Agreement study of keratometric values measured by Biograph/LENSTAR, auto-kerato-refractometer and Pentacam: Decision for IOL calculationPurpose: To determine the prevalence of corneal arcus, its risk factors, and its relationship to ocular and visual indices.

BACKGROUND**:**

The aim was to determine the agreement in keratometric readings measured with the Biograph/LENSTAR, the Pentacam and an auto-kerato-refractometer in a ٤٠- to ٦٤-year-old population.

METHODS:

This report is part of the first phase of the population-based Shahroud Cohort Eye Study. In virgin eyes, agreement among keratometry readings of three devices was examined in ٧,٢٦٠ eyes using the Bland-Altman method. The inter-device ٩٥ per cent limits of agreement (٩٥% LoA) and ٩٥% confidence interval for upper and lower limits of agreement were calculated. Comparisons were made for keratometric readings of the flat and steep meridians as maximum keratometry (max-K), minimum keratometry (min-K) and their average (mean-K).

RESULTS:

Based on Biograph/LENSTAR measurements, averages of max-K, min-K and mean-K were ٤٤.٧٠ ± ١.٦٤, ٤٣.٨٧ ± ١.٥٤ and ٤٤.٢٨ ± ١.٥٨□D, respectively. The quantile-quantile plot revealed that all three variables had normal distributions in this population. Agreement between the Biograph/LENSTAR and the auto-kerato-refractometer (max-K difference: -٠.٠٣□D, ٩٥% LoA: -٠.٨١ to ٠.٧٥; min-K difference: -٠.٠٨□D, ٩٥% LoA: -٠.٨٥ to ٠.٦٨) was better than the agreement between the Biograph/LENSTAR and the Pentacam (max-K difference: ٠.٥٠□D, ٩٥% LoA: -٣.٢٤ to ٤.٢٥; min-K difference: ٠.٥٩□D, ٩٥% LoA: -٣.٠٠ to ٤.١٧). The agreement between the Pentacam and the auto-kerato-refractometer (max-K difference: ٠.٥٤□D, ٩٥% LoA: -٣.١٦ to ٤.٢٤; min-K difference: ٠.٦٦□D, ٩٥% LoA: -٠.٧٧ to ٠.٥٣) was worse than the other two pairs.

CONCLUSION:

These three devices are not interchangeable in terms of keratometry for calculation of the intraocular lens power. Agreement between the Biograph/LENSTAR and the auto-kerato-refractometer can be increased with regression models but this is not true in case of Biograph/LENSTAR and Pentacam.