



## CONFUSING KERATOMETRIC VALUES

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**ABSTRACT** Keratometry plays a vital role in pediatric ophthalmology as it measures the anterior corneal curvature<sup>1</sup>. This study investigates keratometric values in children between the ages of 5 and 16 years. Data collection was performed using an RF-K1 full autorefractometer<sup>2</sup>, followed by statistical analysis<sup>3</sup>. The results demonstrate variations in keratometry with respect to age and gender, with younger children and females exhibiting higher mean keratometry values<sup>4</sup>. These findings emphasize the necessity for further research to establish well-defined criteria for diagnosing pediatric keratoconus<sup>5</sup>.

**KEYWORDS :****INTRODUCTION**

Keratometry is a fundamental diagnostic tool that evaluates the anterior curvature of the cornea across a fixed chord length of 2-3 mm, providing essential data for detecting refractive errors and corneal abnormalities<sup>6</sup>. Normal keratometric values typically range between 42-44 diopters (D); However, deviations can occur during childhood<sup>7</sup>. This study aims to examine keratometric variations in children aged 5-16 years while exploring differences associated with age and gender<sup>8</sup>.

**MATERIALS AND METHODS**

A cross-sectional study was conducted at the Ophthalmology OPD, enrolling children aged 5 to 16 years. Visual acuity was assessed using Snellen's chart, and best-corrected visual acuity was recorded. Keratometric readings of the flat and steep meridians were obtained using an RF-K1 full autorefractometer. Statistical analyses were applied, with results expressed as mean  $\pm$  SD.

**RESULTS**

The overall mean keratometry value was 43.84  $\pm$  1.73 D.

The table shows - The mean keratometric value for the flat meridian is 44.72 D, and for the steep meridian, it is 43.44 D.

Age (yrs)	Number	Flat meridian in mean	+/- SD	95%CI	Steep meridian in mean	+/- SD	95%CI	Mean	+/- SD	95%CI
5	2	43.87	1.76	25.74-57.00	46.63	1.76	28.00-59.76	45.25	1.76	26.62-58.38
6	14	44.12	1.60	42.29-44.27	45.04	1.60	43.21-45.19	44.58	1.60	43.75
7	4	44.12	0.12	42.12-45.75	45.94	0.12	43.93-47.55	45.03	0.12	43.02-46.65
8	8	43.09	1.65	39.84-43.58	44.97	1.65	41.72-45.46	45.03	0.12	43.02-46.65
9	18	44.08	0.80	42.46-44.90	45.31	0.80	43.69-46.13	43.88	0.80	43.07-45.51
10	10	43.87	0.22	42.76-44.65	44.83	0.22	43.72-45.61	44.35	0.22	43.24-45.13
11	14	42.53	0.39	41.36-41.82	43.48	0.39	42.31-44.19	43.00	0.39	41.83-43.00
12	22	43.42	1.23	41.39-44.36	44.91	1.23	42.88-45.85	44.16	1.23	42.13-45.10
13	26	42.8	0.74	41.68-43.32	43.70	0.74	42.58-44.22	43.25	0.74	42.13-43.77
14	38	42.88	0.85	41.57-43.63	43.92	0.85	42.79-44.67	43.4	0.85	42.18-44.15
15	14	43.5	0.49	42.34-44.08	44.43	0.49	43.27-45.01	43.96	0.49	42.80-44.54
16	30	43.23	1.15	42.01-43.59	44.03	1.15	42.81-44.39	43.63	1.15	42.41-43.99s

Gender	Flat K (D)	Steep K (D)
Female	44.85	43.57
Male	44.24	43.11

Figure -1 Gender-based differences were noted, with females exhibiting slightly higher keratometric values than males (by 0.43 & 0.58 D in the flat and steep meridians, respectively).

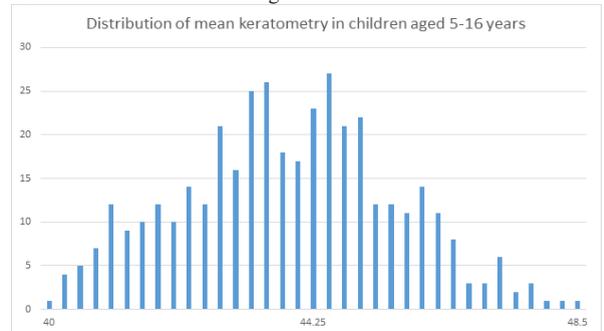
**DISCUSSION**

The results indicate a decline in keratometric values with increasing age, suggesting corneal flattening as a natural part of growth<sup>9</sup>. Additionally, females exhibited slightly steeper corneal curvature than males, a trend supported by previous studies<sup>10</sup>. These findings align with prior research, such as Hashemi et al.<sup>10</sup> and Friling et al.<sup>2</sup>, which report comparable trends in pediatric keratometry<sup>3</sup>. One key challenge highlighted by this study is the difficulty in establishing keratoconus in

Mean keratometric values for different age groups:

- **5 to 8 years:** Flat K = 45.41 D $\pm$ 1.28, Steep K = 43.95 D $\pm$ 1.28
- **9 to 12 years:** Flat K = 44.39 D $\pm$ 0.66, Steep K = 43.09 D $\pm$ 0.66
- **13 to 16 years:** Flat K = 44.22 D $\pm$ 0.80, Steep K = 43.23 D $\pm$ 0.80

These values indicate a trend of decreasing keratometry with age, suggesting corneal flattening as children grow. The flat and steep keratometry values are consistently higher in younger children, with a noticeable decline around the age of 11.



pediatric patients based solely on keratometric values, reinforcing the need for more comprehensive investigations with larger study populations<sup>4</sup>.

**CONCLUSION**

Keratometric values in children exhibit variation based on both age and gender, with younger children and females demonstrating steeper corneal curvature. Given the limitations of keratometry in diagnosing pediatric keratoconus, further research with broader data sets is essential to refine diagnostic criteria.

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