

# Disparities in Bulimia Nervosa: Who is Left Behind?

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## Abstract

Bulimia nervosa is a serious eating disorder affecting a large number of female teenagers. We find substantial income and racial disparities in the treatment of Bulimia. Specifically, Blacks and girls from low income families are more likely to exhibit bulimic behavior than Whites and girls from high income families, but Whites and girls from high income families are much more likely to be diagnosed with an eating disorder.

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# 1 Introduction

Eating disorders (ED) are an important and growing health concern in the United States, where 20 million women suffer from a clinically significant ED at some time in their life. One form of ED is bulimia nervosa (BN), which is characterized by bingeing and purging. The prevalence of BN in the population is unclear as it is not always diagnosed. Moreover, the seriousness of BN is accentuated by the fact that bulimics persist in their behaviors (Keel, et al., 2005; Ham, et al., 2013). Further, the problem may be growing since bulimic behavior is increasingly seen in children as young as 10 (Cavanaugh and Ray, 1999).

While there has been increasing research focusing on health disparities by race and class (Adler and Rehkopf, 2008), investigations concerning the incidence and treatment of BN or EDs across socioeconomic groups remains scarce, even though the impact on health of EDs is significant especially given the early age of onset. As reported by the National Eating Disorder Association, "exact statistics on the prevalence of EDs among women of color are unavailable. This may be due to our historically biased view that EDs only affect white women, and relatively little research has been conducted utilizing participants from racial and ethnic minority groups."<sup>1</sup>

The main contribution of this study is to show that the distribution of bulimic behavior across socioeconomic groups may crucially differ if we consider all individuals potentially at risk rather than solely focus on those of have being diagnosed, who are more likely to be White. In fact, this study suggests that greater outreach for BN should be made to Blacks and to individuals from low income families. Further, it raises a flag against conducting future research on a sample solely drawn from diagnosis, as the results may not be applicable to a larger population and may contribute to reinforce the misleading picture of mixing who is at major risk versus who is more likely to be referred to or seek out ED treatment.

## 2 Data

We use the National Heart, Lung, and Blood Institute Growth and Health Study (NHLBIS) to investigate the incidence of BN behavior by race and income class, while to study diagnosis we use the Longitudinal Study of Adolescent Health data (AddHealth). The NHLBIS was conducted annually for ten years, and starting in 1990, when the girls were aged 11-12, the survey contains questions on BN behavior asked approximately every other year, independent

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<sup>1</sup> Quote taken from <http://www.nationaleatingdisorders.org/eating-disorders-women-color-explanations-and-implications>. Last access Oct 31, 2013.

of any diagnoses or treatment they had received.<sup>2</sup> The survey questions were designed by a panel of medical experts to assess the psychological characteristics and symptoms that are relevant to detect bulimic behavior. Based on the answers to these questions, they constructed an Eating Disorders Inventory-BN scale, which is widely used in ED research.<sup>3</sup> Since NHLBIS is constructed to have equal numbers of Blacks and Whites, and approximately equal representation across different income groups, in order to obtain estimates from the AddHealth that are comparable to the NHLBIS, we restrict our attention to the Blacks and Whites urban sample (BWU). In 2002 the AddHealth respondents were asked the following question: "Have you ever been told by a doctor that you have an eating disorder, such as anorexia nervosa or bulimia?" While we cannot separately identify bulimic and anorexic (AN) patients, we have reasons to believe that this variable detects a higher number of bulimic cases since according to the statistics gathered by epidemiologists: the incidence of BN is twice as large as the incidence of AN, i.e. two-thirds of the reported cases are BN cases.<sup>4 5</sup>

## 2.1 Results: Who is Left Behind?

Table 1 presents the Probit partial effects when using the data sources mentioned above. Columns (1) - (5) provide the results obtained with the NHLBIS. As shown in column (1), the propensity of being bulimic is nearly 19 percentage points lower among White girls than among African-American girls, that is Whites have, on average, an 88% smaller chance of exhibiting bulimic behavior (the mean value of bulimia is 2.2% in the NHLBIS). Further, moving from the lowest to the highest parents' education category decreases the probability of exhibiting BN by more than half. When we allow for an interaction between race and parental education in column (2), there is no significant difference between Blacks and Whites when the parents are high school graduates. Also, having at least one parent who started college decreases the probability of showing bulimic behavior in both racial groups, and (in absolute value) it is 27% higher for Whites (0.37/0.22 versus 0.29/0.22, the former is 1.27 times larger than the latter). Finally, when comparing the educational disparity between the highest edu-

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<sup>2</sup> In a follow-up survey, Striegel-Moore et al. (2003) note that few women reported a history of treatment for their EDs, and black women were particularly unlikely to have received treatment.

<sup>3</sup> See Garner et al. (1983) for more details of the development and validation of the ED-BN index, and Striegel-Moore et al. (2000) for details of the NHLBIS.

<sup>4</sup> See Wade, et al. (2011), and the National Association of Anorexia Nervosa and Associated Disorders, Inc. website. Accessed Oct. 2013. <http://www.anad.org/get-information/about-eating-disorders/eating-disorders-statistics/>

<sup>5</sup> In what follows we assume that the distribution of diagnosed BN cases to AN cases is constant across income and racial groups.

cated and the base groups, the drop in the probability of exhibiting BN is more pronounced for Whites (0.614/0.22 versus 0.285/0.22, the former is 2.15 times larger). In columns (3) and (4) we document that the probability of BN decreases in family income, and the size of the income disparities is remarkably high. When compared to the base group, coming from the highest income category halves the probability of being bulimic. This difference is even stronger when we consider Whites and Blacks separately. In column (5) we include both income and education, and the results yield similar patterns.

□Insert Table 1 here□

In contrast to the NHLBIS estimates, the AddHealth estimates reveal that White teenagers are around 3% points more likely to be diagnosed with an ED than Blacks. They have on average almost a 100% higher chance of being diagnosed since 3.4% of the girls were diagnosed with an ED holding education constant (column 6) or holding income constant (column 8). One might be concerned that, given the geographical restriction of the NHLBIS sample (i.e., only urban girls) and its race/income stratification, our results may not hold when we consider a larger population. However, the estimates we obtain pooling urban and not urban samples (column 11) are very similar to the ones obtained using only the urban sample (column 10). Column (12) reports the weighted least squares estimates for the BWU sample, where the weights are proportional to the relative NHLBIS size of each ethnic/income group so as to mimic the stratification by income and race adopted in the NHLBIS. We do not observe any remarkable difference in the unweighted estimates obtained in the representative sample, suggesting heterogeneous treatment effects is not an issue. These robustness checks reveal that it is unlikely to observe geographic variation in the ED prevalence, or in its racial/income patterns, and reassure us that the lack of geographic representativeness in the NHLBIS is unlikely to affect the comparability of the parameter estimates across data sets due to parameter heterogeneity. Finally note that the NHLBIS survey starts when girls are younger than the average onset age for BN (e.g., 11-12 years old in wave 3), hence, it is likely that those exhibiting BN just started and have not yet been diagnosed or treated. Thus if we use only data from wave 3, the ED-BN index should mainly reflect only differences in the propensity of engaging in BN, and not the potential racial/income differences in treatment. When we estimate a regression model with the ED-BN index as dependent variable using data from wave 3, we find that the difference in incidence between Whites and Blacks is even higher (and still statistically significant) than what we obtained by pooling all waves. Being White now lowers the ED-BN index by 0.65. Similarly, as compared to the lowest income group, being middle (high) income lowers the index by about 0.42 (0.48), and these differences also are statistically significant.

### 3 Conclusions

In this paper we show that there is a serious disparity in the treatment of BN across racial and income groups, with African Americans and lower income girls being underserved. Thus there is a large untreated group at whom outreach should be aimed.<sup>6</sup> Further, our study illustrates the problems with using descriptive statistics on the incidence of BN, or any disease, based solely on treatment.

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<sup>6</sup> These results are consistent with contemporaneous studies in the medical literature providing anecdotal evidence of ethnic disparities in utilization of eating disorders care. See Becker et al. (2010) and references therein.

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