Keratometry in eyes with bilateral pediatric cataract at tertiary eye care center in Nepal: A preliminary Report

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ABSTRACT

Pre-operative keratometry measurement of the subjects was done in 80 children with bilateral congenital cataract below 15 years who had undergone pediatric cataract surgery. The objective of the study was to evaluate the average keratometry reading in Nepalese children with bilateral cataract. The keratometry reading was taken under general anesthesia with the Nidek Auto Keratometer, model KM-500. The mean age was 69.7 months (SD=52.6)**,** range from one month to 168 months. The mean keratometry reading was 44.8 (SD=2.7) in operated eyes and 44.7 (SD= 2.6) in fellow eyes. The minimum and the maximum values of keratometry reading in operated eyes were 39.4 and 51.5 respectively where as it was 40.3 and 51.5 in fellow eyes. We concluded that in bilateral pediatric cataract the keratometry value is similar in both operated and fellow eyes. Based on the keratometry value of the operated eye, the patients with bilateral congenital cataract can undergo surgery in those eye hospitals where facilities of the keratometry is not available under general anesthesia. We also recommended that additional study on axial length will be needed to calculate the Intra Ocular Lens power in fellow eye.

Keywords: Cataract surgery, congenital cataract, keratometry.

Childhood blindness is one the priorities in Vision 2020-the Right to Sight.[1] Among other diseases, the congenital cataracts are one of the major public health issues and challenge to mitigate the childhood blindness in Nepal due to the inadequate operation facilities to do operation in time. Mostly the membranous, total, nuclear, lamellar and posterior congenital cataracts need immediate surgery. Ideally in pediatric cataract surgery, biometry and keratometry needs to be done. Keratometry estimates the radius of curvature, means diopteric (D) of power of cornea. Keratometry is a measurement curvature of the central 2-3 mm of the anterior cornea and main meridians (horizontal and vertical) and secondary calculation of the full optic power of the cornea.[2] Its value is essential for the calculation of the power of the intra-ocular lens. To the best of our knowledge, no one reported the average keratometry reading in the children of Nepalese population. The objective of this study is to determine the average keratometry reading of the children undergoing the pediatric cataract surgery in Tilganga Institute of Ophthalmology (TIO). This preliminary report will help to do surgery where the keratometry is not available.

The perspective retrospective study was designed to evaluate the pre-operative average keratometry measurement of the Nepalese children with bilateral congenital cataract under the age of 15 years. All consecutive subjects were enrolled in this study from November 2007 to August 2008 at TIO, a tertiary eye care center in Nepal. It has full phase pediatric unit with the facility of general anesthesia as well as pediatric ophthalmologist. Only the congenital cataract cases were included where as other forms of cataract were excluded. Keratometry is done under general anesthesia using the hand held Nidek Auto Keratometer [NAK], model KM-500 .In the cooperative patients keratometry value was taken before the induction of laryngeal mask anesthesia. Special form was designed to collect the data of study. Ethical approval was granted by TIO, Institution Review Committee. Verbal and written consent was taken from the guardians of the children. Collected data was edited, coded and entered in the excel 2007 then the analysis was done in SPSS version 11.5. We used t-test for independence based on the results of the F test for equality of variance. P-value less than 0.05 was considered as the significant.

Altogether 80 subjects with bilateral congenital cataract were included. The mean age was 69.7 months (SD=52.6)**,** range from one month to 168 months. The mean keratometry reading was 44.80 (SD=2.7) in operated eye and 44.7 (SD= 2.6) in fellow eye. The minimum and the maximum values of Keratometry reading in operated eyes were 39.4 and 51.5 respectively where as in fellow eyes were 40.3 and 51.5 (Table-1).

In this study, the keratometry value of operated eye and fellow eye in different age group were tested by using unpaired t-test.

Table-1: Descriptive statistics

Description	Age (month) (n=80)	K average (operated eyes) (n=80)	K average (fellow eyes) (n=57)
Mean	69.7	44.8	44.7
Standard Deviation	52.6	2.7	2.6
Minimum	6.0	39.4	40.3
Maximum	168.0	51.5	51.5

This study had total 80 subjects with data of 80 operated eyes and 57 fellow eyes, so p-value for different age group was calculated by using independent t-test. The mean value of keratometry in different age group is nearly equal in operated and fellow eye with no significant association (p >0.05) (Table-2).

Table-2: Age distribution and keratometry of operated and fellow eyes

Age (month)	K average (operated eyes)			K average (fellow eyes)			p-value*
	Mean	SD	Number	Mean	SD	Number	
0-6	46.9	1.5	4	45.9	1.8	3	0.5
7-18	43.8	2.9	16	44.6	2.7	13	0.4
19-60	44.2	3.0	21	44.2	3.0	20	1.0
61-168	45.3	2.4	39	45.0	2.4	21	0.7
Total	44.8	2.7	80	44.7	2.6	57	0.8

* using unpaired t-test

Keratometry reading and the axial length measurement are done routinely in all the adult patients who undergo cataract surgery in the outpatient basis. However for the children it can be done only under anesthesia. Infantile eyes have a significantly steeper K-value.[3] Studies have also shown that the eyes with the pediatric cataracts also have significantly steeper K-values from birth to 6 months of age when compared with the older children.[4] The average normal keratometry reading in adult is 45 D. Ehlers and colleagues obtained 47.5 D as a mean value for mature infants and 43.7 D for children aged 2 to 4 years.[5] They concluded that the corneal curvature reaches the adult range at about 3 years of age. Gordon and Donzis noted their average K values of full term infants as 45.2 D.[3] According to the study of the keratometric reading done in Thai children in the age groups from newborn to age of ten; it was consistent between ranges of 43-44 D.[6]

There is the change of the keratometry reading in the children till 2 years of age. Thus, the keratometry and axial length calculation is a must for all children who undergo the pediatric cataract and intra-ocular lens implantation.

All the patients are thus made emmetropic at the time of surgery based on the IOL power calculation. Age wise there is no contraindication of the intra-ocular implantation in children. Till now, there has been no study done on the keratometry reading of the children who has undergone the pediatric cataract surgery.

We concluded that in bilateral pediatric cataract the keratometry value is similar in both operated and fellow eyes. The keratometry value in operated eye is similar in bilateral cataract cases. Thus, in bilateral congenital cataract cases, the keratometry value of the operated eyes can be taken as the reference for the surgery of the second eye in those eye hospitals where facilities of the keratometry is not available. We also recommended that additional study on axial length will be needed to calculate the IOL power in fellow eye.

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Capacity building is not an event but a process: lesson from health sector decentralization of Nepal

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ABSTRACT

Health Facility Operation and Management Committee are supposed to govern all the affairs of local health facilities under decentralization policy. The capacity building of the committee was deemed necessary and thus different stakeholders involved in the capacity building process. All agreed up on the need of capacity building of the committee but there were different school of thoughts on the contents and process of capacity building. Major capacity building inputs included orientations and training to the committee. However the follow up part was not uniform; some organizations conducted periodic reflection meeting, where as many ended up with the training. There were some tangible changes observed by the capacity building inputs. Their priority however was on infrastructure and drug purchase. The changes observed were very short lived and not sustainable. The capacity building was equated with training and an event with low priority on follow up, monitoring and coaching. It was not thought as a process. A concept of complete package of capacity building should have been developed where training component would be only an element of overall capacity building.

Keywords: Capacity building, health facility operation and management committee, training.

MAIN TEXT:

Capacity building is a catchphrase in development field. It is an important issue in health sector decentralization also. Keeping in view the importance of community participation in governance of local health facilities and services, Ministry of Health and Population (MOHP), Nepal decided to handover the local health institutions to local bodies as per decentralization policy.[1] Under this provision, Health Facility Operation and Management Committee (HFOMC) are supposed to govern all the affairs of local health facilities. The HFOMC is a legitimate body formed locally at each health facility whose structure is inclusive in nature.[2] But mere handover of the health facilities to local body thus HFOMC was not sufficient. The capacity building of HFOMC was deemed necessary.

In past few years different organizations involved in the capacity building of the HFOMC.[3] All agreed up on the need of capacity building of HFOMC to make it capable in managing local health facilities and health services but there were different school of thoughts on the contents and process of capacity building.

Major capacity building inputs by these organizations included orientation and training to HFOMC.[3, 4] In the beginning, MOHP initiated its efforts by organizing an orientation through National Health Training Center (NHTC). This orientation was conducted just after the handover process was over. Other organizations conducted cascade trainings. The contents of the training included mainly HFOMC capacity assessment and management issues like planning, supervision and monitoring including others. The follow up part was not uniform; some organizations conducted periodic reflection meeting where as many ended up with the training.

There were some tangible changes observed by the capacity building inputs. HFOMC used to conduct regular monthly meeting. They tried to manage local resources. Their priority however was on bringing out the tangible outputs - infrastructure, drug purchase, hiring of local staff and extension of laboratory/x-ray services but underestimating the process – improving organizational capacity. Further, *dalits* and women HFOMC members had only token participation in health facility management with no say in decision making.[5] Most importantly, the changes observed were very short lived and not sustainable. The major drawback was capacity building equated with training and an event with low priority on follow up, monitoring, coaching, periodic review. The capacity building of HFOMC was not thought as a process. Besides, the training component also was not smoothly conducted. It was more knowledge based which should be skills mixed otherwise. These are the main reasons why even after long engagement of large number of organizations, strengthening of HFOMC did not take headway. Since, training was thought all in all, many contents were

delivered at a time. Since hand over and orientation process was not adequately done, their level of knowledge and skills on health facility management was so poor. Most of them even did not know their roles and responsibilities.

A concept of complete package of capacity building should have been developed where training component would be only an element of overall capacity building. The initial training should have covered only simple contents like internalization of their roles/ responsibilities, introduction of health facilities and its services, effective meeting conduction and decision making process. And necessary skills could have been delivered during regular monthly meeting of HFOMC and periodic review meeting. The capacity building process should have followed simple to complex technique while designing and delivering the contents. Furthermore, composition of the HFOMC was so heterogeneous that the content of the training should have been designed taking these things in to consideration. Instead, focus of the capacity building should be on imparting different management skills on HFOMC which would lead to performance improvement like increased resource mobilization, infrastructure, staff management and would possibly contribute to improve health outcomes like increase in service coverage.

The capacity building is a process that improves the ability of a system to improve performance and it does not necessarily directly influence health status but contributes to it through its link to performance.[6] The capacity building of HFOMC should be understood as a process of strengthening a peripheral community health system. In short, capacity building of HFOMC in future should focus on process and be implemented in a complete package.

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