child dyads over time and examining the correlations between parental and pediatric laboratory abnormalities such as elevated liver enzymes or dyslipidemia.

Table 1. Association between weight changes of children and predictor variables. Significant p-value of below 0.05 are indicated with\*. CI refers to the confidence interval.

Characteristic	Estimates (Adjusted OR)	2.5 % CI	97.5 % CI	P-value
Unchanged or gained weight	1.7	1.4599	2.0197	<0.001 *
Female Sex	0.7	0.5960	1.0291	0.08
Age	0.9	0.9855	1.0017	0.12
Months between visits for parents	1.02	1.0049	1.0279	0.004 *
Months between visits for children	1	0.9856	1.0235	0.64

Table 2. Association between annual change in children modified BMI z-score and predictor variables in parent/ guardian. Significant p-value of below 0.05 are indicated with\*. CI refers to the confidence interval. Coef refers to the regression coefficient.

Characteristic of parent/ guardian	Coef	2.5 % CI	97.5 % CI	P-value	Model P-value
Overweight at last visit	0.0281	-0.0456	0.1019	0.455	0.008*
Obesity at last visit	0.0757	0.0042	0.1472	0.038 *	
Severe obesity at last visit	0.1317	0.0241	0.2394	0.016 *	
Female Sex	0.0151	-0.0874	0.1176	0.773	
Age	-0.0037	-0.0068	-0.0006	0.017 *	

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