

Weight and Fertility: Complex Links between Overweight, Childbearing and Socioeconomic Status

Introduction

The prevalence of obesity among American youth has grown markedly over the last two and a half decades, with trends continuing to increase (Ogden et al. 2002, Troiano & Flegal 1998). Overweight and the associated health conditions tied to this condition have become one of the largest public health crises facing the current generation of American adolescents and young adults. The problem is even more pronounced among African American and Mexican-American youth (Ogden et al. 2002). The dramatic increase in overweight has led to a growing body of research aimed at understanding the causes and consequences of adolescent obesity, though its links to the social world have, until recently, received limited attention (Boardman et al. 2005, Crosnoe & Muller 2004, Frisco et al. 2005).

Overweight likely impacts many aspects of young peoples lives as the move through adolescence and the transition to adulthood, two stages of the life course characterized by extensive physical, social, psychological and status changes. In our study, we have begun and will continue to investigate how overweight and obesity are tied to non-marital birth and age at birth among young women, two important aspects of family formation that have ramifications for young people's future economic opportunity and socioeconomic status. Theoretically, it is possible that (1) overweight may impact non-marital birth and age at first birth, (2) non-marital birth and age at first birth may affect obesity, or (3) that there is a reciprocal relationship between overweight and childbearing.

Background

Overweight and Fertility

Overweight and obesity are not hidden health-risk statuses. Instead, the physical manifestations of overweight and obesity are easily observable to others. In the U.S. today, weight is closely tied to beauty, attractiveness, and popularity and there is a clear stigma in being overweight and

obese. This is particularly true for young women (Pearce et al. 2002, Sobal et al. 1995).

Therefore, weight status may affect young women's pool of available sexual partners, decreasing the likelihood of non-marital childbearing and increasing age at first birth. Under this hypothesis, one would expect to find negative relationships between weight and non-marital childbearing and positive relationships between weight and age at first birth. Conversely, weight may affect young women's ability (or perceived ability) to negotiate contraceptive use when they have sex, which could increase the likelihood of non-marital childbearing and decrease age at first birth. Under this hypothesis, one would expect to find positive relationships between weight and non-marital childbearing and negative relationships between weight and age at first birth.

Fertility and Overweight

When investigating relationships between young women's weight status and fertility, one cannot ignore the fact that it is equally likely that overweight and obesity actually follows rather than precedes childbirth. Physiological changes that accompany pregnancy and childbirth have been related to sustained increases in weight among adults (Walker 1995). Although this weight gain is temporary for some women, for others, childbearing is a catalyst to long-term weight changes. Currently, we are not aware of any studies that investigate how childbearing affects overweight and obesity among adolescents and young women. This is a particularly important question for female teens since women who give birth before age 20 may still be developing and growing.

Cyclical or Spurious Relationships?

As is often the case in demographic research, a third or fourth scenario may best describe relationships between overweight and fertility. First, we may observe a cyclical relationship—

weight may impact fertility outcomes for the reasons suggested above, but fertility in turn may also impact weight.

Secondly, we may also find that relationships between overweight and women's fertility are fundamentally determined by other factors that impact them both. In our study, we will focus specifically on the potentially large and complex role that young women's socioeconomic status plays in relationships between overweight and first birth. A rich social science literature suggests that socioeconomic disadvantage is both a precursor and outcome of early and non-marital childbearing (e.g., Geronimus et al. 1994). New research also indicates that socioeconomic disadvantage may also be a precursor and outcome of overweight and obesity (Frisco et al. 2005).

The Current Study

We use data from the National Longitudinal Study of Adolescent Youth (NLSY) to investigate potential causal, cyclical or spurious relationships between young women's overweight status, early fertility, and their socioeconomic position. Our study is the first of which we are aware that brings to untangle these complex relationships among adolescents and young adult women at a time in the life course when both weight and childbearing may have serious and long-term negative ramifications on one's life chances. We have begun to and will continue to explore the following research questions: 1) Is there a relationship between overweight and both non-marital childbearing and age at first birth? 2) Is there a relationship between childbearing and an earlier onset of overweight or obesity? 3) Are relationships between overweight and our two indicators of early fertility cyclical? 4) Does the impact of

socioeconomic status on both weight and fertility lead to spurious relationships between overweight and both nonmarital childbearing and age at first birth?

Data and Methods

We use data from the National Longitudinal Survey of Labor Market Experience, Youth Survey 1979-1998 (NLSY79). From this nationally representative sample we select a sample of nearly 1000 adolescent women who were younger than age 17 in 1981 when body weight was first assessed. Due to the over-sample of selected minority subpopulations, contrasts can be made among women of African American, European American and Hispanic ethnic origin. As our project progresses, we plan to assess whether there are contrasting relationships between overweight and fertility when we compare young women from these three racial and ethnic category. Although we do have data from women of other racial and ethnic backgrounds, small sample sizes limit our ability to conduct within group analyses for these respondents.

From the data described above, we construct a person-year dataset using respondents' prospective survey data on age at first birth and overweight status (calculated from self-reported weight and height using CDC age-corrected standards for girls and women) for every year between 1981 through 2000. Our sample ages from 16-17 in 1981 to 35-36 in 2000. Socioeconomic indicators of disadvantage include: yearly educational attainment of the respondent, yearly poverty status, educational attainment of the respondent's father when the respondent was age 14, and family poverty status of the respondent when she was age 14.

We use a discrete-time hazards model to assess the relationship between 1) childbirth and overweight, 2) childbirth and obesity, 3) overweight and childbirth, and 3) obesity and childbirth. We relax the assumption that the main covariate of interest has similar effects over age by testing

age interactions. This allows us to show (for example when modeling the hazard of first birth) that the covariate of interest (i.e. overweight or obesity in the year prior) is more likely to lead to childbirth if it occurs at a young age. Where these are statistically significant, they are included in the models. Robust standard errors are used for more conservative inferences about the significance of variables in light of potential model misspecification.

Preliminary & Predicted Findings

Although we have only begun to produce preliminary results, our findings currently suggest that:

- There is a positive relationship between having a first birth at a young age and developing a weight problem (overweight or obesity). The younger a woman is when she has her first child, the higher her odds of becoming overweight at a younger age. (See Table 1)
- The age at which young women become pregnant is somewhat dependent on whether they are overweight or obese. (See Table 1)
- The age at which young women first become pregnant is not dependent on obesity status. (See Table 1)
- Socioeconomic disadvantage operates in part through early childbearing to increase the likelihood of an early onset of overweight and obesity. (See Table 2)

Discussion

The findings just discussed are based on exploratory work only. As our project progresses, we will develop more sophisticated models that better flesh out relationships between overweight, fertility and young women's socioeconomic status during adolescence and the transitions to adulthood.

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Table 1. Hazard Ratios for the Relationship between Overweight, Obesity and First Birth, U.S. Adults in the years 1981-1998^a

	First birth		Overweight	Obesity
	Model 1	Model 2	Model 3	Model 4
Age	1.16***	1.19***	1.14***	1.21***
Ethnicity				
Black	1.00	1.00	1.00	1.00
White	0.59**	0.59*	0.62***	0.50***
Hispanic	0.59*	0.67	0.82†	0.78†
Overweight, time (t-1)	1.34†			
Obesity, time (t-1)		1.61		
First birth, time (t-1)			3.14***	5.04***
(First birth)*(Age)			0.89***	0.86***

^a Discrete time hazards models with robust z-statistics in parentheses; † p≤0.100; * p≤0.050; ** p≤0.010; *** p≤0.001. Data are from the National Longitudinal Survey of Youth 1979.

Table 2. Hazard Ratios for the Odds of Overweight Associated with First Birth and Socioeconomic Mediators, U.S. Adults in the years 1981-1998^a

	Overweight			
	Model 1	Model 2	Model 3	Model 4
Age	1.07***	1.16***	1.06***	1.15***
Ethnicity				
Black	1.00	1.00	1.00	1.00
White	0.59***	0.67***	0.64***	0.68**
Hispanic	0.79†	0.82	0.81	0.82
Father's education at age 14		0.99	0.98	0.98
Respondent's education	0.97†	0.98		
First birth, time (t-1)		3.63***		3.65***
(First birth)*(Age)		0.87***		0.87***

^a Discrete time hazards models with robust z-statistics in parentheses; † p≤0.100; * p≤0.050; ** p≤0.010; *** p≤0.001. Data are from the National Longitudinal Survey of Youth 1979.