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OPEN PEER REVIEW

Evaluation of Average Post-menarche Height Growth and Associated Factors: A Cross-Sectional Study

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About this report

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1 Original submission

1 comment · 24 Sep 2024

Referee 1 Reviewer

MAJOR REVISION 24 Sep 2024

Dear authors

The manuscript entitled "Evaluation of average post-menarche height growth and associated factors: a cross-sectional study" examines an important aspect of pediatric endocrinology, focusing on post-menarche height growth in adolescent girls in an understudied population (Iranian girls). While the study has the potential to contribute valuable data to the field, it has several areas that require significant revision to meet the high standards expected for publication in an international journal such as IJ Pediatrics.

The most critical areas for improvement include the lack of a justification for the sample size, the need for a clearer discussion of the limitations of the study (particularly regarding the retrospective design and representativeness of the sample), and a lack of clarity of language.

1. STUDY DESIGN AND SAMPLING
1.1. Rationale for sample size: although the sample size of 91 adolescent girls is reasonable, the manuscript lacks a formal sample size calculation. This is a significant deficiency as it is unclear whether the study was adequately powered to detect meaningful differences. Justification of sample size based on power analysis is critical to ensure that the study is adequately powered and its conclusions are valid. Please provide a sample size calculation to justify the adequacy of the study population or discuss this limitation in detail.
1.2. Representativeness of the sample: participants were recruited from a pediatric endocrinology clinic, making it a clinical sample rather than a representative population sample. This introduces a potential bias as these adolescents may not reflect the general population of Iranian girls. Please include a more detailed discussion of the limitations this introduces and how this affects the generalizability of the findings.

2. STATISTICAL REPORTING AND INTERPRETATION
2.1. Software description: the description of the SPSS software in the "Statistical analysis" section is unclear (line 96). Please explicitly state the use of SPSS software as recommended by the ICMJE (https://www.icmje.org/icmje-recommendations.pdf). In addition, please refer to https://www.ibm.com/support/pages/how-cite-ibm-spss-statistics-or-earlier-versions-spss for proper citation guidelines.
2.2. Nonparametric statistical tests: the authors appropriately used nonparametric tests due to the non-normal distribution of height growth. However, there is little explanation for the choice of these tests. Please include a brief explanation of why these tests were chosen over parametric alternatives, especially for readers unfamiliar with the non-normality of the data.
2.3. Post hoc Tests: the results of the Kruskal-Wallis test showed significant differences between the percentiles of height and weight for growth after menarche. However, Dunn's post hoc tests are mentioned briefly without much detail. Please provide more information on how these tests were performed and why they were chosen, as this would improve the scientific rigor of the analysis.
2.4. Presentation of results: what is the rationale for presenting results with two or more decimal places?

3. CLARITY OF PRESENTATION AND LANGUAGE
3.1 Clarity of presentation of results: while the results are presented logically, the figures and tables could be more clearly labeled. Some figures lack detailed legends or explanations of statistical significance markers, which may confuse readers. For example, in Figure 2 and Figure 3, the use of asterisks for significant differences should be more clearly explained in the legend. Also, Table 1 was presented incorrectly. Please correct this.

3.2. Redundant information: there are areas where the manuscript unnecessarily repeats information, especially regarding the factors studied (age, height, and BMI). Please condense these sections to avoid redundancy and improve the flow of the manuscript.

4. LIMITATIONS AND STUDY DESIGN

4.1. Retrospective design: the retrospective nature of the study limits the ability to control for confounding variables, which the authors briefly acknowledge. However, the discussion could benefit from a more thorough exploration of the biases inherent in retrospective designs (e.g., selection bias, recall bias) and how these were mitigated or how they might affect the results. Please discuss this limitation in detail.

4.2. Control of confounding variables: the manuscript does not discuss whether efforts were made to control for potential confounding variables, such as socioeconomic status or diet, that may influence growth outcomes. Either include a discussion of how confounders were accounted for or acknowledge that these factors were not considered.

5. GENERALIZABILITY

5.1. Limited generalizability: you mention that your study population consisted of girls who attended endocrinology clinics because of height concerns. This limits the generalizability of the findings as the sample may not be representative of the broader population of girls in Iran. Please expand your discussion of how this affects the applicability of your findings to other populations.

7. ENGLISH LANGUAGE AND STYLE

7.1. Language clarity: the English language of the manuscript is understandable, but could benefit from significant improvements in sentence structure, grammar, and punctuation. Some sentences are overly complex and awkwardly phrased, which detracts from the overall readability. Please consider using professional language editing services or having the manuscript thoroughly proofread by a native English speaker to polish the writing.

7.2. Tense consistency: there are inconsistencies in tense, switching between past and present tense, especially when describing the study design, results, and conclusion. Scientific writing typically uses the past tense to report methods and results, so maintaining consistency in tense usage will improve readability. Please correct this.

7.3. References: the references appear to be formatted correctly, though they may need minor adjustments to adhere strictly to journal guidelines. Please correct this.

Thank you for the opportunity to participate in the review of your manuscript. Addressing these issues would greatly enhance the scientific validity of the study and make the results more reliable and applicable to the field of pediatric endocrinology. I look forward to the further development of your work and your continued contributions to the scientific community.

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Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Response to Reviewers

Manuscript title: Evaluation of average post-menarche height growth and associated factors: a cross-sectional study

Manuscript ID: 153696

Dear Associate Editor

Thank you very much for your email and the opportunity for improving our manuscript. We read with interest the comments raised by the publishing office and respected reviewers with regards to our manuscript. We appreciate the time and effort that you and the reviewers dedicated to provide feedback on our manuscript and are grateful for the insightful comments. We have incorporated most of the suggestions and have done our best to address the comments made by you and the reviewers. All changes are highlighted within the manuscript. Our responses to the reviewers' comments are given below, for a point-by-point response to the reviewers' comments and concerns.

Reviewer 1

- **Q:** It should be stated in the method that none of the patients suffered from precocious puberty and that all the girls in the study started menarche above 10 years old.
- **R:** Thank you for your comment. Presence of precocious puberty and menarche before 10 years old were added to exclusion criteria in the Materials and Methods section (Page 3, Line 90 to 91).

- **Q:** If possible, it is better to provide the relationship between the final height and the amount of height gain in the post-menstrual period, with the height of the parents and the average height of the parents to increase the validity of the study.
- **R:** Thank you for your comment. While assessing the relationship between final height and post-menstrual height gain was not part of the initial aims of this study, we appreciate your suggestion. We will consider this aspect in future research and evaluate the relationship you mentioned. The information regarding parents' heights was incomplete in the medical records. As a result of this missing data, we are unable to assess the influence of parental height on the amount of height growth after menarche.

- **Q:** Unfortunately, in no part of the study has it been mentioned whether what percentage of these girls have closed the growth plate at the end of 3 years or not? In fact, it is very important to know whether after 3 years, the growth plate is still open or not? Because in cases where the age of onset of menstruation is lower, do we expect the growth plate to close earlier or later? And this helps to choose one of the theories that the period is the dark point for gaining height or waiting for height increase

- **R:** Thank you for your valuable comment. We included girls whose growth had concluded and who did not experience any height increase within one year after the three-year follow-up period. The closure of the growth plates was determined based on findings from physical examinations rather than imaging. This clarification has been incorporated into the inclusion criteria in the Methods section (Page 3, Line 84 to 86).

Reviewer 2

- **Q:** Rationale for sample size: although the sample size of 91 adolescent girls is reasonable, the manuscript lacks a formal sample size calculation. This is a significant deficiency as it is unclear whether the study was adequately powered to detect meaningful differences. Justification of sample size based on power analysis is critical to ensure that the study's conclusions are valid and not underpowered. Please provide a sample size calculation to justify the adequacy of the study population or discuss this limitation in detail.
- **R:** We employed convenience sampling and included all eligible patients in the study. To determine the sample size, we referenced a prevalence rate of 4.15% for adolescents with short stature, as reported in a previous study conducted on the Iranian population (1). The sample size was calculated using the following formula:

α.=0.05

p.=4.15 %

(1-p)= 95.85%

d=0.05

n= 60

$$n=\frac{(z1-\alpha/_2)^2.P(1-}{d^2} \qquad n=\frac{(1.96)^2\times 0.0415(1-0.04}{(0.05)^2}$$

- Additionally, a study on postmenarcheal height growth in Chile determined that a minimum sample size of 90 participants was necessary, based on a significance level of 0.05 and a statistical power of 80% (2).

- **Q:** Representativeness of the sample: participants were recruited from a pediatric endocrinology clinic, making it a clinical sample rather than a representative population sample. This introduces a potential bias as

these adolescents may not reflect the general population of Iranian girls. Please include a more detailed discussion of the limitations this introduces and how this affects the generalizability of the findings.

- **R:** Thank you for your valuable comment. The potential bias and its impact on the generalizability of the findings were more thoroughly discussed in the discussion section (Page 6, Line 177 to 179), (Page 6, Line 184 to 188), (Page 6, Line 195 to 197), (Page 8, Line 247 to 250), (Page 8, Line 256 to 259).

- **Q:** Software description: the description of the SPSS software in the "Statistical analysis" section is unclear (line 96). Please explicitly state the use of SPSS software as recommended by the ICMJE (https://www.icmje.org/icmje-recommendations.pdf). In addition, please refer to https://www.ibm.com/support/pages/how-cite-ibm-spss-statistics-or-earlier-versions-spss for proper citation guidelines.
- **R:** We specified the statistical software package used, along with its version, in a more explicit manner (Page 3, Line 96 to 97).

- **Q:** Nonparametric statistical tests: the authors appropriately used nonparametric tests due to the non-normal distribution of height growth. However, there is little explanation for the choice of these tests. Please include a brief explanation of why these tests were chosen over parametric alternatives, especially for readers unfamiliar with the non-normality of the data.
- **R:** Thank you for your constructive comment. A more detailed explanation was provided regarding the non-normal distribution of the data and the rationale for using non-parametric tests (Page 3, Line 99 to 103).

- **Q:** Post hoc Tests: the results of the Kruskal-Wallis test showed significant differences between the percentiles of height and weight for growth after menarche. However, Dunn's post hoc tests are mentioned briefly without much detail. Please provide more information on how these tests were performed and why they were chosen, as this would improve the scientific rigor of the analysis.
- **R:** Thank you for your constructive comment. We have provided a more detailed explanation of how and when we utilized Dunn's post hoc tests (Page 3, Line 106 to 109).

- **Q:** Presentation of results: what is the rationale for presenting results with two or more decimal places?
- **R:** Thank you for your precious comment. Presenting numerical results with two or more decimal places is a common practice in scientific and

statistical reporting. It enhances precision and accuracy, highlights statistical significance, adheres to reporting standards, and improves readability.

- **Q:** Clarity of presentation of results: while the results are presented logically, the figures and tables could be more clearly labeled. Some figures lack detailed legends or explanations of statistical significance markers, which may confuse readers. For example, in Figure 2 and Figure 3, the use of asterisks for significant differences should be more clearly explained in the legend. Also, Table 1 was presented incorrectly. Please correct this.
- **R:** The legends for Figures 2 and 3 have been rewritten for clarity and detail, with a more explicit explanation of the statistical significance markers (Page 6, Line 166 to 168 and 170 to 172). Additionally, corrections have been made to Table 1 (Page 5, Line140 to 142, Table 1).

- **Q:** Redundant information: there are areas where the manuscript unnecessarily repeats information, especially regarding the factors studied (age, height, and BMI). Please condense these sections to avoid redundancy and improve the flow of the manuscript.
- **R:** Thank you for your comment. We have removed the redundant and repetitive sections regarding the factors studied (age, height, and BMI) in the discussion section to enhance clarity (Page 6, Line 175).

- **Q:** Retrospective design: the retrospective nature of the study limits the ability to control for confounding variables, which the authors briefly acknowledge. However, the discussion could benefit from a more thorough exploration of the biases inherent in retrospective designs (e.g., selection bias, recall bias) and how these were mitigated or how they might affect the results. Please discuss this limitation in detail.
- **R:** We provided a more comprehensive discussion of the biases arising from the retrospective design of the study in the limitations section (Page 8, Line 242 to 247).

- **Q:** Control of confounding variables: the manuscript does not discuss whether efforts were made to control for potential confounding variables, such as socioeconomic status or diet, that may influence growth outcomes. Either include a discussion of how confounders were accounted for or acknowledge that these factors were not considered.
- **R:** Thank you for your valuable comment. Controlling for potential confounding variables, such as socioeconomic status or diet, was not

feasible due to the retrospective design of the study and the lack of relevant information in the medical records. However, we have addressed the role of confounding variables in the discussion section, highlighting their potential impact on the results (Page 6, Line 195 to 197).

- **Q:** Limited generalizability: you mention that your study population consisted of girls who attended endocrinology clinics because of height concerns. This limits the generalizability of the findings as the sample may not be representative of the broader population of girls in Iran. Please expand their discussion of how this affects the applicability of their findings to other populations.
- **R:** Thank you for your valuable comment. The impact of the clinical study population on the generalizability of the findings has been discussed more thoroughly in both the discussion and limitations sections (Page 6, Line 177 to 179), (Page 6, Line 184 to 188), (Page 6, Line 195 to 197), (Page 8, Line 247 to 250), (Page 8, Line 256 to 259).

- **Q:** Language clarity: the English language of the manuscript is understandable, but could benefit from significant improvements in sentence structure, grammar, and punctuation. Some sentences are overly complex and awkwardly phrased, which detracts from the overall readability. Please, analyze the use of professional language editing services or thorough proofreading by a native English speaker is recommended to polish the writing.
- **R:** We appreciate your suggestion. The manuscript was edited by a native English speaker to enhance clarity, coherence, and overall readability (Page 1, Line 23, 34, 36), (Page 2, Line 41, 51, 60, 61), (Page 4, Line 130), (Page 7, Line 223), (Page 8, Line 239).

- **Q:** Tense consistency: there are inconsistencies in tense, switching between past and present tense, especially when describing the study design, results, and conclusion. Scientific writing typically uses the past tense to report methods and results, so maintaining consistency in tense usage will improve readability. Please correct this.
- **R:** The mentioned parts were reviewed again, and we adjusted the verb tenses to address any inconsistencies.

- **Q:** References: the references appear to be formatted correctly, though they may need minor adjustments to adhere strictly to journal guidelines. Please correct this.
- **R:** Thank you for your valuable comment, done.

Associate Editor's Comments:

- **Q:** There is no mention of efforts to address potential sources of bias.
- **R:** Thank you for your helpful comment. We provided a more comprehensive discussion of the potential biases in the limitations section (Page 8, Line 242 to 250).

- **Q:** The study size (91 girls) is reported, but the rationale for this sample size is not provided.
- **R:** The sample size calculation has been provided above in response to "Reviewer 1."

- **Q:** Limitations of the study are not discussed, which is essential for transparency.
- **R:** Thank you for your comment. A more comprehensive and detailed discussion of the study's limitations has been included (Page 8, Line 242 to 250).

Reviewer Assistant Comments:

- **Q:** There is no mention of efforts to address potential sources of bias.
- **R:** Thank you for your helpful comment. We provided a more comprehensive discussion of the potential biases in the limitations section (Page 8, Line 242 to 250).

- **Q:** The study size (91 girls) is reported, but the rationale for this sample size is not provided.
- **R:** The sample size calculation has been provided above in response to "Reviewer 1."

- **Q:** The statistical methods used (SPSS version 26) are mentioned, but specific analyses (e.g., how missing data were handled) are not detailed.
- **R:** Thank you for your valuable comment. As we excluded incomplete medical records, there were no missing data in the study.

- **Q:** The number of participants and their characteristics are provided, but reasons for non-participation are not discussed.
- **R:** The exclusion criteria have been written with more details (Page 3, Line 84 to 91).

- **Q:** Characteristics of the participants are summarized, but details on missing data for each variable are not included.
- **R:** Thank you for your comment. As we excluded incomplete medical records, there were no missing data in the study.

- **Q:** The main results regarding height growth are reported, but there is no mention of unadjusted or adjusted estimates.
- **R:** Thank you for your insightful comment. I would like to clarify that the results presented were unadjusted estimates, as noted in the results section of the report (Page 4, Line 125 to 126).

- **Q:** Limitations of the study are not discussed, which is essential for transparency.
- **R:** Thank you for your comment. A more comprehensive and detailed discussion of the study's limitations has been included (Page 8, Line 242 to 250).

- **Q:** There is no discussion on the generalisability of the findings.
- **R:** Thank you for your valuable comment. The impact of the clinical study population on the generalizability of the findings has been discussed more thoroughly in both the discussion and limitations sections (Page 6, Line 177 to 179), (Page 6, Line 184 to 188), (Page 6, Line 195 to 197), (Page 8, Line 247 to 250), (Page 8, Line 256 to 259).

- **Q:** There is no mention of funding sources or conflicts of interest.
- **R:** This study was carried out without any funding support, which is mentioned in funding section (Page 8, Line 267).

1. Heshmat R, Qorbani M, Mozafarian N, Djalalinia S, Sheidaei A, Mansourian M, et al. Economic inequality in prevalence of underweight and short stature in children and adolescents: the weight disorders survey of the CASPIAN-IV study. Archives of endocrinology and metabolism. 2020;64:548-58.
2. Amigo H, Lara M, Bustos P, Muñoz S. Postmenarche growth: cohort study among indigenous and non-indigenous Chilean adolescents. BMC Public Health. 2015;15:1-7.

2 Revision 1

1 comment · 5 Nov 2024

Referee 1 Reviewer

ACCEPT 5 Nov 2024

Dear Authors,

Thank you for your thorough responses and revisions to your manuscript. After evaluating the revised version, I am pleased to see that most of my previous comments have been sufficiently addressed:
1. The addition to the inclusion criteria specifying the exclusion of cases of precocious puberty and menarche before the age of 10 years was clearly included in the Methods section.
2. Your detailed explanation of the sample size calculation and discussion of the limitations related to the representativeness of the sample have been effectively incorporated.
3. The expanded discussion of study limitations, including potential biases introduced by the retrospective design and the clinical nature of the sample, has strengthened the manuscript.
4. The improved explanations of the use of nonparametric statistical tests and the detailed description of post hoc Dunn's tests add to the scientific rigor and transparency of your analysis.
5. Revisions to figure legends to make statistical significance markers clearer and corrections to Table 1 improve the clarity of the manuscript.
6. The removal of redundant information in the Discussion section has improved the overall flow and readability of the text.

Overall, you have satisfactorily addressed the key points raised in my previous review. The revisions have improved the clarity, methodological detail, and overall quality of your manuscript. While limitations such as selection bias and the retrospective nature of the study are noted, they have been adequately discussed.

I am confident in recommending acceptance of your revised manuscript. Thank you for your efforts to improve your paper. I look forward to its publication.