

How Accurate is Self-Reported Parental Height? Evidence From a Tertiary Pediatric Endocrinology

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ABSTRACT

Objective: Parental height is a key component of growth assessment in children; however, it is often self-reported. The accuracy of reported parental height and its potential clinical implications remain insufficiently studied.

Methods: Parents of the first 100 children attending a tertiary pediatric endocrinology clinic for the first time were included. Parental height was first self-reported and subsequently measured using a standardized stadiometer. Height standard deviation scores (SDS) were calculated based on Neyzi reference data. Reporting error was defined as the difference between reported and measured height (Δ SDS). Agreement was assessed using Wilcoxon signed-rank tests and Bland–Altman analysis. Correlations were evaluated using Spearman's rank test.

Results: A total of 96 mothers and 58 fathers were included. Self-reported height was significantly higher than measured height in both mothers (159.3 \pm 6.1 vs. 157.3 \pm 5.6 cm, $p < 0.001$) and fathers (174.8 \pm 5.3 vs. 172.7 \pm 4.6 cm, $p < 0.001$). Over-reporting of ≥ 2 cm was observed in 51.0% of mothers and 58.6% of fathers. Bland–Altman analysis demonstrated a mean bias of 2.0 cm in mothers and 2.3 cm in fathers, with wide limits of agreement. No significant correlation was found between measured height SDS and reporting error in either group. Reporting accuracy was not influenced by parental stature, sex, or shared family behavior.

Conclusion: Self-reported parental height frequently overestimates true height and shows substantial individual variability in a pediatric endocrinology setting. Whenever possible, direct measurement of parental height should be incorporated into routine clinical practice to ensure accurate growth assessment.

INTRODUCTION

Parental height is a fundamental component of growth assessment in children and is routinely used for the calculation of target height and interpretation of growth patterns in pediatric practice.^[1,2] A child's height centile is evaluated in relation to the mid-parental height (MPH) centile and target range (MPH \pm 2 SD) on the growth chart; height outside this range increases the likelihood of an underlying growth disorder.^[1,3] Accurate determination of parental height is essential for the assessment of a child's growth potential across a wide range of conditions affecting linear growth, not limited to the evaluation of short stature.^[2,4]

In pediatric endocrinology clinics, parental height is ideally measured using standardized stadiometry. However, in real-life clinical settings, direct measurement may not always be feasible because of high patient volume or incomplete

parental attendance at the time of evaluation. Consequently, parental height is frequently obtained by self-report, particularly in routine pediatric practice.^[3] Although self-reported anthropometric data are convenient, they are susceptible to systematic reporting bias and may not reliably reflect true height.^[5,6]

Previous studies in adult populations have demonstrated that self-reported height tends to be overestimated, with greater discrepancies observed among men and shorter individuals.^[6-8] However, evidence on the accuracy of self-reported parental height in pediatric clinical settings is scarce, and data from the Turkish population are limited. Moreover, the potential impact of inaccurate parental height reporting on growth assessment and target height calculation has not been sufficiently addressed.^[9]

The aim of this study was to evaluate the agreement be-

tween reported and measured parental height in a pediatric endocrinology clinic setting. We also aimed to examine differences in reporting accuracy between mothers and fathers, and to determine whether the magnitude of self-reported error can be considered clinically acceptable in the Turkish population.

MATERIALS AND METHODS

This observational study was conducted at a tertiary pediatric endocrinology outpatient clinic. Parents (96 mother, 58 father) of the first 100 consecutive children who attended the clinic for the first time after scheduling their appointment through the national central appointment system were invited to participate. Both mothers and fathers were eligible for inclusion if they attended the clinic visit. Parents with known skeletal deformities, previous spinal surgery, or medical conditions affecting standing height were excluded from the study.

At the initial clinic visit, parental height was first obtained by self-report and recorded by the clinician. Subsequently, standing height was measured using a calibrated Holtain Harpenden stadiometer by experienced pediatric endocrinologist. Measurements were performed with parents barefoot and positioned in the Frankfurt plane, and height was recorded to the nearest 0.1 cm.

Adult height standard deviation scores (SDS) were calculated separately for reported and measured parental heights using sex-specific mean and standard deviation values at 18 years of age derived from the Neyzi growth charts, which were used as a proxy for adult height.^[10] The difference between reported and measured SDS values (Δ SDS) was used to assess reporting bias.

Written informed consent was obtained from all participating parents prior to enrollment. Participation was voluntary, and all data were anonymized before analysis to ensure confidentiality. Studies were performed with

the approval of the Ethics Committee of the Marmara University Faculty of Medicine, Istanbul, Türkiye (09.2025-25.0954) and according to the Declaration of Helsinki.

Statistical analysis

Statistical analyses were performed using GraphPad Prism® version 10 (GraphPad Software Inc., San Diego, California, USA). Statistical significance was defined as $p < 0.05$. Continuous variables were summarized as mean \pm standard deviation or median, as appropriate. Differences between self-reported and measured parental heights were assessed using the Wilcoxon signed-rank test. Agreement between reported and measured height was evaluated using Bland–Altman analysis, including calculation of mean bias and 95% limits of agreement. Associations between measured height SDS and reporting error (Δ SDS), as well as between maternal and paternal reporting error, were assessed using Spearman's rank correlation coefficient. Comparisons of reporting error between parents below and above the 25th height percentile were performed using the Mann–Whitney U test.

RESULTS

Of the 100 children included, 54 attended the first clinic visit with both parents, 42 attended with their mother only, and 4 attended with their father only.

Among mothers, self-reported height (median: 159.3 ± 6.1 , range: 150–182 cm) was significantly higher than measured height (157.3 ± 5.6 , range: 148.4–177.7 cm) ($p < 0.001$, Wilcoxon signed-rank test). Similarly, among fathers, self-reported height (median: 174.8 ± 5.3 , range: 161–185 cm) was also significantly higher than measured height (median: 172.7 ± 4.6 , range: 162–182.1 cm) ($p < 0.001$, Wilcoxon signed-rank test). Comparison of self-reported and measured parental height demonstrated consistent differences across the distribution in both mothers and fathers (Fig. 1).

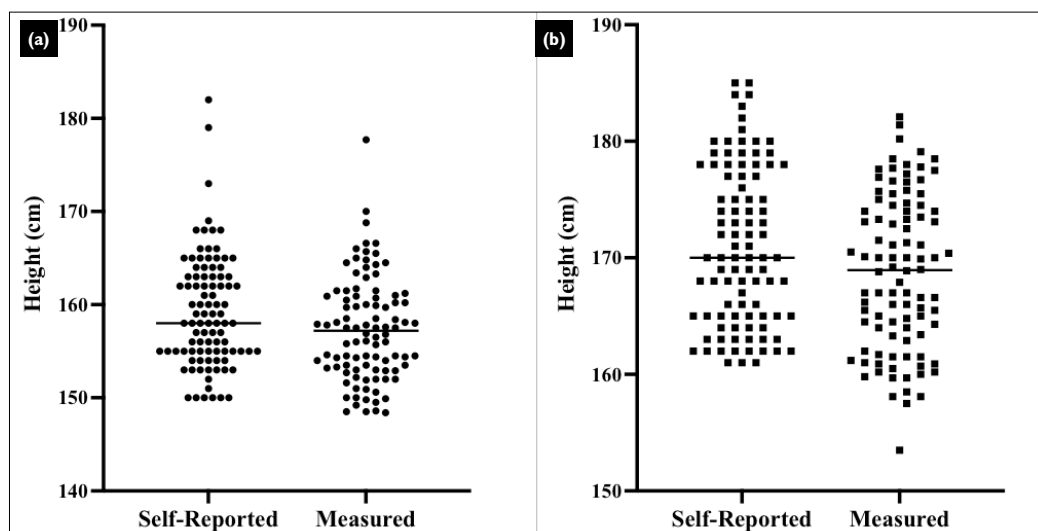


Figure 1. Comparison of self-reported and measured parental height in (A) mothers and (B) fathers.

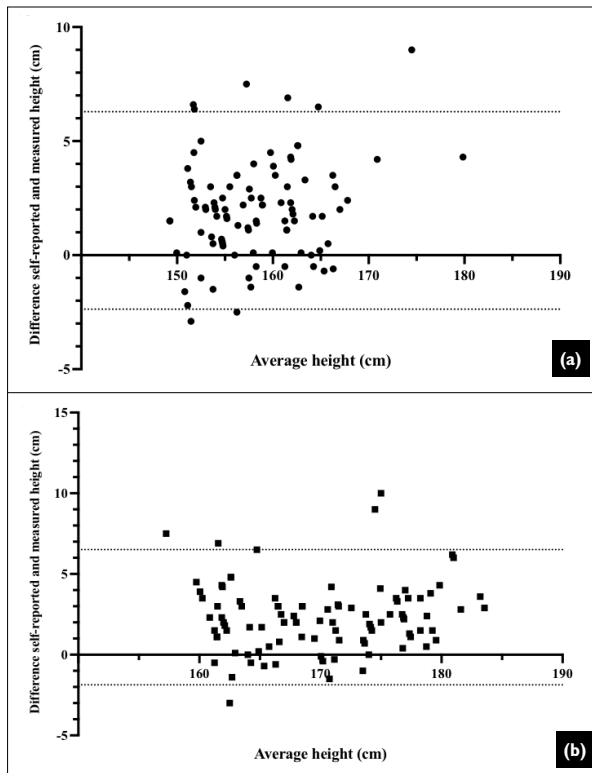


Figure 2. Agreement Between self-reported and measured parental height assessed by Bland–Altman analysis. Bland–Altman plots showing the agreement between self-reported and measured parental height in (a) mothers and (b) fathers. The difference between self-reported and measured height is plotted against the mean of the two measurements. The solid horizontal line represents the mean difference (bias), and the dashed lines indicate the 95% limits of agreement.

Among mothers, over-reporting of ≥ 2 cm was observed in 49 participants (51.0%), while major over-reporting (≥ 5 cm) was present in 7 (7.3%). Under-reporting of ≤ -2 cm was observed in 3 mothers (3.1%). Among fathers,

over-reporting of ≥ 2 cm was observed in 34 participants (58.6%), while major over-reporting (≥ 5 cm) was present in 3 (5.2%). Under-reporting of ≤ -2 cm was observed in 1 father (1.7%).

Bland–Altman analysis demonstrated a positive mean bias in mothers (2.0 cm; 95% limits of agreement: -2.4 to $+6.3$ cm) and fathers (2.3 cm; -1.9 to $+6.5$ cm), indicating higher self-reported than measured height. In both groups, wide 95% limits of agreement were observed, reflecting considerable individual variability (Fig. 2).

When measured height SDS was compared with reporting error (Δ SDS), no significant correlation was observed in either mothers (Spearman's $\rho = -0.05$, 95% CI -0.20 to 0.20 , $p = 0.66$; $n = 96$) or fathers ($\rho = 0.10$, 95% CI -0.10 to 0.40 , $p = 0.36$; $n = 58$), indicating that reporting accuracy was not influenced by parental height (Fig. 3). When mothers and fathers were stratified according to measured height below and above the 25th percentile, no significant differences in reporting error were observed between the two groups in either parent ($p = 0.67$ and $p = 0.31$ respectively).

Among families in which both parents attended the clinic, no significant correlation was observed between maternal and paternal reporting error (Δ SDS) (Spearman's $\rho = 0.20$, 95% CI -0.10 to 0.40 , $p = 0.19$; $n = 54$).

DISCUSSION

In this study, we evaluated the agreement between self-reported and measured parental height in a tertiary pediatric endocrinology clinic and demonstrated that both mothers and fathers systematically overestimated their height. Self-reported values were significantly higher than measured values in both groups, with a mean overestimation of approximately 2 cm. These findings are consistent with previous reports in adult populations showing a tendency toward height over-reporting.^[5-7,11]

Bland–Altman analysis revealed wide limits of agreement,

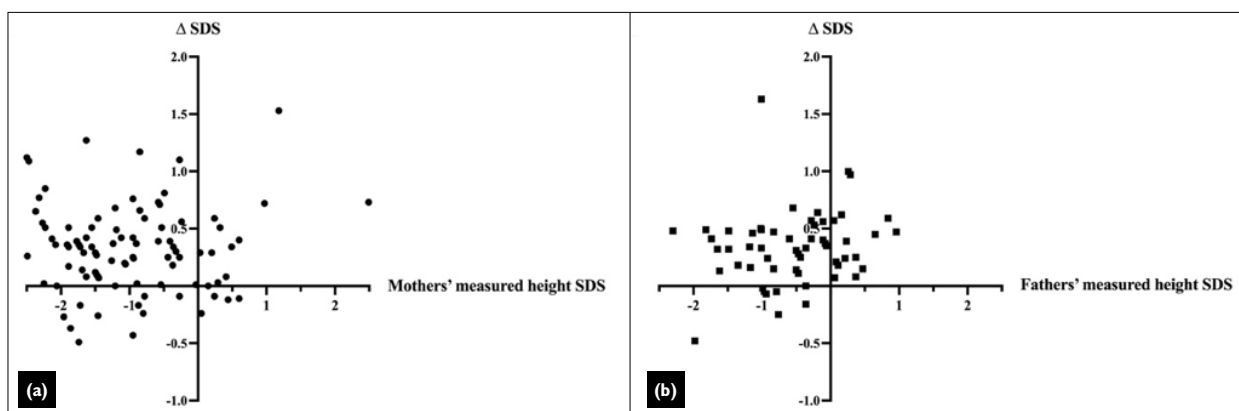


Figure 3. Scatter plots showing the relationship between measured height standard deviation score (SDS) and reporting error (Δ SDS) in (a) mothers and (b) fathers. Δ SDS was calculated as the difference between self-reported and measured height SDS. No significant correlation was observed between measured height SDS and reporting error in either group, indicating that reporting accuracy was not influenced by parental stature.

indicating substantial individual variability in reporting accuracy.^[12] Although the average bias was modest, discrepancies of up to 6-7 cm were observed in both mothers and fathers. Such differences may be clinically relevant, as inaccurate parental height reporting can affect mid-parental height calculation and the interpretation of a child's growth pattern.^[3,13]

More than half of the parents over-reported their height by at least 2 cm, while major discrepancies of 5 cm or more were present in a considerable minority. In contrast, under-reporting was uncommon. These findings suggest that over-reporting represents the predominant pattern of bias in this population, in line with previous anthropometric validation studies.^[5,6]

Unlike some previous studies reporting greater overestimation among shorter individuals,^[6,14] we did not observe an association between measured height and reporting error. Neither correlation analyses nor stratification by height percentile revealed differences in reporting accuracy among shorter parents, suggesting that reporting bias occurred independently of actual stature.

Previous studies conducted predominantly in adult populations have reported greater overestimation among men than women.^[4,6,7,14] In contrast, our findings did not support the hypothesis that men tend to overestimate their height more than women. This discrepancy may reflect cultural and contextual differences in health-related perceptions and reporting behaviors. In the Turkish population, height perception and self-reporting practices may be less influenced by gender-related social and increased health awareness among parents attending pediatric specialty clinics may contribute to similar reporting patterns between mothers and fathers.

Notably, a substantial proportion of children attended the first clinic visit without their fathers, and paternal height was therefore frequently obtained by self-report. This reflects common patterns in routine pediatric practice in Turkey, where mothers more often accompany children to outpatient visits. Sociocultural and occupational factors, including work-related constraints and traditional caregiving roles, may limit paternal attendance. Consequently, clinicians frequently rely on indirectly obtained paternal anthropometric data, which may further increase the risk of reporting bias.

Interestingly, a population-based study from Scotland reported that both men and women tended to underestimate their height, with mean differences of 1.3 cm and 1.7 cm, respectively.^[15] Despite differences in the direction of reporting bias, a consistent finding across studies is the wide individual variability between reported and measured height in both sexes. This reinforces the importance of accurate parental height measurement in pediatric clinical practice. In addition, no significant correlation was observed between maternal and paternal reporting error among families in which both parents attended the clinic, suggesting that reporting accuracy reflects individual

rather than shared family-related behavior.

From a clinical perspective, these findings highlight the limitations of relying solely on self-reported parental height in pediatric growth assessment. Given the frequency and magnitude of reporting errors, direct measurement of parental height should be encouraged whenever feasible.^[3,13] When measurement is not possible, clinicians should interpret reported values with caution and consider potential bias. Efforts should be made to measure both parents at the earliest opportunity and to record their heights in the child's health record.

The main strengths of this study include the standardized measurement protocol, the use of Bland–Altman analysis, and the focus on a pediatric endocrinology population. However, several limitations should be acknowledged. The single-center design may limit generalizability, and socioeconomic and educational factors that may influence reporting accuracy were not assessed.

CONCLUSION

In conclusion, self-reported parental height frequently overestimates true height and shows substantial individual variability in a pediatric endocrinology setting. These discrepancies are not influenced by parental stature, sex or shared family behavior. Whenever possible, direct measurement of parental height should be incorporated into routine clinical practice to ensure accurate growth assessment.

Ethics Committee Approval

Studies were performed with the approval of the Ethics Committee of the Marmara University Faculty of Medicine (Date: 21.11.2025, Decision No: 09.2025-25.0954).

Informed Consent

Written informed consent was obtained from all participating parents prior to enrollment.

Peer-review

Externally peer-reviewed.

Authorship Contributions

Concept: B.G.T., T.G.; Design: B.G.T., T.G.; Supervision: Z.Y.A.; Materials: B.G.T.; Data collection &/or processing: B.G.T., M.E., D.H.; Analysis and/or interpretation: B.G.T., D.H.; Literature search: B.G.T., Z.Y.A.; Writing: B.G.T., M.E.; Critical review: Z.Y.A., T.G.

Conflict of Interest

None declared.

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Ebeveynlerin Beyan Ettikleri Boy Ölçümlerinin Güvenilirliği: Üçüncü Basamak Bir Çocuk Endokrinoloji Merkezinden Bulgular

Amaç: Ebeveyn boyu, çocuklarda büyümenin değerlendirilmesinde temel bir bileşen olmakla birlikte, çoğu zaman beyan ettikleri boy kabul edilir. Ancak ebeveynlerin bildirdiği boy ölçümlerinin doğruluğu ve bunun olası klinik sonuçları yeterince araştırılmamıştır.

Gereç ve Yöntem: Üçüncü basamak bir çocuk endokrinoloji kliniğine ilk kez başvuran ilk 100 çocuğun ebeveynleri çalışmaya dâhil edildi. Ebeveynlerin boyları önce öz bildirim yoluyla alındı, ardından standart bir stadiometre kullanılarak ölçüldü, boy standart sapma skorları (SDS) hesaplandı. Bildirim hatası, bildirilen ve ölçülen boy arasındaki fark (Δ SDS) olarak tanımlandı. Uyum, Wilcoxon işaretli sıralar testi ve Bland–Altman analizi ile değerlendirildi. Korelasyon analizleri Spearman sıra korelasyon testi ile yapıldı.

Bulgular: Çalışmaya toplam 96 anne ve 58 baba alındı. Hem anneler hem de babalar boylarını, ölçülen değerlere göre anlamlı olarak daha uzun bildirdi (anneler: 159.3 ± 6.1 ve 157.3 ± 5.6 cm; babalar: 174.8 ± 5.3 ve 172.7 ± 4.6 cm; her ikisi için $p < 0.001$). Annelerin %51.0'i, babaların ise %58.6'sı boyunu en az 2 cm daha uzun bildirmişti. Bland–Altman analizi, annelerde ortalama 2.0 cm, babalarda ise 2.3 cm'lik fazla bildirim olduğunu ve bireyler arasında belirgin farklılıklar bulunduğunu gösterdi. Ölçülen boy SDS ile Δ SDS arasında anlamlı bir ilişki saptanmadı. Ayrıca, bildirim doğruluğu ebeveynin boyu, cinsiyeti veya aile içi ortak davranışlardan etkilenmedi.

Sonuç: Çocuk endokrinoloji pratiğinde ebeveynlerin bildirimine dayalı boy ölçümleri, gerçek boyu sıklıkla olduğundan yüksek göstermekte ve belirgin bireysel değişkenlik içermektedir. Büyümenin doğru değerlendirilmesini sağlamak için, mümkün olan durumlarda ebeveyn boylarının doğrudan ölçülmesi rutin klinik uygulamaya dâhil edilmelidir.

Anahtar Sözcükler: Bildirime dayalı boy; çocuk endokrinolojisi; ebeveyn boyu; hedef boy.