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Ocular biometric parameters of school going children obtained during eye check up in Army schools and Kendriya Vidyalaya in Jabalpur cantonement with refractive errors

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Abstract
Aim: the present study was undertaken to observe Ocular biometric parameters of school going children obtained during eye check up in Army schools and Kendriya vidyalaya in Jabalpur cantonement with refractive errors.
Materials and Methods: The study recruited 100 Children of the age group of 6–15 years from Army schools and Kendriya vidyalaya in Jabalpur cantonement areas. The study period was from 1st January 2012 to 31st Dec 2014. All children then underwent a detailed ocular examination. The AL, ACD, and LT were measured, whereas VCD was calculated by subtracting the total of ACD and LT from the AL. Standard methods were used to measure the ocular biometrics.
Results: Table no 1 presents the refractive errors data of participants (n=100). Low myopia was observed in majority of the participants (45%). High myopia cases were fewer comparatively. Table 2: Ocular biometrics of the participants with different refractive errors (n=100). There was significant difference in the parameters of ocular biometrics in different refractive errors.
Conclusion: The study results confirm that imbalance in the ocular biometrics has significant contribution in causing the refractive errors. The study recommends detailed studies in this area for understanding the relationship between ocular biometrics and refractive errors.

Keywords: myopia, refractive errors, ocular biometrics

Introduction
There exist a strong relationship between the ocular biometrics and refractive errors. This is absolute with parameters such as axial length (AL), anterior chamber depth (ACD), vitreous chamber depth (VCD), lens thickness (LT), and corneal curvature (CC) [1]. There should be proper balance between these parameters for normal eye functioning [2]. However, the studies confirming the relationship between the ocular biometrics and refractive errors are sparse. Further, study results in this area were very limited. Hence, the present study was undertaken to observe Ocular biometric parameters of school going children obtained during eye check up in Army schools and Kendriya vidyalaya in Jabalpur cantonement with refractive errors.

Materials and methods
Study design: Cross-sectional study
Sampling method: Convenient sampling
Study population: The study recruited 100 Children of the age group of 6–15 years from Army schools and Kendriya vidyalaya in Jabalpur cantonement areas. The study period was from 1st January 2012 to 31st Dec 2014. Those unwilling were not recruited in the study. Those with eye disorders, severe complications, long term use of medications related to eye were also not included in the study. Consent was obtained as per the rules of ICMR. Consent from the parents or guardians were obtained duly prior to the study data collection.
Data collection: All children then underwent a detailed ocular examination. The AL, ACD, and LT were measured, whereas VCD was calculated by subtracting the total of ACD and LT from the AL. Standard methods were used to measure the ocular biometrics [3].

Ethical considerations: The study proposal was approved by the institutional ethics committee after satisfying the queries adequately. The study followed all the guidelines as per the ICMR guidelines. Written informed consent was obtained from all the parents of the participants before the commencement of the study. Information related to the patients was kept confidential.

Data analysis: The statistical software SPSS 18.0 version was used to analyze the data. The significance of difference was tested using the one way Anova. The probability value less than 0.05 were considered significant.

Results: Table no 1 presents the refractive errors data of participants (n=100). Low myopia was observed in majority of the participants (45%). High myopia cases were fewer comparatively. Table 2: Ocular biometrics of the participants with different refractive errors (n=100). There was significant difference in the parameters of ocular biometrics in different refractive errors.

Table 1: Refractive errors data of participants (n=100)

Refractive error	Frequency	Percentage
Emmetropia	20	20
Low myopia	45	45
Moderate myopia	11	11
High myopia	10	10
Low hyperopia	14	14

Data was presented as frequency and percentage

Table 2: Ocular biometrics of the participants with different refractive errors (n=100)

Refractive error	AL (mm)	ACD (mm)	LT (mm)	VCD (mm)	P value
Emmetropia	23±1.42	2.88±0.11	3.43±0.18	16.22±0.48	<0.05*
Low myopia	24±0.44	3.88±0.24	4.43±0.62	17.21±0.32	<0.05*
Moderate myopia	22.44±0.67	3.22±0.45	3.56±0.36	16.57±0.28	<0.05*
High myopia	25.2±0.51	3.88±0.12	3.82±0.61	18.66±0.32	<0.05*
Low hyperopia	21.76±0.22	3.11±0.65	3.34±0.12	17.43±1.32	<0.05*

Data was presented as mean and SD. (*P value less than 0.05 was significant)

Discussion

The present study was undertaken to observe Ocular biometric parameters of school going children obtained during eye check up in Army schools and Kendriya vidyalaya in Jabalpur cantonement with refractive errors. Low myopia was observed in majority of the participants (45%). High myopia cases were fewer comparatively. There was significant difference in the parameters of ocular biometrics in different refractive errors. Refractive errors are most common type of eye disorders. Ocular biometrics is major contributors for the refractive errors [4-6]. Variations in the ocular biometrics cause the refractive errors. Earlier studies revealed that corneal power and AL make the greatest contribution to SE in high hypermetropia and high myopia [7-9]. Another study demonstrated that corneal power increased at higher levels of myopia and decreased at higher levels of hyperopia [10].

Further, another study reported there is no correlation between the ocular biometrics and refractive errors [11-12]. The study results confirm that imbalance in the ocular biometrics has significant contribution in causing the refractive errors. The study recommends detailed studies in this area for understanding the relationship between ocular biometrics and refractive errors.

Conclusion

The study results confirm that imbalance in the ocular biometrics has significant contribution in causing the refractive errors. The study recommends detailed studies in this area for understanding the relationship between ocular biometrics and refractive errors.

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Conflicts of interest: None declared

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