Peer Review File

**Comparing the corneal curvatures obtained from three different keratometers-IOL Master, Bausch & Lomb Manual keratometer and TOPCON KR 8800 autokeratometer**

Reviewer: 1

Overall, the topic is acceptable, but please make sure you proofread your work before submitting it. There are numerous typing errors. English editing is also required. I will comment on the rest section by section, so you can improve each part.

**Abstract, Introduction, Methods:** Adequate

**Results:**

Table 1: This table is too basic and is unnecessary. Why the arbitrary grouping of ages? Mean age, with standard deviation, will be sufficient.

**Discussion:**

Leaves much to be desired. Too much repetition of results, lack of references to similar studies.

First paragraph of discussion: You mentioned “Several studies have reported the repeatability and accuracy of corneal powers”, but you only gave one reference. Since many other studies have compared corneal curvature measured by different instruments, what makes your study special? Is there any clinical relevance to your study (eg. Now you find that you get three different values using three different machines, what does that mean to you?)

Second paragraph: “In this prospective study, we performed keratometry using a manual keratometer (Bausch & Lomb), Topcon KR-8800 autokeratorefractometer (Topcon Inc., Japan) and IOL Master 500 (Zeiss Meditec) in two hundred fifty-two eyes of patients eligible for cataract surgery. Our study had total of 252 patients of which 121 patients in this study were females and 131 patients were males. Most of the patients in this study belonged to more than 60 years of age.”

Try not to keep repeating methods and results. For your instruments, please choose a term (eg. Autokeratorefractometer) and use it consistently (don’t change to ‘Topcon’ halfway). You have already described all these in the methods section. Why do you mention age and gender again here? Does it affect the accuracy of corneal curvature measurement using these machines?

Third paragraph: “Using IOL master instrument the mean (± SD) K steep was 45.06 (± 1.6), Kflat was 44.17 (± 1.5), and Avg K was 44.62 (± 1.52). Using Manual keratometry the mean (± SD) Ksteep was 45.04 (± 1.6), K flat was 44.15 (± 1.5) and Avg K was 44.6 (± 1.52). Finally, by autokeratorefractometer, we observed that the mean (± SD) K steep was 44.90 (± 1.6), Kflat was 44.02 (± 1.51) and Avg K was 44.47 (± 1.53). These values were similar to what was observed in previous studies.17–19

In what way would you say these are similar? And if they are similar, does it add weight to your study (your aim is to compare K reading from three instruments, not to find mean K reading among your population)? Based on your reference 17, by Ale Magar et al., the mean of average keratometry values obtained from the IOL Master, manual keratometry and autokeratometry were 44.388 ± 1.430, 44.297 ± 1.425 and 44.220 ± 1.497 D, respectively. Their highest Avg K was seen in the group measured with IOL master. In your case, however, mean Avg K was highest using manual keratometry and lowest with autokeratorefractometer.

This ties in with my comment on your later statement “It was observed that the mean Avg K had significantly different values between IOL master and Manual keratometry since the p value is less than 0.05. The findings were similar with respect to other study results in which there was a significant difference between IOL master and manual keratometry. 17”.
Yes there is significant difference – but the findings are not similar to that reference quoted, because that study found that Avg K is highest using IOL master, and yours finds that it is highest using manual keratometry. Please correct this and recheck your references. Also add more references regarding other studies.

“Also we observed that the mean Avg K had significant different values between IOL master and AUTO K since the p value is less than 0.001. The findings were similar with respect to other study results in which there was a significant difference between IOL master and Topcon.”

Firstly, no need to repeat results; you have already stated in the methods that p value < 0.05 was considered significant. As for ‘other study results in which there was a significant difference between IOL master and Topcon’, where are your references….?

“On analyzing the plots, both IOL Master and the Manual Keratometer tended to over estimate K readings compared to the Autorefractokeratometer, the the highest bias of 0.15 between the IOL Master and Autorefractokeratometer. This could be seen as clinically insignificant.”

Based on what evidence do you consider this insignificant, vs significant?

“On comparing the IOL Master and Manual Keratometer using the Bland-Altman plot, the 95% confidence limits of agreement were from 0.26D to -0.22D. The confidence limit being 0.48D, thus showing agreement to be relatively good.”

How do you explain that agreement was good (i.e. these two devices produce similar results) yet there was a significant difference of corneal curvature between these groups?

Any measures to reduce bias and error? Please discuss some potential limitations (eg. Intra-observer bias, single measurement so measurements may not be reproducible..?)

It would be good to explain a little regarding the potential causes of the differences and whether they will be clinically relevant in practice (eg. How much difference would significantly affect refractive outcome?) Any recommendations based on your findings? Which instrument would you recommend? Would it help to use more than one instrument?

Conclusion:

“ In conclusion keratometry data obtained with different instruments may not be interchangeable”

Grammar: ‘in conclusion’ (no comma after ‘in’). Since you have completed your study, can you conclude – are the instruments interchangeable or not? Which one tends to over/underestimate K readings compared to the others?

Reply: I made changes as recommended by the reviewers.

They have been highlighted in red font

Reviewer: 2

Comments to the Author

1. it would be better not to use numbering in the abstract.
2. Table 3: please explain the abbreviate the details of legends
3. if possible, please include other disease group, for example:

after refractive surgery or after pterygium surgery, This study is done in just for pts for cataract surgery.

if authors cannot include any other population of other ocular disease, then at least, please divide the groups by ages and present each results of comparison of IOL master, B&L keratometer, and KR-8800 in each group ,so there is any difference of measurement between groups.

Reply: I made changes as recommended by the reviewers.
They have been highlighted in red font