ISSN 1990-3863

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Al-Shifa
Journal of Ophthalmology

Vol. 17, No. 2, April – June 2021

QUARTERLY PUBLISHED

Logo

Abstracts available at http://www.alshifa-eye.org.pk/Journal.php and
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EDITORIAL

Cataract Trends in Pakistan Over a Period of Years

Ume Sughra

Cataract is a disease of the eye in which the normally clear lens of the eye or its capsule (surrounding transparent membrane) gets opacified that obscures the passage of light through the lens to the retina of the eye. It can be bilateral and vary in severity. It affects infants, adults, and predominately older people. Most cataracts occur as a result of aging, eye changes begin to happen after age 40 and gradually the disease process progresses without affecting daily activities early on, but with time, especially after the fourth or fifth decade, the cataract will eventually mature, making the lens completely opaque to light interfering with routine activities and impacting the quality of life.[1] People over age 60 usually start to have some clouding of their lenses however, vision problems may not happen until years later impact on the quality of life.[2] Certain genetic and environmental factors such as smoking cigarettes, ultraviolet light exposure, and certain diseases, such as diabetes, uveitis, IOP-lowering medications/surgery, trauma, steroid usage, and certain occupations also increase the risk of developing cataract.[3]

Cataracts are the most common cause of blindness and visual impairment worldwide. Around 36 million people are blind worldwide, and over 12 million of them are due to cataract which is preventable or treatable Around 78.8 million aged above 50 have moderate-to-severe vision impairment. [3]The number of people visually impaired is estimated to be 285 million, of whom 39 million are blind. The major causes of visual impairment are uncorrected refractive errors (43%) and cataract (33%). [4]The prevalence of cataract is found to be higher in developing countries with early onset. [5] Cataracts have also been associated with depression, higher mortality rates and decreased quality-of-life and productivity in the elderly .[6] The majority of studies also found that women have a higher rate of cataracts than men .[7]

The most common cause of blindness 51.5% in Pakistan is Age-related cataract which is treatable and avoidable.[8] There are estimated to be 570, 000 adults (225,000 men and 345,000 women) who are blind due to cataract.[9]

Continuous efforts over the past decades have yielded considerable dividends, with a 27% reduction in the age-adjusted prevalence of blindness reported between 1990 and 2020. Despite this, the total number of individuals with both blindness and moderate and severe vision impairment has increased substantially (by 51% and 92%, respectively) during the same period. A key reason for this increase is that eye care services have been unable to keep pace with population ageing and growth, along with behavioral and lifestyle changes that have led to an increase in the number of eye conditions that cause vision impairment and blindness such as cataract, glaucoma, age-related macular degeneration, myopia, and diabetic retinopathy. [10]

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ORIGINAL ARTICLE

Visual Outcomes and Complications of Phacoemulsification for Senile Cataract in a Tertiary Care Eye Hospital

Hafsa Maryam[1], Qandeel Tahir[1], Shama Khan[2]

Abstract:

Purpose: Cataract is one of the main causes of preventable blindness in Pakistan, the purpose of this study was to evaluate the effect of phacoemulsification on visual acuity for senile cataract as well as to track record the types of complications associated with this procedure.

Study design: Cross-sectional study.

Place and duration of study: The study was conducted at General OPD of Tertiary Eye-care Hospital of Rawalpindi, Pakistan from October 2020 to March2021.

Materials and Methods: Participants coming for follow-up who have undergone phacoemulsification (one-week post-op) by same consultant surgeon. An interview based structured questionnaire was used with informed consent to collect the data.

Result: A total of 290 eyes of 250 participants suffering from senile cataract were included in the study. Mean age of participants was 59 ±7.10 years, 56% (140) of the participants were male, while 110 (44%) were female. All the surgeries were carried out by the same consultant surgeon. 60.4% (151) of the eyes were right while 55.6% (139) were left. Good final visual outcome was seen in 84.4% of the cases. Postoperative complications occurred in 5.2% of the participants.

Conclusion: The result of this study showed good final visual outcome (84.4%), which is close to the WHO recommendation of best corrected good visual outcome of 90%. *Al-Shifa Journal of Ophthalmology 2021; 17(2): 52-57.*

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Originally Received: 12 May 2021
Revised: 17 June 2021
Accepted: 28 June 2021

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Introduction:

Cataract is responsible for half of the world blindness (51%) and second main cause of visual impairment globally(33%)[1,2]. According to World Health Organization (WHO) survey in 2019, moderate visual impairment caused by cataract was seen in 65 million people out of more than 250 million visually impaired people[3]. Majority of people with unoperated cataract are found in non-industrial nations, where there's restricted admittance to eye care. Besides, the greater number of those cataract cases are age-related with the high rate among the maturing population.[4]

As per report of the Pakistan National Blindness and Impairment study, the main source of visual deficiency in aged population of Pakistan is cataract[5]. Senile cataract is one of the main sources of reversible visual deficiency all around the world and its treatment can be followed back to 4000 years prior to Egypt[4]. Cataract can be treated by surgery only. It plays an important role in reclamation of vision and better quality of life to people. There is generous improvement in visual acuity for most of the people after cataract extraction across all age groups.[6]

Cataract Surgery is one of the most performed eye surgeries in the world, the number of patients undergoing cataract surgery are 19 million annually and this number has reached about 30 million in year 2020.[(4)]According to a survey in 2019 in Pakistan some experts said that Pakistan is one of the 20 countries with highest cataract surgical rate, with a number of one million annually[7]. Standard surgical method for cataract removal is phacoemulsification, which uses ultrasonic waves to emulsify the cataract. This methodology is basic, protected, speedy, and prompts lesser measure of corneal astigmatism as compared with manual extracapsular cataract extraction (ECCE). The refractive result of phacoemulsification and the risk of complications has generally been worked on throughout the last decade with new machines and use of better intraocular lenses.[8]

According to a survey in Pakistan, the most common cause of blindness is un-operated cataract (53.5%)[9]. This study highlighted the visual outcomes and complications after phacoemulsification of patients with senile cataract coming to general OPD of a tertiary care eye hospital of Rawalpindi.

Materials and Methods:

A cross sectional study was done at General OPD of Tertiary care eye hospital of Rawalpindi to find out the visual outcomes and complications of senile cataract surgery after phacoemulsification from October 2020 to March 2021. A total of 250 participants were included in study, sample size was calculated using the OpenEpi software at an anticipated frequency of 80.5% [(5)]. The study participants were approached conveniently. Patients aged 40-70 years coming to the hospital for follow-up who have undergone phacoemulsification (one-week post-op) by a same consultant surgeon for senile cataract were enrolled in the study, verbal informed consent was taken from the participants and those who were willing to participate were enrolled in the study.

Data was collected through an interview-based questionnaire. The data collection tool consisted of three parts. First part included age, gender, presenting chief complaint of the patient, and history of hypertension. In second part, preoperative clinical findings included unaided visual acuity, corneal findings, lens findings and fundus findings of both eyes. These findings were recorded 2 days before surgery. In third part, postoperative clinical findings included unaided visual acuity, corneal findings, lens findings and fundus findings of both eyes and complication after surgery if any was noted. These findings were recorded after one week of surgery. All the above-mentioned findings were recorded by a consultant ophthalmologist. All the surgeries were performed by one consultant surgeon. Informed verbal consent was taken from all the patients. Each eye of the patient was checked separately. All the listed patients were registered for socio-demographic details and both preoperative and postoperative unaided visual acuity (UCVA), detailed slit lamp examination including both anterior and posterior segment was carried out by consultant ophthalmologist. Data analysis was done through SPSS version 26.0. Categorical variables were presented as frequencies and percentages. Continuous variables were presented in the form of

Mean ± SD. For inferential statistics Paired Sample T- test was used to compare the pre and post operative outcomes.

Results:

A total of 250 participants were included during the study period. More than half of the respondents were males comprising 56% of the total participants. Mean age of the subjects was 59 ±7.10 years ranging from 40 to 70 years. Majority of the study participants (59.2%, 148) did not present any complaint. More than half of participants did not have systemic hypertension. (72.4%, 181)

Pre-Operative Clinical Findings:

Visual Acuity: In Right Eye Most of participants 36.4% (n=91) had good vision while 34.8% (n=87) had impaired vision and 28.8% (n=72) had poor vision. In left Eye most of participants 40.4% (n=101) had good vision while 33.2% (n=83) had impaired vision and 26.4% (n=66) had poor vision. Detailed results presented in Table 1.

Post-Operative Clinical Findings:

Visual Acuity: In Right Eye Most of participants 84.0% (n=210) had good vision while 14.4 %(n=36) had impaired vision and 1.6% (n=4) had poor vision. Detailed results presented in Table 2.

Among total number of participants 0.8% (n=2) had endophthalmitis, 1.2% (n=3) had PCR and Corneal oedema, 2% (n=5) developed CMO while 94.8%(n=237) had no complications, fig 1. A significant difference was observed between the pre- and post-operative clinical findings with a p-value<0.05. Detailed results are presented in Table 3.

Table 1:Pre-Operative Clinical Findings

Uncorrected Visual Acuity	Right Eye (OD)	Left Eye (OS)	Right Eye (OD)	Left Eye (OS)
	n	%	N	%
Poor Vision (<3/60)	72	28.8%	66	26.4%
Impaired vision (6/18-6/12)	87	34.8%	83	33.2%
Good Vision (6/6-6/12)	91	36.4%	101	40.4%

Table 2:Post-Operative Clinical Findings

Uncorrected Visual Acuity	Right Eye (OD)	Left Eye (OS)	Right Eye (OD)	Left Eye (OS)
	n	%	N	%
Poor Vision (<3/60)	04	1.6%	05	2%
Impaired vision (6/18-6/12)	36	14.4%	34	13.6%
Good Vision (6/6-6/12)	210	84%	211	84.4%

Table 3: Comparison of Preoperative and Postoperative Visual Acuity in Right Eye (OD)

Groups	Mean	±SD	T	df	p-value
Preoperative vision	2.08	0.805	-14.16	249	0.001
Postoperative vision	2.83	0.418			

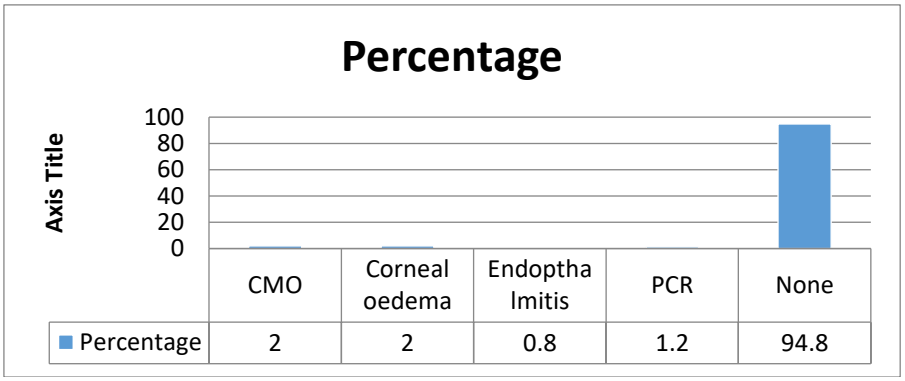

Figure 1:Post-Operative Complications

Discussion:

The main objective of this study was to find out the visual outcomes of senile cataract surgery after phacoemulsification and to find out the types of complications associated with phacoemulsification.

The final visual outcome depends upon various preoperative components including patient selection, surgical technique, intraoperative complication and postoperative care. The Visual outcome of cataract surgery is not same in whole world. In present study findings showed that 84% of participants had good visual outcome with visual acuity (6/6 – 6/18). Various elements are responsible for visual outcomes after surgery. A study was conducted on 360 eyes of 352 patients, they found that good visual outcome was 78% after one week of surgery[10]. In our study the outcome was 84%.

Pragati et al found that the main presenting complaint of the participants was photophobia (55.8%)[11].As systemic hypertension is a risk factor for participants undergoing cataract surgery, but had less effect on visual outcome as compared to ocular comorbidities. That's why ocular comorbidities were excluded from the present study. Bia Z Kim et al reported that the ocular comorbidity was present in 45.8% of eyes and 59% participants had history of systemic hypertension, with the final outcome of vision 6/9 – 6/12[12]. This outcome was less as compared to present study.

The rate of postoperative complications in our study was 5.2% phacoemulsification were very little 5.2%, which included 0.8% endophthalmitis, 1.2% had PCR and Corneal oedema, 2% developed CMO. The possible reason for this could be due to complications related with posterior capsular rupture (PCR) during surgery such as vitreous loss, tilted IOL, Cystoid macular oedema, persistent uveitis, anterior chamber IOL leading to increase in IOP, corneal oedema. In this study, all the surgeries were performed by a well experienced consultant surgeon. Taku Toyama et al found that IOP elevation(2.2%), Corneal oedema 2.2% PCR 0% and CMO 0.72%[13],while all surgeries were performed by four surgeons. The present study concluded that phacoemulsification is a safe and effective procedure, for treating cataract. It has good visual outcomes if performed in well trained hands under cautious disinfection and hygienic measures.

The study strength of the present study was that it included high follow up rate (more than 90%), routine use of modern surgical technique (phacoemulsification) with IOL implantation and consultant surgeon great skills. As in present study visual outcome was good 84.4%, which reduced the fear and motivated more participants to come for surgery as there was improvement in

participant's quality of life after cataract surgery. Another important aspect added to the study was that data was collected from tertiary eye care hospital, which provided better facilities, postoperative guidelines were provided to the participants in order to prevent postoperative complications, having, and low complication rate (5.2%) in present study.

The study had certain limitations. Sample size was small due to ongoing pandemic, also led to difficulty in data collection. The duration of this study was short. This study does not represent the visual outcome of participants after one month (post-operative) as there may be some late postoperative complications.

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Concept and Design: Hafsa Maryam, Shama Khan
Data Collection / Assembly: Hafsa Maryam, Qandeel Tahir
Drafting: Hafsa Maryam, Qandeel Tahir
Statistical expertise: Qandeel Tahir
Critical Revision: Shama Khan

ORIGINAL ARTICLE

Visual Outcomes After Pediatric Cataract Surgery: A Retrospective Analysis

Anisa Irshad[1], Fareeha Ayub[1], Ume Sughra[2], Sumaira Altaf[1], Saifullah[1]

Abstract

Purpose: The purpose of this study was to estimate the amount of improvement during the follow-ups and improvement before and after the cataract surgery.

Materials and Methods: A retrospective study was carried out in the pediatric department at Al-Shifa trust eye hospital Rawalpindi Pakistan from July 2018 to December 2018. In this study total of 100 patients were included having the age of 2 to 11 years with congenital cataracts. The clinical record of patients was found through the computer. There visual acuity of both eyes was observed before and after the surgery.

Results: Visual acuity of all the patients was assessed and was measured in log-MAR. The mean visual acuity of a right eye before surgery was 1.05(±0.155SD). While the mean visual acuity on the first follow-up of the right eye after surgery was found to be 0.60(±0.36SD) and the mean visual acuity on the second follow-up after surgery was 0.46(±0.43SD). The mean visual acuity of a left eye before surgery was 1.00(±0.155SD) while the mean visual acuity on first follow-up after surgery was found to be 0.61(±0.36SD). And the mean visual acuity on second follow-up after surgery was 0.44(±0.36SD).

Conclusion: Cataract surgery procedure results in a significant change of visual acuity. This has a positive impact on postoperative visual acuity as the visual acuity showed improvement.
Al-Shifa Journal of Ophthalmology 2021; 17(2):58-63.

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Originally Received: 8 November 2020
Revised: 13 May 2021
Accepted: 22 May 2021

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Introduction:

The natural lens of the human eye is crystal clear. Any opacity or cloudiness of this crystal-clear lens is called a cataract.[1] Pediatric cataract is the formation of cloudiness of the lens in children. Congenital cataract is the type of cataract is present at birth. It develops during embryonic life and acquired is develops after birth, in later stages of life. Globally, 1 to 15 /1000 children suffer from cataracts which is the main cause of 5%-20% of childhood blindness.[2]Bilateral cataract has caused blindness in around 200,000 children worldwide.[3] According to a study Pediatric "Cataract - Asia Pacific" published in the American Journal of Ophthalmology (Oct 2016). In India, approximately 10% of childhood blindness is caused by cataracts. Among non-traumatic cataracts, 7.2% were hereditary, 4.6% were due to congenital rubella

syndrome, 15.1% were secondary, and 73.0% were undetermined. A study conducted at the Holy Family Hospital in Rawalpindi; Pakistan found that bilateral cataracts constituted 80.4% of 112 cases of congenital cataracts while unilateral cataracts accounted for 19.6% of cases. Consanguinity was a significant risk factor for congenital cataracts, especially in bilateral cases. The prevalence of cataracts in Nepal is 1.7/10,000 children and in china.[4]

Participants and Methods:

A Retrospective study was carried out to assess the visual outcome after pediatric cataract surgery at ASTEH Rawalpindi, Pakistan. Data were collected over six months, starting from July 2018 to December 2018. Al-Shifa trust eye hospital is situated in Rawalpindi; Pakistan. ASTEH is considered the apex of ocular health in the country and has the state of technology regarding diagnosis, investigation, and management of all eye diseases. All patients presenting in the pediatric department of ASTEH and getting diagnosed with congenital cataracts having the age between 2 to 11 years, were part of this study. The sample size of 100 patients was decided. Secondary data was collected through the previous record of patients done through the surgery, during the last six months of 2017 and the first six months of 2018 i.e., July 2017 to April 2018. The sampling technique used was convenient non-random sampling. Inclusion criteria was patients having congenital cataract age between 2 to 12 years, IOL implantation, and Patient who have undergone lensectomy. Exclusion criteria are for patients having traumatic cataracts, Retinopathy of prematurity, severe development delay age less than two years at last follow-up, and Follow-up less than three months. Data was collected from computer recorded of follow-up patients through a Performa it consists of the following parts and renders visual acuity of both eyes before the surgery, at first follow-up and second follow-refraction after the surgery at first follow-up and second follow-up. Data was collected from computer records of patients who had undergone cataract surgery between the ages of 2 to 11 years. All information of patients regarding surgery was available in the record. The patients that have no other ocular pathology and only have congenital cataracts were selected.

The study investigated one outcome variable that is visual acuity after cataract surgery. Independent variables include Age, gender, and refraction after the surgery was the independent variable. Data was entered in SPSS version 17 for analysis before the data analysis data was cleaned by generating frequencies and errors in the data were collected according to performs. Descriptive statistics were generated for all variables; categorical data were presented in the form of frequencies and percentages. Mean and standard deviation was reported for one continuous variable that is the age of the patient.

Repeated measure ANOVA test for independence was used. The test was applied on all applicable independent variables and outcome variables; the significance level of 5% was used for all inferential statistics.

The study was conducted after the approval of the Institutional Review Board. Permission was also taken from the head of the pediatric department. The collection of data recorded in computer was kept confidential and collected data was used only for academic purposes.

Results:

A total of 100 patients were included in this study. Among the total of 100 patients, 56% were males while 44% were females. Figure: 1. their ages lied between 2 and 12 years while the mean age was 6 years (±2.19 SD). Figure 2

Visual acuity of all the patients was assessed and was measured in log-MAR. The mean visual acuity of a right eye before surgery was 1.05(±0.155SD). While the mean visual acuity on the first follow-up of the right eye after surgery was found to be 0.60(±0.36SD) and the mean visual acuity on the second follow-up after surgery was 0.46(±0.43SD). The mean visual acuity of a left eye before surgery was 1.00(±0.155SD). While the mean visual acuity on first follow-up after surgery was found to be 0.61(±0.36SD). And the mean visual acuity on second follow-up after surgery was 0.44(±0.36SD). Table: 1

The refractive status of the patients was categorized into four categories. On first follow up, the refractive error in the right eye of 47% of patients lied between +0.25DS to +6.00DS while 29% lied in the first category with the refractive error between -2.00DS t0 -0.25DS. And the refractive error in the left eye of 47% of the patients lied between +0.25DS to +6.00DS while 27% had their error between -2.00DS to -0.25DS. On second follow up, the refractive error in the right eye of the majority (54%) of the patients lied between +0.25 to +6.00 DS while 22% had their error between -2.00DS to -0.25DS. And the refractive error in the left eye of 49% of the patients lied between +0.25DS to +6.00DS while 25% had their error between -2.00DS to -0.25DS.

Since the assumption of Marvell's test of sphericity was violated, we have reported the Greenhouse Geisel value to show the mean difference in the visual acuity of three sets of readings. There was a statistically significant difference in the visual acuity of the right eye from before surgery to the next two follow-ups. F (3,100) =93386, P=0.001, showing improvement in visual acuity that was 6/60m (1 log MAR) before till third follow-up visual acuity was 6/18 (0.47 log MAR). And as same for the left eye, a significant difference in visual acuity before surgery to the next two follow-ups. F (31,00) =83387, P=0.001, showing improvement in visual acuity 6/60m (1logMAR) that is of before surgery till third follow up visual acuity was 6/18(0.47 log MAR).

For related pairs, a non-parametric alternative to paired t-test was applied to assess the refraction of two follow-ups of both eyes. Z-score for the right eye of two follow-ups was= 2.646 and p-value was statistically significant, p<0.008 while Z-score for left eye refraction of two follow-ups came out to be -0.816 with a statistically insignificant p-value, p<0.414.

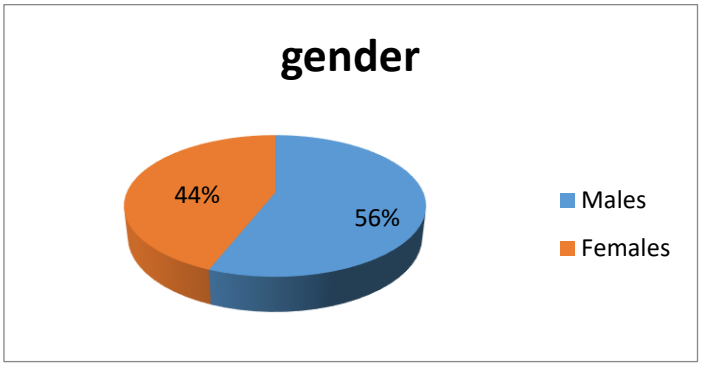

Figure 1: A Pie- chart showing gender distribution of all the patients

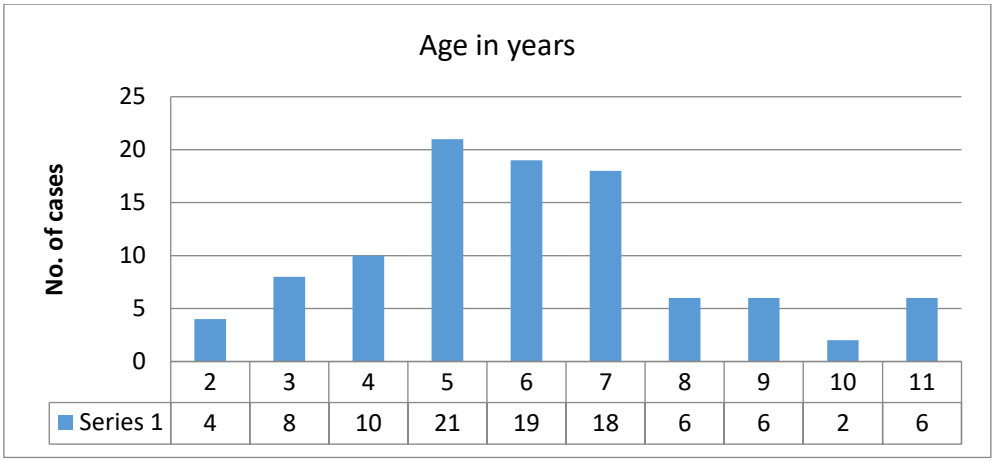

Figure 2: A Bar chart showing age distribution of all the patients

Table No 1: Visual acuity of the Patients Before and after surgery:

	Mean Visual Acuity (± SD)
Visual Acuity before surgery- Right Eye	1.05 (0.155)
Visual Acuity before surgery- Left Eye	1.00 (0.155)
Visual Acuity after surgery at first follow-up- Right Eye	0.60 (0.36)
Visual Acuity after surgery at first follow-up- Left Eye	0.61 (0.36)
Visual Acuity after surgery at second follow-up- Right Eye	0.46 (0.43)
Visual Acuity after surgery at second follow-up- Left Eye	0.44 (0.36)

Discussion:

Pediatric cataract has a significant effect on visual acuity. Visual acuity can be restored by early surgical intervention in children with congenital cataracts; visual outcomes after surgery vary widely. This is the first-ever retrospective study in ASTEH to evaluate the difference in visual acuity before and after the surgery as well as its improvement over time. The result of this study was of the clinical significance of congenital cataract management, involving the time of presentation of a child with congenital cataract, surgical timing, approach, and control of complications to achieve an ideal visual outcome. The age of the patient also affects normal visual development so if cataract surgery is not performed early it can lead to visual impairment. The follow-up time of three months after surgery shows improvement in vision and after the six months, there is a significant difference in vision before and after surgery. Children greater than 5 years of age show rapid improvement than less than 5 years of age, which shows that over

time visual acuity will be improved. Time of presentation is an important factor if the child presents at a later age that may lead to amblyopia or blindness in the eye having cataract. Regular follow-ups also determine the effect on vision as most of the children required near vision spectacles for the near work tasks. In this study due to the limitation of time long-term outcomes of vision were not found and only six months progress is determined. A study in China by Solebo reported that out of 97 patients only 36% achieved the restoration of vision that represents only 36% achieved within a normal range vision.[5] One study reported that visual development can continue to progress until the age of 12 years.[6]

After a long cohort study comprised of a mean follow-up of 10 years, Birch reported that patients with dense congenital cataracts with a mean age of 10 weeks achieved mean visual acuity of 0.4 Log MAR, in this study only congenital cataract was included.[7] Generally, cataract surgery should not be performed if visual acuity is better than 20/40 and the child can perform its daily activities comfortably. However, if the child has visual acuity less than 20/40 but doing well in school and does not have any problem regarding visual task performance cataract surgery can be deferred until later.[8] Based on a daily life visual acuity of the better eye i.e., 20/40, the prevalence of decreased vision or visual impairment was 7.70%, this result was lower than estimates in Chinese children in a different region. [9]

Conclusion

Cataract surgery procedure results in a significant change of visual acuity. This has a positive impact on postoperative visual acuity as the visual acuity showed improvement. The results of this study indicate that if the surgery is performed meticulously by careful technique, it may prevent visual impairment.

Recommendation:

A pediatric cataract is a sensitive ocular condition; it can lead to blindness if left untreated. It should be treated at the time as soon as possible.

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ORIGINAL ARTICLE

Quality of Life in Cataract Patients Visiting a Tertiary Care Eye Hospital

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Abstract:

Background: Visual impairment caused by cataract is the major cause of treatable blindness. According to the WHO prevalence of cataract is 47.9% worldwide. Quality of life is greatly affected by cataract. Quality of life means the individuals' perception of his place in life according to the contexts of culture and values, a concept often affected by individuals psychological and physical state and social relations.

Objectives: The main objectives of the study were to access the quality of life of individuals before and after cataract and to find the association of quality of life with their socioeconomic factors.

Materials and Methods: A cross-sectional study was carried out in Al-Shifa trust eye hospital Rawalpindi from October 2020 to February 2021. Technique used for the study was convenient sampling and sample size was 206. Structured questionnaire was used with verbal consent form to collect data. Results: 31.6% males shows poor general health as compared to females, p-value=0.000. Illiterate patients shows high difficulties with activities 31.7% p-value=0.000. People from urban areas have more difficulties in daily life activities 33.7% having p-value 0.0004. Non-working shows poor responses to vision 42.7% p-value=0.000. All these shows significant results while all other categories show insignificant result.

Conclusion: The results of this study indicate that cataract affects quality of life and cataract is still the major cause of blindness and many people are unaware of it. It should be treated on time before it causes blindness. Illiterates are more affected. Education is important and awareness about cataract. *Al-Shifa Journal of Ophthalmology 2021; 17(2):64-70.*

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Originally Received: 18 April 2021
Revised: 19 June 2021
Accepted: 22 June 2021

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Introduction:

Cataract is defined as any opacity in the crystalline lens. It affects about 75% of the elderly over 70 years of age , and impacts various aspects of vision interfering negatively in the quality of life .[(1)]

Light entering the eye reaches the retina. It detects light and transfers the signals through optic nerve to optic center in the brain. In case of cataract, the light is hindered on its way to retina hence preventing the eye from normal seeing. [(2)]
Most of the cataract is because of the age related changes in the lens, However there are so many other factors that can cause

development of cataract , like drugs , diabetes.[3]

Quality of life of cataract patients is reported to be low and cataract surgery has been reported to improve the quality of life of patients in developed countries. Visual acuity measurement used to be the standard procedure for the assessment of the indication for cataract surgery and the postoperative outcomes. [2] WHO estimates the prevalence of cataract worldwide 5 million and in Pakistan prevalence of cataract is 10 Lac. [4]

Visual impairment had greater impact on quality of life including difficulties in daily life activities, increased depression and social isolation and an increased risk of fall and fractures in older adults. Visual impairment had more impact on the psychosocial parameters than on the other parameters of patients' quality of life. [4]

Cataracts are of different sizes, smaller cataracts normally does not interfere with the vision but larger cataract however, severely impair the vision and may lead to blindness.[3] Cataract are classified on the basis of age of patient , on the basis of location of opacity , on the basis of degree of opacity .[3] Symptoms of cataract are painless gradual deterioration of the vision both distance and near. Glare or intolerance of bright light is also a symptom of cataract. Colored halos are also perceived ,secondary lens induced glaucoma and monocular diplopia.[3]

Consequent to the cataract formation, there is a decrease of visual communication, thus increasing the risk for falls in a population because in parallel comes decreased stability, balance, perception of distance and depth and adaptation to dark which results in difficulties for the recognition of impending dangers. Elderly in this condition, struggle to remain stable facing complex environments and tasks and have two times more chances to fall[1].

Cataract is reported to cause severe visual impairment and negatively affects the quality of life. Visual impairment due to cataract is largely confined to the elderly population. Visual impairment is reported to have greater impact on quality of life than other age-related conditions. Decreased visual function is associated with poor quality of life and reduced involvement in daily social activities. Poor vision has an effect on general health, social status and mortality tests. [2]

Material and Methods

It was a Cross-sectional study carried out at outdoor patient department of Al-Shifa trust eye hospital Rawalpindi. Data was collected over duration of 5 months. This study was carried out in five months from October 2020 to February 2021 in outdoor patient department (OPD). This study was carried out in Al-Shifa trust eye hospital Rawalpindi. Sample size of this study was 206, calculated using OpenEpi software at a prevalence rate of 84%. The data was collected by consecutive non-probability technique. Inclusion criteria for this study were, Individual having any type of cataract and population having age >18. Both genders were included. Exclusion for this study was Individual who was not willing to participate and individual having any mental / physical disabilities**.** VFQ-25 questionnaire was used to access the quality of life of cataract patients. All patients were interviewed using VFQ-25. Demographics include age, gender, education, employment status, residence and marital status. VFQ-25 consisted of 25 questions grouped into one question assessing general health, 11 subscales involving visual difficulties in everyday life and vision related psychological parameters. The principal author collected the data herself. The questionnaire was interview based and questions were asked in a language and manner easily comprehensible for respondents.

Outcome variables of this study were quality of life of cataract patients. Independent variables of this study were gender, employment status, marital status, residence and other socio-demographics variables. Data was analyzed using SPSS version 26. All descriptive was represented in form of frequencies and percentages, continuous data in mean with SD and median. Chi-square test was used to see any association between variables. After collection of data, it was coded and entered into SPSS software on daily basis and then saved thereafter. After entering data, data was cleaned by generating frequencies in SPSS. If any discrepancy present, it was removed by consulting questionnaire or respondents again. The study was conducted after the approval of Hospitals Ethical review board. Verbal informed consent was taken from every participant that became part of the study. The data collected was used only for academic purpose and confidentiality of the data and the participant was ensured. Individuals for help in better choice according to their refractive status were also guided.

Results:

Results showed that association between gender and employment status with general health is significant. Chi-square result shows that P-value is <0.05 i.e., 0.01 and 0.013 respectively. While all other factors age, education, residence and marital status shows insignificant results having chi-square results >0.0 as shown in table no.1

Chi-square result of age p-value=0.038, gender p-value=0.037, education p-value=0.01, employment status p-value=0.01 and residence p-value=0.04 shows significant results as P-value is <0.05 so there is an association between these factors and difficulties with activities. While marital status shows insignificant result p-value >0.05 i.e., 0.852 as depicted in table 2.

Association between employment status and education with responses to vision is significant, as p-value is <0.05 i.e., 0.01 and 0.012 respectively. While all other factors age, gender, residence and marital status have p-value >0.05 so they show insignificant result as displayed in table 3.

Table 1: Association of demographics and general health:

		Poor health n (%)	Good health n (%)	Total n (%)	p-value
Age	20-40	2(1.0)	3(1.5)	5(2.4)	0.08
	41-60	38(.4)	56(27.2)	94(45.6)	
	60-80	60(29.1)	47(22.8)	107(51.9)	
Gender	Male	65(31.6)	36(17.5)	101(49.0)	**0.01**
	Female	34(16.5)	70(34.0)	104(50.5)	
Education	Illiterate	59(28.6)	76(36.9)	135(65.5)	0.018
	Primary	20(9.7)	18(8.7)	38(18.4)	
	Secondary	13(6.3)	10(4.9)	23(11.2)	
	Higher	8(3.9)	2(1.0)	10(4.9)	
Employment status	Working	27(13.1)	14(6.8)	41(19.9)	**0.013**
	Non-working	73(35.4)	92(94.7)	165(80.1)	
Residence	Urban	45(21.8)	60(29.1)	105(51.0)	0.096
	Rural	55(26.7)	46(22.3)	101(49.0)	
Marital status	Married	93(45.1)	98(47.6)	191(92.7)	0.865
	Unmarried	6(2.9)	6(2.9)	12(5.8)	
	Total	100(48.5)	106(51.5)	206(100.0)	

Table 2. Association of demographics and difficulties with activities

		Poor health	Good health	Total n (%)	p-value
Age	20-40	3(1.5)	2(1.0)	5(2.4)	**0.038**
	41-60	61(29.8)	32(15.6)	93(45.5)	
	60-80	51(24.9)	56(27.3)	107(52.2)	
Gender	Male	65(31.7)	36(17.6)	101(49.3)	**0.037**
	Female	49(23.9)	54(26.3)	103(50.2)	
Education	Illiterate	65(31.7)	69(33.7)	134(65.4)	**0.001**
	Primary	20(9.8)	18(8.8)	38(18.5)	
	Secondary	21(10.2)	2(1.0)	23(11.2)	
	Higher	9(4.4)	1(0.5)	10(4.9)	
Employment status	Working	35(17.1)	6(2.9)	41(20.0)	**0.001**
	Non-working	80(39.0)	84(41.0)	164(80.0)	
Residence	Urban	69(33.7)	36(17.6)	105(51.2)	**0.004**
	Rural	46(22.4)	54(26.3)	100(48.8)	
Marital status	Married	107(52.2)	83(40.5)	190(92.7)	0.852
	Unmarried	6(2.9)	6(2.9)	12(5.9)	
	Total	115(56.1)	90(43.9)	206(100.0)	

Table 3. Association of demographics and responses to vision

		Poor health	Good health	Total	p-value
Age	20-40	0(0.00)	5(2.4)	5(2.4)	0.095
	41-60	44(21.4)	50(24.3)	94(45.6)	
	60-80	53(25.7)	54(26.2)	107(52.9)	
Gender	Male	42(20.4)	59(28.6)	101(49.0)	
	Female	55(26.7)	49(23.8)	104(50.5)	0.172
Education	Illiterate	72(35.0)	63(30.6)	135(65.5)	**0.012**
	Primary	18(8.7)	20(9.7)	38(18.4)	
	Secondary	5(2.5)	18(8.7)	23(11.2)	
	Higher	2(1.0)	8(3.9)	10(4.9)	
Employment status	Working	9(4.4)	32(15.5)	41(19.9)	**0.001**
	Non-working	88(42.7)	77(37.4)	165(80.1)	
Residence	Urban	43(20.9)	62(30.1)	105(51.0)	0.072
	Rural	54(26.6)	47(22.8)	101(49.0)	
Marital status	Married	94(45.6)	97(47.1)	191(92.7)	0.081
	Unmarried	2(1.0)	10(4.9)	12(5.8)	
	Total	97(47.1)	109(52.9)	206(100.0)	

Discussion:

Cataract is as any opacity in the crystalline lens. It is easily treatable but still it is the most important issue in developing countries. [5] Cataract is the leading cause of blindness and reversible visual impairment in the world. It is defined as cloudiness in the crystalline lens. It affects about 75% of the elderly over 70 years of age, and impacts various aspects of vision interfering negatively in the quality of life. [6]

In many studies it is suggested that visual impairment due to cataracts significantly decreased the vision-related quality of life, demographic factors. Visual impairment was also negatively correlated with the mental health of the patients.

A study was conducted in Brazil in which people with age group >70 years old were in majority. Thirty-six participants (94.74%) claimed vision problems. This study showed that falls due to cataract had a negative impact on quality of life which makes treatment or correction of visual impairment more important. Elderly population also shows worse mental health, higher level of dependence and greater difficulty with activities. VFQ-25 shows statistical significance, near sight activities p-value=0.02, far sight activities p-value=0.01, mental health p-value=0.0001 and dependence p-value=0.08. [1] Parallel results were found in the present study, difficulties in near and far sight activities shows significant results p-value=0.01`. General health also shows significant result p-value=0.01

In an investigation in Ghana in which 70 participants were included from age group between 12-99 years. Majority were aged between 69 -87. There were more females with cataract than males. Visually impaired patients were 57.8% and this reduced to 40.4% after surgery. Females were known to suffer more visual impairment due to barriers like culture and traditions. [7] Similar results were found in the current study, there were more females with cataract 51.0%. Visual impairment affects quality of life and after surgery visual impairment gets much better.

A study was conducted in China in which 401 participants were included. Mean age of the patients was 69 years. Patients who undertook this study was about to undergo cataract surgery. Cataract decrease quality of life in following parameters such as mental health, difficulties with activities and dependence Results shows that visual impairment had more impact on psychosocial parameter than other quality of life parameters. [3] Present study also concluded the same results that cataract effects on mental health of patients decrease quality of life, increase difficulties with activities and dependence.

A research was conducted in Hong Kong in which 110 patients were included and had a mean age 71 years. 40.4% were men. There was no significant correlation between age and quality of life p-value=0.63. 104 patients (94.5%) had improved quality of life after surgery, 3(2.7%) had no change and 3 had worse visual acuity. [5] Similar results were found in the current study, there was no significant correlation between age and quality of life p-value=0.080

In a study in Doumen Country, China it is concluded that among cataract patients 32.1% had visual acuity less than 0.01 in both eyes. Of operated eyes 52.6% presented visual acuity less than 0.01. Scores among cataract operated patients were not influenced by age, gender or education level. Lack of education was associated with quality of life in unoperated patients and older age was associated with lower quality of life p-value=0.001. [8] Present study also concluded that lack of education was associated with quality of life p-value=0.000 in unoperated patients and older people had lower quality of life.

A study was conducted in Australia in which 99 participants were included age between 55-88. Improvement in the vision-related quality of life after cataract surgery was associated with improved contrast sensitivity and improvement in depressive symptoms after cataract surgery was associated with improved stereopsis. [9] Parallel results were found in the current study that cataract surgery shows improvement in depressive symptoms and stereopsis.

An investigation was conducted on quality of life with cataract in which those patients who currently worked presented with lower vision mental health. General health was positively associated with higher education level. Males exhibited lower vision subscale as compared to females. [10] While similar results were found in the present study illiterate people had much poorer general health (28.6%) as compared to educated 3.9%. Similarly, males have poor general health (31.6%) than females (16.5%).

In a study on patient's acceptance of waiting for cataract surgery in which there was significant variations in Sociodemographic, health and visual status $p < 0.01$ except than the gender with p-value=0.218. [11] Present study also shows parallel results in which gender does not shows any significant result with visual status p-value=0.03

A study was conducted in India in which socioeconomic, demographics and ocular history was obtained. Alcohol, diabetes and age related macular degeneration were risk factors in urban group. Significant risk factor for any cataract in subjects >60 years were increasing age in both urban and rural groups. [12] Similar results were found in the present study population with age group 60 years or greater than 60 had poor health and association with difficulties in daily life i.e., p-value=0.038.

Conclusion:

This study concluded that cataract can severely affects quality of life. Males have poorer general health. Illiterate people with cataract had many difficulties in activities. Education is important and awareness about cataract. Due to difficulties with activities many people were unemployed, they quit jobs after cataract. People should be educating about cataract surgery. Many patients were from urban areas having cataract and difficulties with activities. People from urban areas ignore the symptoms and prefer to treat themselves and delay in cataract surgery which leads to blindness.

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ORIGINAL ARTICLE

Scleral Buckling with 360^0 Encirclement Using 3x5 mm Sponge in Rhegmatogenous Retinal Detachments

Muhammad Kamran Khalid[1], Farhana Ramzan[2]

Abstract:
Objectives: To determine the efficacy of a modified scleral buckling technique.
Design, Duration & Settings: This qausi experimental post-test study was conducted at the department of Ophthalmology, Gomal Medical College, Dera Ismail Khan (D I Khan), Pakistan from January 2015 to December 2015.
Materials & Methods: The sample was collected from Eye Unit, DHQ Teaching Hospital D.I.Khan, Pakistan. Proper approval from the ethical committee of Gomal Medical College, D I Khan was taken before starting the study. All the patients were operated by the same surgeon under local anesthesia and GA was used when indicated.
Results: Retinal detachment surgery with 360^0 encirclement using 3x5 mm sponge for SB for the repair of RRD is a highly effective procedure as the retina was flat in almost all the cases using this technique.
Out of a sample of 25 patients of RRD, males were more than female and older (>40 years) more than younger (<40 years) patients. (Table-1). The prevalence of phakic patients was higher than pseudophakic and aphakic patients, the prevalence of sub-total RD was higher than half and total RD and the prevalence of very small breaks (Not visible) was higher than relatively larger breaks (Visible) (Table-2).
Conclusion: The retina was found flat in a very high percentage (96%) of patients as compared to patients (4%) with detached retina ($p<0.0001$) both at a follow up one week and three months. *Al-Shifa Journal of Ophthalmology 2021; 17(2):71-76.*

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Originally Received: 15 March 2021
Revised: 23 April 2021
Accepted: 7 May 2021

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Introduction:

Rhegmatogenous retinal detachment (RRD) is a potentially blinding disease characterized by the separation of the neurosensory retina from the retinal pigment epithelium because of a break in the neurosensory retina.[1]

The prevalence of RRD ranges from 6.3 to 17.9 per 100,000, with the highest incidence in people who are in their sixties[1,2]. Before the era of scleral buckling (SB), most RRD progressed to complete retinal detachment and resulted in the loss of vision of the effected eye. In the 1950s, SB was introduced, which allowed performance of surgical treatment for RRD[3]. Even after the advent of pars plana vitrectomy (PPV), which was introduced as

a new treatment option by Robert Machemer,[4] SB had remained the standard technique for RRD for several decades, and PPV was considered as a supplemental procedure to SB in complicated cases, such as proliferative vitreoretinopathy (PVR).

There have been several clinical trials comparing the two methods.[5,6] The scleral buckling vs primary vitrectomy in RRD (SPR) study [6] was the largest randomized clinical trial, and it showed that anatomic and functional outcomes of the two methods were comparable. Apparently, PPV has become more popular as the primary procedure for management of RRD, SB is sometimes considered an uncomfortable outdated operation for the surgeon compared to PPV, as it required more anesthesia and repeated taking on and off the indirect ophthalmoscope. In addition, it might induce change of refractive errors or diplopia postoperatively. Nevertheless, SB has apparent merits over PPV in selected cases.

RRD can be repaired using either SB or PPV, and the choice depends on various factors. Generally, PPV has several advantages, including less pain and better management of vitreous pathology, and better management of multiple, large and posterior breaks. On the other hand, advantages of SB include prevention of cataract progression, early visual rehabilitation, and absence of position restriction after the operation.

Many prospective and retrospective studies have reported the outcomes of the two methods in phakic eyes.[6,7-11] A multicenter, prospective clinical trial[16] showed that visual outcomes of SB were superior to those of PPV and there is no significant difference between PPV and SB with respect to the single surgery success rate (SSSR). Most of the published articles have reported similar results in the two methods:74%-94% with SB vs 75%-96% with PPV.[6,7-11] Despite non-inferior outcomes of SB in these reports, it appears that the recent development in PPV-related technology has made PPV more popular as the primary procedure in the management of phakic RRD.[12]

The presence of the lens is a limitation during the performance of PPV. The lens limits the visualization of the periphery as well as the range of the instrument movement, and progression of postoperative cataract impairs visual recovery. However, use of a wide-viewing system and a combined surgery with phacoemulsification can overcome these disadvantages. Recently, the SSSR of PPV has been reported to be 95% or more.[13] A retrospective study evaluating the recent advances in PPV, reported that PPV was superior to SB in older patients in terms of SSSR and visual outcomes.[14]

Nevertheless, SB is still advantageous with respect to the avoidance of postoperative cataract and achievement of early visual recovery; this is especially important for young patients, for whom loss of accommodation would significantly affect the visual functions.

A variety of scleral buckling materials are used to address a variety of RRD cases which sometimes leads to mismatch and surgical failure. Usually, a silicone band is used for encirclement and a silicone sponge for segmental SB procedures, we used a modified and uniform technique of encirclement with silicone sponge in all the cases of RRD that were fit for sclera buckling procedure, hoping to simplify the technique and leading to maximum success with least side effects.

Research Objectives:
To determine the efficacy of a modified scleral buckling technique.

Materials & Methods:

This qausi experimental post-test study was conducted at the department of

Ophthalmology, Gomal Medical College, D.I.Khan, Pakistan from January 2015 to December 2015. The sample was collected from Eye Unit, DHQ Teaching Hospital D.I.Khan, Pakistan. Proper approval from the ethical committee of Gomal Medical College, D I Khan was taken before starting the study.

All the patients were operated by the same surgeon under local anesthesia and GA was used when indicated. After performing 360^0 peritomy, all the four recti muscles were isolated and anchored with 0 silk suture. Sub-retinal fluid (SRF) was drained in the appropriate quadrant using 26G needle through the sclera. Then 360^0 buckling was performed using 3x5 mm silicone sponge and 5/0 ethibond suture. The sponge was secured in all the four quadrants with 1 or 2 mattress sutures keeping in mind the position of the break. This produced at 360^0 buckle that was adequately broad and supporting all the visible breaks. The conjunctiva was closed with 7/0 vicryl suture. This 3x5 mm silicone sponge is usually used for segmental buckling procedures.

Population & Sampling (size, technique, selection): The sampling technique was consecutive, non-probability technique.

\Exclusion criteria: All patients with posterior breaks, very large horse-shoe shaped tears and high grade PVR not manageable with scleral buckling were excluded from the study.

Demographic variables were sex (Male, Female) and age groups (<40 years & >40 years). Data was collected on a Performa and our research variables were a) Lens status (Phakic, Pseudo-phakic, Aphakic) b) RD configuration (Half, Sub-total, Total), c) Size of Breaks (Visible, Not visible) and Status of retina (Flat, Detached).

Sample was described by frequency and percentage using SPSS 17 software.

Results:

Out of a sample of 25 patients of RRD, males were more than female and older (>40 years) more than younger (<40 years) patients. (Table-1). The prevalence of phakic patients was higher than pseudophakic and aphakic patients, the prevalence of sub-total RD was higher than half and total RD and the prevalence of very small breaks (not visible) was higher than relatively larger breaks (visible) (Table-2).

The retina was found flat in a very high percentage (96%) of patients as compared to patients (4%) with detached retina ($p<0.0001$) both at a follow up one week and three months (Table-3).

Table No.1: Distribution of RRD by Sex and Age groups in D.I.Khan, Pakistan(n=25)

Variables	Attributes	Frequency	Percentage
Sex	Male	17	68.0
	Female	8	32.0
Age Groups	<40 years	6	24.0
	>40 years	19	76.0

Table No.2 : Distribution of RRD by Lens status, RD Configuration and Size of Breaks in D.I.Khan, Pakistan(n=25)

Variables	Attributes	Frequency	Percentage
Lens Status	Phakic	16	64.0
	Pseudophakic	8	32.0
	Aphakic	1	4.0
RD Configuration	Half	6	24.0
	Sub total	14	56.0
	Total	5	20.0
Size of Breaks	Visible breaks (one or more)	11	44.0
	Not visible (Very small breaks)	14	56.0

Table No.3: Status of retina at one Week and 3 months in D.I.Khan, Pakistan(n=25)

Variables	Attributes	Frequency	Percentage
Status of retina at 1 week	Flat	24	96.0
	Detached	1	4.0
Status of retina at 3 Months	Flat	24	96.0
	Detached	1	4.0

Discussion:

A significant debate may be found in literature regarding the status of the lens and the choice of the procedure. Generally, surgeons are more inclined towards SB in cases of phakic RDs to prevent progression of cataract or damage to the lens by vitrectomy instruments, limitation of instrument manipulations due to presence of lens and difficulty in viewing peripheral retina during PPV in phakic patients. As there is no risk of lens damage, vitreous is more liquefied and posterior vitreous detachment is present in pseudophakic patients, surgeons are more inclined towards PPV in such patients.

As our study included a significant number of both phakic (64%) and pseudophakic (32%) patients it points towards the higher efficacy of the procedure (96%) in both types of patients. Similar success rate has been reported in multiple international studies for phakic[6-11,14] and pseudophakic [6,5-17] patients. Although Heimann H et al has reported higher success rate for PPV (53.4%) as compared to SB (72%) in pseudophakic cases[6] but higher success rate has been reported in other randomized clinical trials [15,16] with SB in pseudophakic patients(76%-83%).

A general consensus exists that simple RRDs can be managed with SB alone and identification, localization and addressing all the breaks is the key factor for the success of SB. We have used a uniform sized buckle (3x5 mm sponge) for 360^0 encirclement in all of our cases that produced a broad indent with adequate height to support almost all the peripheral breaks including both round and small horse-shoe shaped tears. Many studies have used same type of buckling technique for

all types of breaks[10,16] but as mentioned earlier the deployment of buckle depends upon the type and position of the break and we have also excluded patients with very large and posterior breaks.

Conclusions:

Retinal detachment surgery with 360^0 encirclement using 3x5 mm sponge for SB for the repair of RRD is a highly effective procedure as the retina was flat in almost all the cases using this technique.

Relatively small sample size is a limitation of our study and large randomized trials are needed to further augment the efficacy of this procedure.

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ORIGINAL ARTICLE

Assessment of Stereopsis with TNO Stereo-acuity Test Among Refractive Error Patients

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ABSTRACT

Purpose: To evaluate stereopsis in refractive error patients with TNO stereo acuity test and to compare Stereopsis values in patients with glasses and without glasses.

Materials and Methods: This Cross-sectional study were conducted among three sixty patients who have refractive error. Auto-refraction, best corrected visual acuity and stereopsis were measured. Convenient nonrandom Sampling technique is used for collecting sample. The level of stereopsis was divided into no stereopsis, abnormal, equivocal and normal for refractive error patients. Data was collected from general OPD of Al-Shifa Trust Eye Hospital and analyzed by SPSS version 17. Paired simple t test was used to evaluate stereopsis before and after glasses.

Results: A total of 360 subjects participated in this study. Majority of the participants were female N= 218 (60.6%) while remaining were male N=142 (39.4%). The mean and standard deviation (SD) of these ages ranging from 18 to 30years were 23.9 and ±3.8. All participants in the study Presented with mean refractive error was 2.3 (SD±1.7) with range of ±1 to ±6.00 Dioptric Sphere (DS) and ±0.75 to ± 4.00Dioptric Cylinder (DC).

Conclusion: It was concluded that refractive error greatly reduced the stereo acuity and after the correction of Refractive error the stereo acuity on TNO test was improved statistically significant ($p<0.05$). *Al-Shifa Journal of Ophthalmology 2021; 17(2):77-84.*

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Originally Received: 8 November 2020
Revised: 13 April 2021
Accepted: 22 May 2021

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Introduction:

Refractive error (Ametropia) is the optical imperfection of eye in which eye cannot focus the rays on sensitive layer of retina that results in blurring of vision. Blurring of retinal image also reduces binocular function. Types of refractive error are myopia, hyperopia and astigmatism. These types present both in children and adults. The condition in which rays of light focus in front of retina called myopia. When rays of light focus behind the retina this condition is called hyperopia. Astigmatism is the condition in which refractive power varies among different meridians. Refractive error is corrected by spherical and cylindrical lenses. Symptoms of refractive error are headache, watering, photophobia, stress on eye, tiredness of eyes.[1, 2, 3, 4] Uncorrected refractive error affects the vision related quality of life. Refractive errors are corrected by means of

spectacles, contact lens, or refractive surgery. Spectacles are the most common, easy and cheap way of correction.[5, 6] The incidence of myopia in a group of population varies with sex, race, age, occupation, near work, indoor activities, environmental and other factors. In Pakistan the prevalence of hyperopia, myopia, and astigmatism are 27.1%, 36.5 % and 37% respectively.[7]

Binocular single vision (BSV) is highest form of binocular cooperation. In normal BSV simultaneous use of both eyes with bifoveal fixation is used to perceive single image. There are three grades of BSV i.e., simultaneous perception, fusion and stereopsis.[8] Stereopsis is 3rd grade of BSV and it is the smallest amount of disparity of retinal image. It is measure in sec of Arc and normal stereo acuity is 60 seconds. Any abnormality of eye which alters the retinal image quality of one or both eyes affects the stereopsis. Ocular conditions such as Ametropia, Aniseikonia, Strabismus, Amblyopia, Nystagmus, Monocular vision, Aphakia, and Mono Fixation Syndrome affect the stereopsis.[9,10] Non-Ocular factors includes low illumination, short duration of exposure, uncorrected refractive error, and more refractive difference between two eyes. Stereopsis can be measured by two types of tests: Contour and Randot tests. Contour test provide reliable stereopsis and Randot give definitive evidence Stereopsis. Contour test include Titmus Fly Test which is commonly used. Titmus Stereo test measure range of disparity. Its range is 3000 to 40 sec of arc. This test applies for quantifying the stereopsis. Random dot test includes TNO and Frisby. TNO based on principle of red and green dissociation. This test consists of seven plates which have random red and green dots. These dots are seen red and green glasses. The first three plates are provided to establish stereopsis presence and other plates to quantify it. The test distance is 40cm of distance. The range of TNO is 480 to 15 seconds of arc.[11, 12]

Participants and Methods:

This cross-sectional study was done to check the depth perception with glasses and without glasses when eye is not optically perfect at the general OPD of Al-Shifa Trust Eye Hospital (ASTEH) Rawalpindi. The sampling population included the entire patient with refractive error who visited general OPD of Al-Shifa Trust Eye Hospital (ASTEH) (ASTEH). Data was collected individually from each patient by convenient non-random technique and duration of study was c from October 2019-February 2020.A sample of 360 patients was included in the study. The study duration was from October 2019-December 2019. Used the Convenient non-random sampling technique. Inclusion criteria are Patient with history of refractive error for the duration of last 5 years. Patient having refractive error $\geq \pm 1$DS with up to $\pm$ 0.75DC. Best corrected visual acuity of 6/6 or 6/9. No other ocular pathology. Age group 18-30 years. Patients were willing to give informed consent for participation in this study. Exclusion criteria is Patient with Lenticular changes, Uncorrected refractive error, Raised IOP, Glaucoma, Trauma, Nystagmus, Media opacity, and Pseudophakia, Amblyopia, Strabismus, Pathological myopia, Hyperopia and Astigmatism, History of any ocular surgery and Mentally retarded patient. Visual acuity and refraction using Snellen visual acuity chart were tested by researcher.

Autokerato-refractometer was used to measure refractive error for reference and confirmed by subjective refraction. Patients having best corrected visual acuity 6/9 -6/6 were tested for stereopsis. Stereopsis test using TNO test at 40 cm distance in well illuminated room with patient wearing his/her best refractive correction and stereopsis was recorded. Slit lamp Biomicroscopy was conducted by an ophthalmologist to check anterior segments and posterior segment. The patient having normal and clear cornea, lens and vitreous was selected and informed consent was

taken. Each patient was asked for ocular history. Stereopsis was measured on a quantitative/numerical continuous scale. Age, gender, history of spectacles, refractive status and types of refractive error are independent variables.

Data was analyzed by using SPSS version 17.0. Descriptive statistics including frequencies and percentages were reported for categorical variables such as area of residence, gender, history of spectacles, family history and ocular history. The ocular examination for numerical variables like, visual acuity, refraction, and stereopsis, mean and standard deviations were presented. Paired sample t-test was used to compare the mean difference between stereopsis before and after glasses. The study was conducted after the approval of Institutional Review Board and Hospital's Ethical review board. Permission letter was taken from head of the department. Verbal informed consent was taken from every patient who was interested to participate in the study. It was ensured that data of patient was used only for academic purpose and confidentiality of all the information was ensured.

Results:

A total of 360 subjects participated in this study. Majority of the participants were female N= 218 (60.6%) while remaining were male N=142 (39.4%). The mean age was 23.9 (SD=3.8 and ranging from18-30 years. All participants in the study presented with mean refractive error was 2.3 (SD=1.7) and ranging from ±1 to ±6.00 DS and ±0.75 to ± 4.00DC.

Table: 1 Demographic characteristic

Demographic characteristics	Frequency (f)	Percentage (%)
Gender		
Female	218	60.6
Male	142	39.4
Area of residence		
Urban	244	67.8
Rural	116	32.2
Patient education		
Illiterate	37	10.3
Primary/middle	51	14.2
Matric /intermediate	138	38.3
Graduate /above	134	37.2
Family history		
Positive	192	53.3
Negative	168	46.7

Table: 2 Frequency of using glasses among the participants

Glasses	Frequency(f)	Percentage (%)
Positive	304	84.4
Negative	56	15.6
Total	360	100.0

Figure 2: Types of refractive error (n=360) among the participants

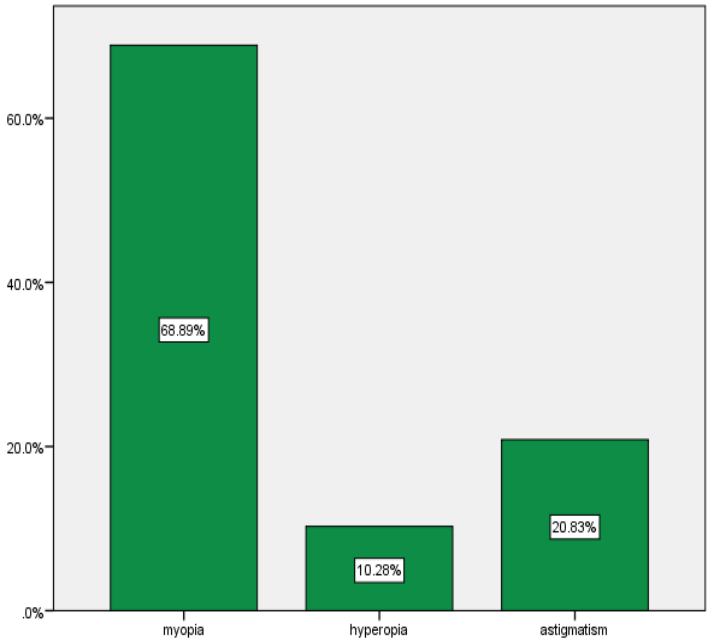

Table3: Magnitude of spherical error

	Frequency(f) (RE)	Percentage (%)	Frequency(f) (LE)	Percentage (%)
-0.75 to -2.25	55	15.3	56	15.6
-2.50 to-4.00	20	5.6	19	5.3
Total	75	20.0	75	20.0

Table 4: Magnitude of cylindrical error

	Frequency (RE)	Percentage	Frequency (LE)	Percentage
-1.00 to -3.00	171	47.5	176	48.9
-3.25 to -6.00	77	21.4	72	20.0
+1.00 to +3.00	8	2.2	8	2.2
+3.25 to +6.00	29	8.1	29	8.1
Total	285	79.2	285	79.2

Figure 3: Stereopsis without glasses

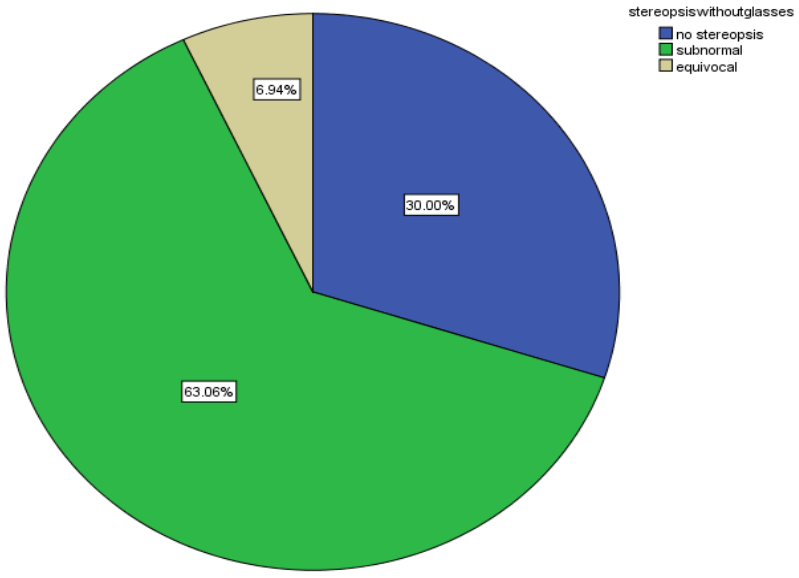

Figure 4: Stereopsis with glasses

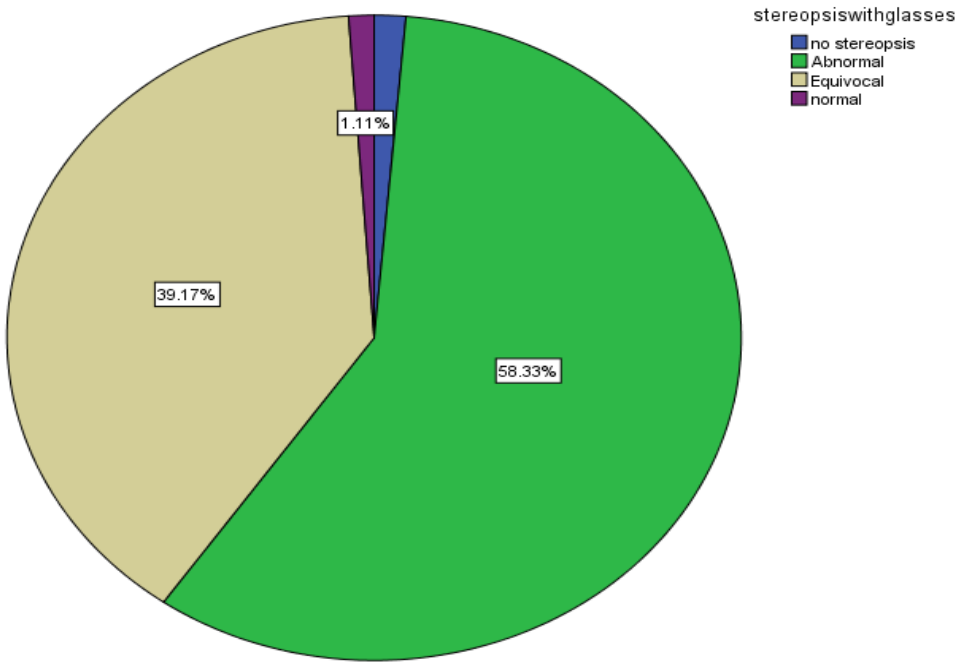

Table: 5 Comparison of stereo acuity before and after glasses(n=360)

Variables	Mean ±SD	t (df=359)	p-value
Stereopsis without glasses	1.76±0.564	-21.748	0.000*
Stereopsis with glasses	2.400±0.539		

*statistically significant p<0.05

Discussion:

The objective of the study was to compare the stereopsis before and after correction of refractive error with glasses. It also focuses on the impact of refractive error on stereopsis. All cases were presented only with refractive error and the chief complaint was of decreased vision. The study included a total of 360 patients, 304 were already using glasses and the remaining patients had refractive error but they were not using glasses for correction. Almost 80% patients knew that they have refractive error so; they got checked-up regularly and also got the prescription for glasses. The stereopsis (the depth perception, 3rd grade of BSV) develops almost at the age of 6 years. Stereopsis requires 6/6 visual acuity, alignment and proper functioning of both eyes. Stereopsis is reduced by Refractive error, Anisometropia, Squint and Amblyopia. Depth perception is perceived at 6-meter distance only.

One previously conducted studied stereopsis in children which had refractive error and intermittent exotropia (XT). They had reported that refractive error and XT have effect on stereopsis. This study did not clear that whether the reduced stereoacuity is improved with correction of refractive error and either refractive error is the cause of decreased stereopsis or intermittent exotropia.[13] Kulkarni, V *et al*, Studied the experimentally induced astigmatism monocular and binocular effect on near stereoacuity in healthy adults. This study showed the reduction in stereoacuity occurs with increased astigmatism.[14] Chanchal G. *et al*, conducted a study in which they took patients (including children and adolescents of age 5 to 18) with myopia. In the study, it was concluded that anisometropia of greater than -1 D and moderate myopia are associated with decreased stereopsis. The degree of astigmatism also has an effect on stereopsis. This study also showed that there is a better stereopsis after correcting the myopia. Myopic refractive error also affects depth perception that improves after correction of refractive error.[15]Yang, J. *et al*, studied the relation between stereopsis and hypermetropia. They also included the patient of hyperopic astigmatism and anisometropia. They found that hyperopia is the reason of poor stereopsis in children of age group 4 to 13. They also found that children who had hypermetropia greater than +3D, have no stereopsis and refractive correction is required for normal stereopsis. Effect of anisometropia on stereoacuity was not found to be statistically significant. [16]

This study emphasizes the effect of refractive errors (myopia, hyperopia, astigmatism) on the grade of stereopsis and compares the level of stereopsis before and after corrective glasses. We found that 30% patients had no stereopsis and other had decreased stereopsis before correction of refractive error. Stereopsis was evaluated both, before and after corrective glasses. One main reason of decreased stereopsis is optical blur. Only 1.4% patients had no stereopsis with corrective glasses. The stereopsis also decreased with increase in degree of refractive error.

Conclusion:

There was significant decreased Stereo-acuity in patient of refractive error. The stereopsis level directly related to degree of refractive error. The study suggests that stereopsis (depth perception) is significantly influenced by refractive error; therefore, the refractive error should be corrected. The patient of refractive error should be wearing the glasses all the time.

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ORIGINAL ARTICLE

Comparison Of Knowledge and Practices Between Urban and Rural Primary School Teachers Regarding Refractive Errors in Children

Mehwish Saleem[1], Nadeem Qureshi[1], Khizar Nabeel Ali[1], Maryam Firdous[1]

Abstract:
A child's eyes are always in use in classroom and 80% of the learning takes place through vision. Therefore, it is necessary to guide teachers on their role in simple eye care delivery.
Objective: Primary aim of this study was to determine the level of knowledge and to assess the practices regarding refractive error in children among primary school teachers, and to evaluate the associated factors affecting the level of knowledge regarding refractive error.
Methods: A cross-sectional study was carried out among primary school teachers of urban and rural areas of Rawalpindi for the duration of three months. All the government and private primary school teachers willing to participate in the study were included. An adopted questionnaire was used and all the responses from self-administered questionnaires were analyzed using SPSS version 21.
Results: A total 95 respondents were included in this study. Equal number of participants were taken from urban and rural areas of Rawalpindi; Pakistan. Out of these almost half (54.5%) of urban and rural primary school teachers had good knowledge and practice regarding refractive error in their children.
Conclusion: The study demonstrates that there is huge gap of knowledge and practices among primary school regarding refractive error, which needs to be addressed immediately, in order to decrease the burden of childhood visual problems in Pakistan. *Al-Shifa Journal of Ophthalmology 2021; 17(2):85-92.*

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Originally Received: 4 March 2021
Revised: 21 April 2021
Accepted: 3 May 2021

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Introduction:

Eyes play a vital role in our day to day lives and are perhaps the most precious gift we have. This world is visible to us because we are blessed with eyesight. Clear and bright eye sight makes this world a better place to live in.(1)

Good vision is an important part of education. Many experts believe 80% of learning is done through a child's eyes. Reading, computer usage and chalkboard work are all visual tasks students perform every day. A child's eyes are always in use in the classroom. Therefore, when a child's vision is not clear, his learning and classroom participation suffers.(2)

A refractive error is an error in the focusing of light on retina. It is one of the most

common ocular conditions, and uncorrected refractive error is a major public eye health challenge. Worldwide URE is the leading cause of visual impairment and 2nd leading cause of blindness.

Globally, an estimated 19 million children are visually impaired or blind. Among them, 12 million children are visually impaired due to uncorrected refractive errors, which could be diagnosed and corrected with the provision of spectacles [(1)(2)]

Between the ages of 0 and 12 years, a child's vision development is a critical period, as vision impacts the child's learning ability. With the entrance of school to the health school system, the school environment becomes the second family and the school teachers take the role of second parents.

Children spend a significant portion of their time in school. Therefore, teachers are in a position to identify the impairments in the early stages itself. Knowledge of primary school teachers towards refractive error plays an important role in encouraging children to seek treatment for their eye problems, as well as to enhance eye health seeking behavior.

Refractive error is a very common eye condition. It occurs when the eye cannot focus the light rays from the object to form a clear image, which results in blurry vision, which is sometimes so severe that it causes visual impairment if remains uncorrected. The three most common types of refractive errors are:

1. Myopia (near sightedness): Difficulty in seeing distant objects clearly
2. Hyperopia (far sightedness): Difficulty in seeing close objects clearly
3. Astigmatism: Distorted vision due to differential focusing of light rays in various dimensions.

Refractive errors cannot be prevented, but they can be detected and treated at an early stage with corrective spectacles, contact lenses or refractive surgery [(3).]

The previous studies state the need to assess the knowledge of primary school teachers regarding refractive errors as the perceptions among primary school teachers of visual problems affecting their students in Pakistan. [(4)] This study will determine the ability of primary school teachers to recognize visual problems in their students and their knowledge about the nature of visual problems including refractive among their students.

Children spend most of their time in the school and it is possible for teachers to assess them easily. This creates a good opportunity for the teachers to identify refractive errors. Early detection and management of the refractive error is important to prevent visual impairment, blindness, and its sequel. Baseline data about school teachers' knowledge and practice towards refractive error is limited in the study area.

The main objectives of the study were:

1. To determine the level of knowledge regarding refractive error in children among primary school teachers.
2. To assess the practice of the primary school teachers regarding refractive error in children.
3. To evaluate the associated factors affecting the level of knowledge regarding refractive error.

Materials and Methods:

It was a cross sectional study, carried out from 1st Oct to 31st Dec 2020 was carried out in government and private schools of urban and rural areas of city Rawalpindi in Pakistan. Individuals of primary school teachers of urban and rural areas of city Rawalpindi. from 1st Nov to 31st Dec were included. A total of 95 subjects were included in the study. Sample size was calculated using the following formula (statistical calculator of WHO).

n = [DEFF*Np (1-p)]/ [$(d^2/Z^2_{1-\alpha/2}$*(N-1) +p*(1-p)] = 384

Desired confidence level of =95%

Anticipated population=34%
Convenient non-probability sampling technique was used

Inclusion criteria:

- Primary school teachers
- Both genders were included
- 18 and above ages was included

Exclusion Criteria:

- Teachers those who were not willing to participate
- Teacher who were be absent at the day of data collection.

The data was collected by using interview-based structure questionnaire. The questionnaire was type in English in order to increase the convenience for participants and to increase the uniformity in questions posed to respondents. The questionnaire was collected based on previous studies. Reliability of questionnaire was checked by using SPSS software and face validity and content validity was checked by circulating them to the expert in the field including supervisors. The data was collected and coded daily.it was entered in SPSS. Any discrepancy, if present was removed after consulting respondents again. Hard and soft copy of the data was secured with access only to the researcher. The SPSS files were sent to the email ID of the researcher and supervisors so that the data remained safe.

Data analysis was done using SPSS version 21. The confidence level was set at 95%. Descriptive statistics were generated for all variables. categorical data was presented in the form of percentage and frequencies. Mean standard deviations and ranges were reported for continuous variables. Median was reported for heterogeneous continuous variables with high standard deviation. Bar chat, pie chart and tables were used to present the data for easy understanding.

Descriptive statistics was run with mean and standard deviation for continuous variables and number with percentages and frequencies for categorical variables. Chi-square test was used to find association between outcome variable and independent variables. The test was applied on all the applicable independent variables and outcome variables. A significance of $p<0.05$ was used for all inferential statistics. Informed consent was taken from every participant included in my study. Consent form ensured that information of every individual was kept confidential.

Results:

A total of 95 patients fulfilled the inclusion criteria and agreed to participate in the study during period of four months. Participants were the primary school teachers of urban and rural area of city Rawalpindi. Most of the individuals were living in urban area 48.4%, while 51.6% belonged to rural area. About 53.7% government and 46.3% private schools were selected randomly from both urban and rural area (Figure 3). Majority of participants were married 52(54.7%) and 43(45.3%) were unmarried. Out of total participants 13(13.7%) were teaching from play-group to 1 class and 81(85.3%) were teaching from 2 to5 class**.**

Mean age of the teachers was 31.68 years and majority of them had qualification of Masters (45.3%) both in urban and rural schools. Most of the urban and rural primary teachers had experienced less than 10 years (77.9%). Assessment of the knowledge on refractive error revealed that good knowledge was found in 54.5% of urban and 46.8% of rural areas

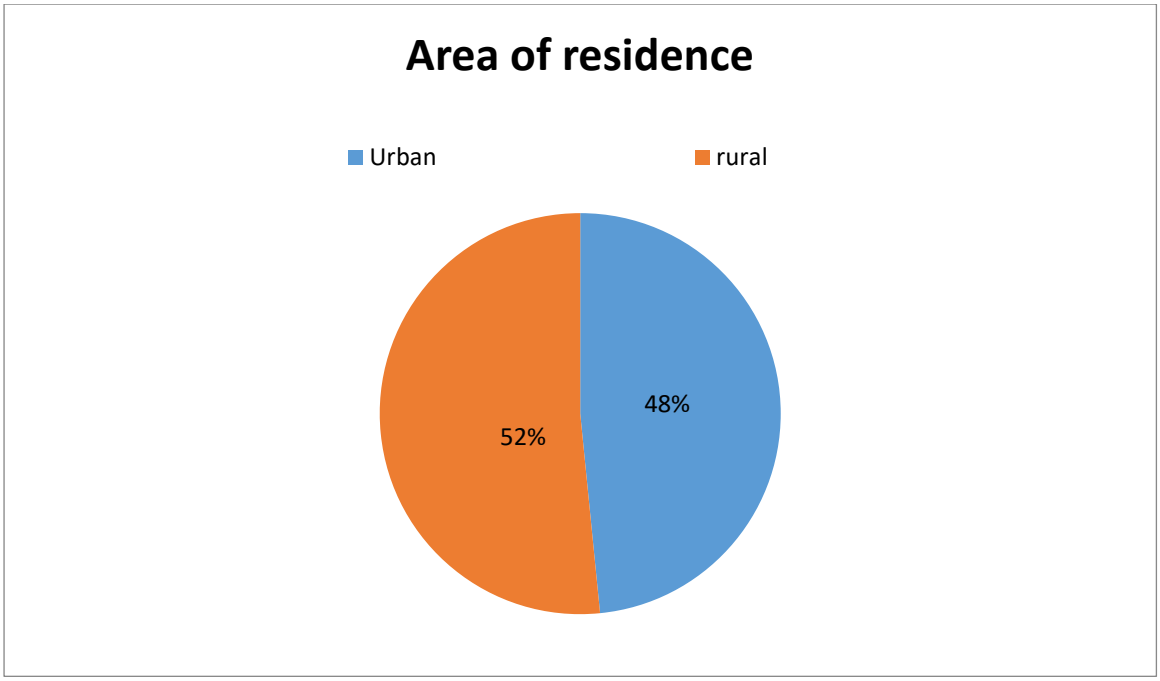

Figure No: 1: Area of residence (Urban vs rural)

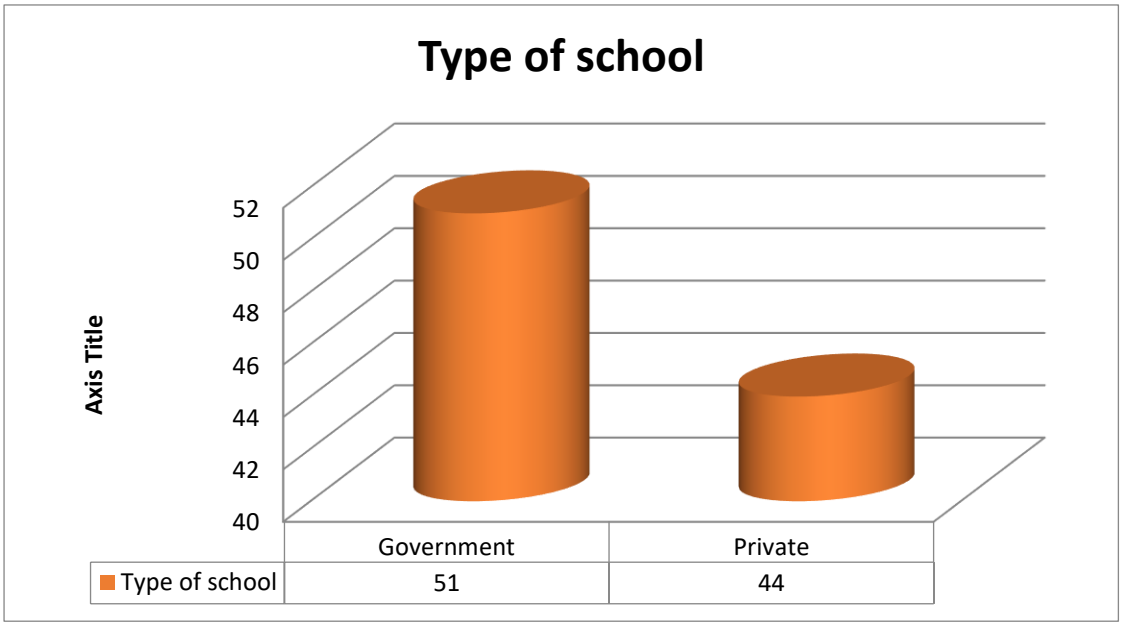

Figure No: 2 Type of school (Government vs Private)

Table No.1: Inferential Statistics

Variable	Categories	Frequencies	Percentages
Marital status	Unmarried Married	43 52	45.3% 54.7%
Major teaching category	Play group-1st 2nd-5th	13 81	13.7% 85.3%

Table No: 2: Association between Knowledge and social-demographics

Variables	Categories	Good knowledge	Poor knowledge	Chi-square(df)	p-value
Age	20-40 41-60	41(51.3%) 5(45.5%)	39(48.8%) 6(54.5%)	0.130(1)	.718
Gender	Male Female	16(55.2%) 29(46.8%)	13(44.8%) 33(53.2%)	0.557(1)	.455
Area of residence	Urban Rural	24(54.5%) 22(46.8%)	20(45.5%) 25(53.2%)	0.554(1)	.461
Marital status	Unmarried Married	18(43.8%) 28(56.0%)	23(56.1%) 22(44%)	1.319(1)	.251
Type of schools	Government Private	29(58%) 17(41.5%)	21(42%) 24(58.5%)	2.464(1)	.116
Educational status	Graduation Masters Masters above	15(44.1) 22(52.4%) 8(61.5%)	19(55.9%) 20(47.6%) 5(38.5%)	1.247(3)	.742
Major teaching categories	Play group-1st 2nd -5th	7(58.3%) 39(50%)	5(41.7%) 39(50%)	.289(1)	.590
Major teaching subjects	Science Maths Urdu English Arts	7(50%) 14(53.8%) 8(50%) 10(50%) 7(46.7%)	7(50%) 12(46.2%) 8(50%) 10(50%) 8(53.3%)	.210(4)	.995
Salary range	Below - 15000 16000-25000 25000 above	7(46.7%) 13(37.1%) 26(63.4%)	8(53.3%) 22(62.9%) 15(36.6%)	5.322(2)	.070

Table No: 3 Association between practice and social-demographics

Variables	Categories	Good Practice	Poor Practice	Chi-square(d.f)	p-value
Gender	Male Female	12(44.4%) 29(45.3%)	15(55.6%) 35(54.7%)	0.006(1)	.939
Area of residence	Urban Rural	26(57.8%) 24(52.2%)	19(42.2%) 22(47.8%)	0.289(1)	.591
Marital status	Unmarried Married	22(53.7%) 28(56%)	19(46.3%) 22(44%)	0.050(1)	.823
Type of schools	Government Private	25(53.2%) 25(56.8%)	22(46.8%) 19943.2%)	0.121(1)	.728
Educational status	Graduation Masters Masters above	18(51.4%) 21(51.2%) 11(73.3%)	17(48.6%) 20(48.8%) 4(26.7%)	2.454(2)	.293
Year of experience	Less than 10 11-20 21-30	39(54.9%) 9(52.9%) 2(66.7%)	32(45.1%) 8(47.1%) 1(33.3%)	.317	1
Major teaching categories	Play group-1st 2nd-5th	5(45.5%) 44(55.7%)	6(54.5%) 35(44.3%)	0.408(1)	.523
Major teaching subjects	Science Maths Urdu English Arts	9(60%) 13(50%) 10(58.8%) 11(57.9%) 7(50%)	6(40%) 13(50%) 7(41.2%) 8(42.1%) 7(50%)	0.720(4)	.949
Salary range	Below - 15000 16000-25000 25000 above	6(37.5%) 21(58.3%) 23(59%)	10(62.5%) 15(41.7%) 16(41%)	2.390(2)	.303

***Statistically significant p value<0.05**

Discussion:

The main purpose of this study is to assess the knowledge and practice of primary school teachers regarding refractive error in children of rural and urban areas of Rawalpindi. The major findings of this study are discussed in relation to similar studies conducted by other researchers.

In a study on the effectiveness of teaching program on early identification of visual impairment in children among 50 primary school teachers most of the teachers (32%) were within the age group of 31-40 and 41-50 years whereas in the present study. Most of the teachers of rural and urban schools were in the age group of 20-40 (88.4%). In the present study majority of the primary school teachers both in urban and rural were female (69.5%) [(5)].

In a study conducted to assess the effectiveness of screening for refractive error by school teachers in Rotakh city, the teachers were asked about their knowledge regarding common symptoms of refractive error and the treatment methods available. Five (55.5%) out of the nine teachers who practiced in a study had satisfactory knowledge [(6)] .

In a similar study conducted in Pakistan to determine 16 primary school teachers' ability to recognize visual problem in students revealed that teachers had good knowledge about the nature of visual problems including refractive error, but many of them had serious misconceptions. Most teachers (75%) said that children with a refractive error had difficulty in seeing blackboard, (43.8%) said that children hold books too close [(7)].

In a study to assess effectiveness of teaching program on early identification of visual problem, results included that there is no significant association between the present knowledge score and baseline factors like age, gender, year of experience and educational qualification.

The general knowledge index score was not found to be significantly different among teachers (of either gender) among public and private schools. Teachers' practice index scores were significantly different among public and private schools. Gender was also found to be a predictor of practice, with female teachers being likely to be more proactive toward refractive error.

In this study people belonging to urban area had slightly more awareness (54%) than rural people. The area specific factors may influence the knowledge about refractive error in their children and their practice. In this study (57.8%) respondents belong to urban area had good practice as compared to rural respondents.

Among those teachers who ever noticed any eye problems in child, (85.9%) informed their parents, (1.4%) called the doctor to the school and only (1.4%) teachers said that they took the child to the eye hospital. About (2.8%) teachers told the child any treatment by themselves and (1.1%) teachers did nothing and (7%) did something else in response to having noticed any problem in child. In Kolkhata the results suggested that visual impairment due to refractive error is significant problem in the school children.[(8)]

To our best knowledge there was not any such study conducted before in Pakistan. So, this study will show the importance to compare the knowledge and practice among urban and rural primary school teachers regarding refractive in their children in order to assure that the school children is doing their daily activities easily

Limitation of the study:

Basic limitation of this study was insufficient and small sample size. Due to epidemic disease, there is unavailability of patients and short time duration is the major hindrances to the study.

Conclusion:

The knowledge about refractive error of students was high in about one-third of teachers and the level of practices about refractive error of students was high in very few teachers. There is a huge gap of knowledge and practices among primary school teachers regarding the refractive error of their students, which needs to be addressed immediately, in order to decrease the burden of childhood visual problems in Pakistan.

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CASE REPORT

Retinoschisis-An Optometric Approach

Nisma Sehar[1], Farman Ullah[2]

Abstract:
Retinoschisis is a rare condition that can have serious visual consequences if not managed properly. Retinoschisis is described as a separation of the neurosensory components of the retina. This case report discusses asymptomatic acquires retinoschisis as it presented within a routine diabetic examination. The patient presented in OPD for regular check-ups she only had complaints of intermittent migraines without diplopia her visual acuity was normal with refraction. On fundus examination, there was a bubble-like appearance of the retina in the inferior temporal quadrants of the left eye bubble-like appearance of the retina with white dots in the lesion in the inferior temporal region of the right eye. This case report explores important clinical findings, treatment options, differential diagnoses, and the optometrist's role in managing this condition. *Al-Shifa Journal of Ophthalmology 2021; 17(2):93-97.* *© Al-Shifa Trust Eye Hospital, Rawalpindi, Pakistan.*

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Originally Received: 15 March 2021
Revised: 24 April 2021
Accepted: 11 June 2021

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Introduction:

Retinoschisis- the splitting of the retinal layer that leads to the bubble-like lesion. The condition can be unilateral or bilateral and it can be peripheral or central, acquired and congenital. Acquired retinoschisis (RS) is considered a degenerative lesion characterized by progressive peripheral splitting of retinal structure. Smooth convex and elevated appearance can be seen in this condition due to the splitting of the retina at the outer plexiform layer or inner nuclear layer [1]. In the third decade of life, there is a high incidence of acquired Retinoschisis. Over 30 % of patients have bilateral retinoschisis and are commonly seen in the inferior temporal quadrant. This condition is common in patients with hyperopia[2]. Acquired retinoschisis and X-linked (juvenile) retinoschisis are the major subtypes mentioned in the literature. X-linked retinoschisis is a congenital condition due to mutation of R1 gene which is associated with adhesion between cell and organization of retinal layers during the development of this condition with prevalence up to 2% making it less common type retinoschisis than acquired retinoschisis or senile retinoschisis. X-

linked retinoschisis seemed more severe than another type Retinoschisis [3]. It is developing quickly after birth, and patients with this have more likely to have strabismus [4]. Fahim et al. 2017 proposed that vitreous haemorrhage and retinal detachment r considered as common secondary pathology associated with this condition [5]. It is unlikely for this patient to have X-linked Retinoschisis because it is congenital or related to secondary pathology Ocular disease but she had good general health and had no definite symptoms regarding vision and no history of another ocular disease.

Case Report:

A 31-year-old female presented as a new patient for a routine eye examination. She was using glasses and had no new ocular or visual complaints. Her best-corrected visual acuity in both eyes was 20/20. No relative afferent pupillary defect was noted. Preliminary testing and anterior segment evaluation were both clear and healthy in both eyes. Her ocular movements were full with small degree hyperphoria in near were seen during the examination. During fundus examination, raised bubble-like appearance of the retina in inferior temporal quadrants of the left eye was seen and a bubble-like appearance of the retina with white dots in the lesion in the inferior temporal region of the right eye was present. On detailed examination by B-Scan and OCT also reveals the same findings of the posterior segment in both eyes. Upon further questioning, the patient admitted that she only experienced intermittent migraines without having diplopia flashes and floaters. The overall medical health of the patient was good she was only taking the contraceptive pills. Moreover, visual fields of the patient in both eyes were full and standard and had supra-threshold sensitivity. Following were different differential diagnoses for the retinal appearance of this patient.

1. Choroidal melanoma, which drives from Melanocytes in the stroma, is considered the most common intraocular malignant tumour. This condition is commonly prevalent in patients sixty years and older and more frequently in men [6]. Many patients with choroidal melanoma may not have symptoms. Other patients may complain about a decrease in vision due to the tumour involved in the fovea [7]. Choroidal melanoma appears as a yellow grey appearance with large vessels on the tumour. Besides the typical appearance of Choroidal melanoma can be different pigmented. The presentation is different from that shown in the image of this patient posterior eye. Therefore, it is unlikely for the lady to have this ocular condition.

2. Choroidal detachment occurs due to the accumulation of fluid or blood between the space of the choroid and sclera. This ocular condition is rare and most commonly associated with trabeculectomy. Also, it can be caused by trauma and inflation some patient with Choroidal detachment may complain about severe pain and Thompson 2030 suggest that blurred vision is the most common symptom seen in the clinics [8,9]. However, choroidal detachments can cause a bubble-like appearance because of the underlying uvea. Choroidal detachments tend to be dark brown with healthy overlying retinal vessels. In addition to this condition is more likely to affect all four quadrants [10] but the lady reported trauma or other ocular disease and the appearance is not consistent with the type of choroidal detachment. Thus, it is unlikely for this patient to have a choroidal squad.

The retina comes forward resulting in a bubble-like appearance in the peripheral retina. Rhegmatogenous retinal detachment (RRD) caused by the separation of the neurosensory retinal from the retinal pigment epithelium layer. Myopia and trauma are considered the primary risk factor. It is commonly seen in patients 40 to 70 years old and widely recognized in men [11]. Patient with RRD frequently complains

curtain across vision decreased visual Acuity flashes or floaters besides metamorphosis may be reported.
Exudative retinal detachments occur when fluid accumulated in the subretinal space due to disruption of the blood-retinal barrier and associated with inflammatory infectious or vascular degeneration [12]. For the patient, there is no history of trauma or systemic disorders, and she reports no symptoms as flashed or floater. Also, she is hyperopia thus it is unlikely for this patient to have a retinal detachment
The bubble-like smooth lesion of both eyes in the outer retina and the patient doesn't note any symptoms of including flashes floaters decreased visual acuity all evidence suggested asymptomatic acquired Retinoschisis.

Management of the case in primary care optometry practice for most patients with retinoschisis are non-progressive without any symptoms. Lewis 2003 proposed that patient with retinoschisis has a high risk to develop a retinal detachment. So, it is important to monitor the condition. Optometric practice helps to diagnose these types of conditions timely and advice the patient of regular follow-ups especially when they will experience any symptoms of floaters, flashes and decreased visual acuity. This practice manages the patient timely which ultimately helps the patients with a good prognosis in ocular health.

Discussion:

Acquired retinoschisis is considered a degenerative lesion characterized by progressive peripheral splitting of retinal structure with over 30 %of prevalence smooth convex and elevated appearance can see in this condition due to splitting of the retina at the outer plexiform layer or inner nuclear layer [13]. It is usually bilateral and patients with Acquired retinoschisis are more likely to have hyperopia Retinoschisis has commonly seen in the inferior temporal of the retina [2]. White flecks or small holes in the inner surface as this patient with retinoschisis shows bubble-like appearance at inferior temporal which is consistent with a feature of Retinoschisis [14]. As mentioned before retinal detachment is seldom associated with retinoschisis patients with retinoschisis can develop RRD, but the risk is low the figure from the study of Byer1986 suggests that less than 2.5 %of patients have retinoschisis associated with rhegmatogenous retinal detachment however, it can cause retinal detachment if inner and outer layers breaks[15].

Retinoschisis is a degenerative lesion which usually has no symptoms and is non-progressive. Therefore, treatment is not necessary for contrast. Retinal detachment is symptomatic and progressive. Achieving diagnosis is vital to choose correct management of the patient as well as reduce unnecessary treatment. It is difficult to distinguish between retinoschisis and retinal detachment due to the similar appearance. It is not uncommon to differentiate retinoschisis from retinal detachment by clinical features, including retinal mobility, demarcation line and pigment cell Retinoschisis refers to a subtle splitting of the outer retina into two layers. Unlike retinal detachment elevated surface does not undulate with eye movement. Patient with retinal detachment is likely to complain about symptoms of floaters due to pigment cell present in vitreous. In contrast, there is no pigment, as the retinal pigment epithelium is unaffected. Thus, pigment cells considered as useful clinical features suggest the presence of retinal detachment. However, the study of Yeoh *et al.* 2012 shows that 40 % of patients with retinoschisis have pigment cells in vitreous[16]. Therefore, focusing on clinical features it is still challenging to achieve a diagnosis in terms of the perimetric test.; Retinoschisis may involve a large area, causing complete visual field loss due to disruption in the connection between retinal layers[17,16]. However, using absolute scotoma as a clue in distinguishing between retinoschisis and other diseases has its

limitations. This absolute scotoma can also be seen in a patient with chronic or anterior retinal detachment [18]. Besides, Retinoschisis typically occurs in the periphery of the retina therefore, no visual field defect is detected as the visual field of this patient is standard that full points of the suprathreshold visual field.

Conclusion:

In conclusion, based on clinical features it is difficult to distinguish the Retinoschisis so detailed posterior examination is necessary for its early diagnosis. The clinical presentation of this patient at the primary level and understanding of retinal anatomy is what prompted the referral of this patient. Patients who are not managed appropriately are at risk for permanent vision loss. Therefore, an optometrist plays an important role in the early diagnosis of this sight-threatening condition and could save the patient from a worse prognosis. So, optometrists must be well informed about the newest treatments and theories surrounding this pathology.

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