

Reviewer Comments:

Reviewer #1: Nursing Research Review
Manuscript Number: NRES: D-08-00243
Primary Reviewer

BMI and Height Differences by age of menarche in a US longitudinal sample of African-American and White Girls

As the authors indicate, the US has experienced rapid increases in childhood obesity during the past two decades and a decrease in the median age of menarche. While both of these "trends" provide independent cause for concern to physical and mental/psychological health, few longitudinal studies of differences in growth by timing of menarche have been conducted- particularly on girls younger than five years of age. This study was designed to address this question and included the following specific aims: At what ages were growth differences evident in early, mid- and late onset menarche groups?; Were the associations between growth and menarcheal timing similar for white and African-American girls?

In addition to the potential significance, the study has several strengths. The review of literature includes and addresses seminal and recent relevant articles to support the significance and identify gaps in the current state of the science. Important to emphasize is that key longitudinal studies that include data on both age of menarche and height and/or weight measures in girls \leq five years of age were based on small and fairly homogenous samples. These studies did not allow for examination of the key questions posed in this study; results did not provide information regarding the timing of menarche on growth patterns in height and BMI from early childhood through late adolescence. Another strength is the source, diversity, size of the sample and number of eligible participants (90%) who actually participated in the study.

The detailed data analysis section (pages 8-10) clearly explains the approach(es) considered and justifies the approach selected. Strengths and limitations (as well as information yield) with both fixed and mixed methods model approaches are detailed.

The discussion section does not go beyond the data/ results presented; however, a few points warrant clarification. It is indicated (page 14) that results suggest that the "pathway through which growth patterns and maturation differences must begin in childhood". A bit more elaboration on this observation would strengthen the manuscript. It is noted (page 15) that four differences are important to emphasize when comparing results across race. These important points merit elaboration. The new finding that "the majority of African-American females may be experiencing childhood growth patterns that have been linked to significant chronic health problems" also merits more explanation/ emphasis.

The study has important limitations that are outlined by the authors including self or mother-reported age of menarche. While staging of menarche (early, mid- and late onset) has no accepted standard definition, the methods used in this study attempt to follow

those used in similar key longitudinal studies. Some discussion of the limitations of method used in this study in relation to results observed should be included. More specific suggestions for future research- based on results obtained and the state-of the science should also be included. Finally, given the selected publication outlet, Nursing Research, the potential implications for healthcare warrant elaboration.

Reviewer #2: General comments: This paper presents interesting ideas regarding the stated aim of the research, to examine the association between timing of menarche on growth patterns in height and BMI from early childhood through late adolescence in a racially diverse, longitudinal sample. The longitudinal design and large, diverse sample represents strengths of this study.

The title and abstract communicate an adequate representation of the intent and findings of the manuscript.

Introduction and Background: The significance of the manuscript is introduced with the discussion of childhood obesity. The authors provide a plausible argument that menarche onset may be associated with subsequent BMI and height.

Literature review: A careful review addresses the limitations of published studies, providing the background for the gap in knowledge that would be addressed through the findings of this manuscript. The authors posit that obesity contributes to early menarche and subsequent growth patterns, in contrast with the prevailing idea that early menarche predisposes to obesity. The authors highlight the importance of tracking girls "over the complete age range" as an indication of the novel nature of the study, underscoring the significance of establishing the critical period for intervention to prevent obesity.

Style of presentation: The manuscript is written in a clear, concise manner overall.

Research design: The authors utilized an appropriate design to address the stated research questions: (1) At what ages were growth differences evident in early, mid and late onset menarche groups? (2) Were the associations between growth and menarcheal timing similar for the white and African-American girls? The sample was derived from the CNLSY79 via biennial interviews including self-report and objective measures. There was ambiguity regarding the age of entry of the girls in the sample, a significant concern in light of the author's statements of the novel nature of this manuscript. The data was limited to the mean number of interviews in each group. Also unclear is the statement on page 9, line 18, referring to 'estimates' to predict height and weight. The definition of overweight by BMI should be included.

Data analysis: The authors provided adequate support for model selection, imputed data as well as the use of self-report. Figures are explained clearly. The tables provide a

succinct summary of findings for significant differences in height and BMI.

Organization: The authors presented this manuscript in a clear, logical and organized manner.

Reviewer #3: The introduction is well-written and highlights an important topic that has implications for nursing. The analytical method used also may be applied to other areas that are of interest to readers and researchers. While the aim of the paper is to describe the results, rather than be a methods paper, I think it would be helpful to provide a bit more background information. It is not clear how you got from curves to ages in Tables 1 and 2. I went back to Biro and Demerath articles and it looks like they actually used statistical techniques in interpreting differences at specific points in their curves? You say that you used Wald tests (page 10) - why are these results not shown? I am not familiar with this longitudinal analysis, so can not judge the adequacy of your approach, but found the presentation of the results difficult to follow. Although the discussion section is well-written and recognizes the limitations, the clinical, NURSING implications could be further highlighted.

Page 4 - lines 3-4: you are referring to actual z-scores here?

Results - I think a table comparing the African-American and white girls would be helpful. You have a lot of information in the text (page 7) and I think this makes it difficult to get a sense of the comparisons, whereas if it was delineated in a table, it would be clearer.

Reviewer #4: This manuscript used a well-known data (NLSY79), conducted a longitudinal analysis to explore the relationship between BMI and height differences by age of menarche between African-American and White girls. In terms of the overall quality of the paper, I think it is very good. The data cleaning, description of the procedure, data analysis, figures and tables were all very nicely done. The authors did not mention anything about Asian girls though, I know there were Asian people in the sample, maybe the number was too small. Is it possible to add another group of Asian girls to the research, I think that will further enhance the quality of the paper. However, I doubt the importance of the topic. For me, this kind of research are better published elsewhere rather than Nursing Research, I might be wrong though. On the other hand, I think we need to encourage more nurses conducting research using secondary data like this one.

CHECKLIST FOR STYLE

TITLE PAGE --

Shorten title to 12 words or less (no abbreviations).

Supply running head of less than 50 characters (no abbreviations).

REFERENCES/citations --

Don't put a comma before et al.