

Risk Factors Assessment of Eye Diseases in Rural Areas of District Mansehra, KP Pakistan

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Abstract- Purpose: This study was conducted in order to investigate the risk factors for major eye diseases (Cataracts, Glaucoma, Corneal opacity, and Refractive error) among peoples residing in rural areas of district Mansehra, Pakistan.

Place and duration: this research work was completed in the period of six months from the rural areas of district Mansehra KP Pakistan.

Study design and methods: Self-design questionnaire was used and data was collected with the help of expert Ophthalmologist. Statistical analysis were performed by using the SPSS 20.00 software for windows and P-value below 0.05 was considered significant.

Results: The results showed that cataract was most common (42%) in patients of eye diseases in rural areas of district Mansehra followed by refractive error (20%), corneal opacity (11%) and glaucoma (9.9%), respectively. The percentages were higher in female patients for all eye diseases as compared to male patients. Among risk factors of eye cataract ultraviolet radiations (71.55%) play highest role followed by obesity (51.28%) and hypertension (43.72%). Family medical history, consanguineous marriages, diabetes and use of statin medication were also among important risk factors of eye cataract. Elevated eye pressure (75.64%), age (55.76%), nearsightedness (50%), congenital diseases (46.15%) and use of steroid medications (42.30%) were the main risk factors found associated with glaucoma. Similarly, measles scarring (63.52%), injury from a force of chemical agent (55.88%) and vitamin A deficiency (55.29%) were the leading risk factors for corneal opacity.

Conclusion: In conclusion life style and environmental factors play important role in causing major eye diseases among people of the study area rather than genetic factors.

Index Terms- Eye diseases, Cataract, UV radiations, Hypertension, Diabetes

I. INTRODUCTION

Visual impairment and blindness are widespread across the human population worldwide. Globally 191 million people are estimated to have moderate to severe vision impairment of which 45 million are blind that consist of 60% women (Fakir et al., 2015). In Pakistan 3.5% population is suffering from the different diseases of which 85.5% can be controlled by awareness and practicing healthy life style while 14.5% are unavoidable (Haroon et al., 2012).

Cataract is the major cause of blindness in which the lens of eye becomes progressively cloudy, resulting blurred vision. This may result in trouble driving, reading or even recognizing faces. Cataract has 4 subtypes, subscapular, nuclear, cortical and congenital of which subscapular cataract ratio is highest. It starts as a small opaque area that usually forms near the back of lens, right in the path of light. It reduces the vision in bright light and making images blur. Poor vision may also occur due to an increased risk of falling and depression (Gimbel et al., 2011). Glaucoma is the second most common eye disease which damages the optic nerve and build up pressure inside the eye (Josine et al., 2017). It has two main types, Open-Angle and

Angle-Closure Glaucoma. Open-Angle Glaucoma is most common in which eye's drainage canals getting clogged over time causing increase in internal eye pressure and subsequent damage to optic nerve. Corneal Opacity is another eye disorder which leads to scarring or clouding of the cornea and decreases vision. It starts from minor irritation to vision problems and in some cases it causes blindness (Joanna et al., 2017). Refractive error is the disability of the eye to accurately focus the rays of light coming from far to fall on retina. Refractive errors are of four types, Myopia, Astigmatism, Hyperopia and Presbyopia. In Myopia the distance objects looks blurred and causes shortsightedness. Hyperopia is abnormal condition in which vision for the distant object is better than near objects, also known as farsightedness. Astigmatism is the defect of optical system in which light rays from a single point fail to converge in a single focal point (Maheshwari and Williams. 2001). In Presbyopia cause the loss of elasticity of the crystalline lens in people above 45 year of age (Georgios et al., 2017). The aim of the present study was to investigate the major eye diseases (Cataracts, Glaucoma, Corneal opacity, Refractive error and other diseases) and their major risk factors among peoples residing in rural areas of district Mansehra, Pakistan.

II. STUDY DESIGN AND METHODS

Study duration

A single sectional survey was conducted for the periods of six months. Ethical clearance was obtained from

III. RESULTS AND DISCUSSION

A total number of 1580 patients were examined in the period of 6 months of all the ages. Frequency of the common eye diseases was cataract 661 (42%) followed by refractive error 316 (20%), corneal opacity 170 (11%) Glaucoma 156 (10%), and other diseases 277 (17%) (Figure 1). This study concluded that these all diseases are age related and were slightly more common in female than male (Figure 2).

Risk Factors Associated With Cataract

Among risk factors of eye cataract ultraviolet radiations (71.55%) play highest role followed by obesity (51.28%) and hypertension (43.72%). Family medical history, consanguineous marriages, diabetes

ethical research committee of Hazara University Mansehra, Pakistan.

Study area

Study area was the rural areas of district Mansehra.

Data collection

A questionnaire was designed, consist of basic demographic information followed by the types of diseases and potential risk factors. Data were collected from the patients visiting district head quarter hospital, al Raheem surgical hospital and LRBT Mansehra. After the examination of patient by ophthalmologist, the questionnaires was filled from 1580 patients.

Examining Patients

Snellen's literate and an illiterate 'E' chart (model to detect the eye sight) was placed 6 meters far in a well-illuminated area to test the visual acuity (VA). VA of all the patients was tested by the trained ophthalmic faculties. Ocular examination of the patients was performed using a pen torch and an ophthalmoscope in a darkened room. Those who needed immediate treatment for conditions like infective and mild to moderate vernal conjunctivitis were given prescriptions. Patients with discharging cataract, glaucoma, corneal opacity, refractive error and blindness from any condition were given referral notes treatment, for follow up and counselling in the hospital.

Statistical Analysis

Data was analyzed statistically with the help of Software Statistic Program for Social Sciences (SPSS) 20.00 to carry out checks and rechecks to ensure validity. Analysis included frequency distribution for the variables of interest and division by age groups, sex and risk factors.

and use of statin medication were also among important risk factors of eye cataract (Figure 3).

Previous studies had shown nearly same results. In one such study Mehta et al., (2016), found that hypertension is one of the leading risk factor causing cataract followed by cousin marriage (31.46%), and trauma (23.14%). Eckstein et al., (1996), reported that diabetes (23.90%) is the leading cause of eye cataract. Diabetes has long been recognized as a risk factor for cataract in several studies (Hennis, et al., 2004). Similarly, previous eye injury or inflammation (20.72%), family history of cataract (33.73%) are also associated with eye cataract. Regular smoking also known to cause cataract (12.10%), especially in those

who started smoking in a very young age in previous study report of (Vashist et al., 2011).

Risk Factors Associated With Glaucoma

Elevated eye pressure (75.64%), age (55.76%), nearsightedness (50%), congenital diseases (46.15%) and use of steroid medications (42.30%) were the main risk factors found associated with glaucoma (Figure 4). Glaucoma mostly affect the aged people of 40 years or above. According to India population survey among 5538 glaucoma patients the age was (40-90) (Ramakrishnan et al., 2003). Major risk factors of glaucoma were elevated eye pressure (75.64%) is highest (Figure 4), According to Faeze, et al., (2016), the percentage of intra ocular pressure was 55% among the 99 glaucoma patients. According to Kyari et al. (2013), eye pressure (71%) was highly associated with glaucoma. Age also plays important role (55.76%), in causing glaucoma. In Nigeria, a survey conducted among 402 patients of glaucoma, the majority 249 (61.9%) were in the age group of 21-80 years (Prabhu et al., 2013). Similarly, near-sightedness (50%) is also an important risk factor for glaucoma, According to Sapkota et al., (2013), 60 glaucoma patients were also affected by near-sightedness and their ratio was higher than others.

Risk Factors Associated With Corneal Opacity

Similarly, measles scarring (63.52%), injury from a force of chemical agent (55.88%) and vitamin A deficiency (55.29%) were the leading risk factors for corneal opacity (Figure 5).

Corneal opacity is also an age dependent disorder and mostly it is occurring in youngsters. All the patients of corneal opacity got corneal infection (100%). Measles when result in scarring/infection of the eye, injury due to Chemical agents and Vitamin A deficiency were the leading risk factors for corneal opacity. According to Bowman et al., (2002), Corneal infection was significantly associated with visual impairment or blindness in unilateral cases the patients who were blind in the eye with corneal opacity. Corneal opacity may also results due to wearing contact lenses for a long time. According to Böhnke and Masters, (1997) 13 patients with corneal opacity showed a history of up to 26 years of wearing soft contact lenses, whereas, 11 patients showed a history of up to 25 years of wearing rigid gas permeable contact lenses.

IV. CONCLUSION

Eye diseases are common health problem globally. It can affect people at every stage of life ranging from early childhood to late adulthood. In conclusion life style and environmental factors play important role in causing major eye diseases among people of the study area rather than genetic factors Life style changes such as regular exercise to get rid of obesity, hypertension and diabetes may also help in preventing eye diseases. Similarly, getting balance diet having adequate amount of vitamin A, avoid using statin and steroid medication, and also avoiding unnecessary use of contact lenses will be help in preventing eye diseases.

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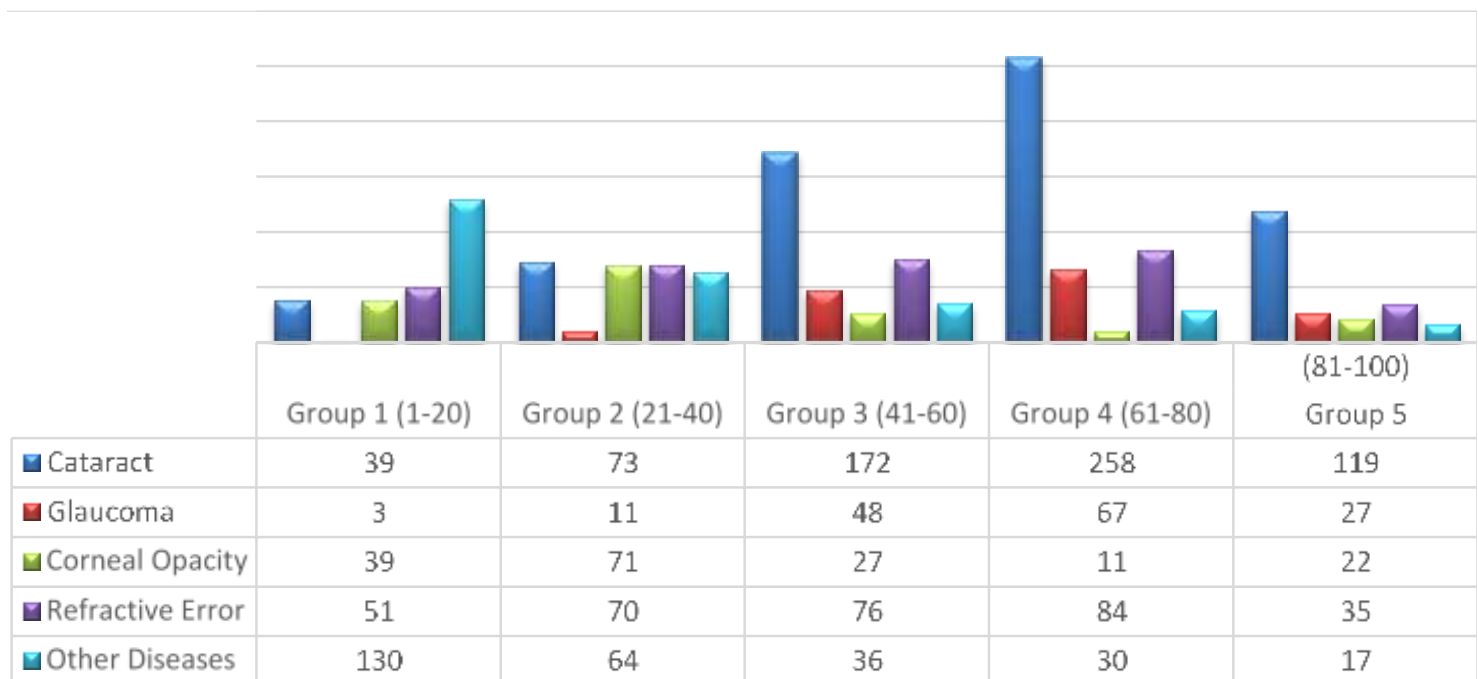


Fig 1: Frequency of eye diseases with respect to age

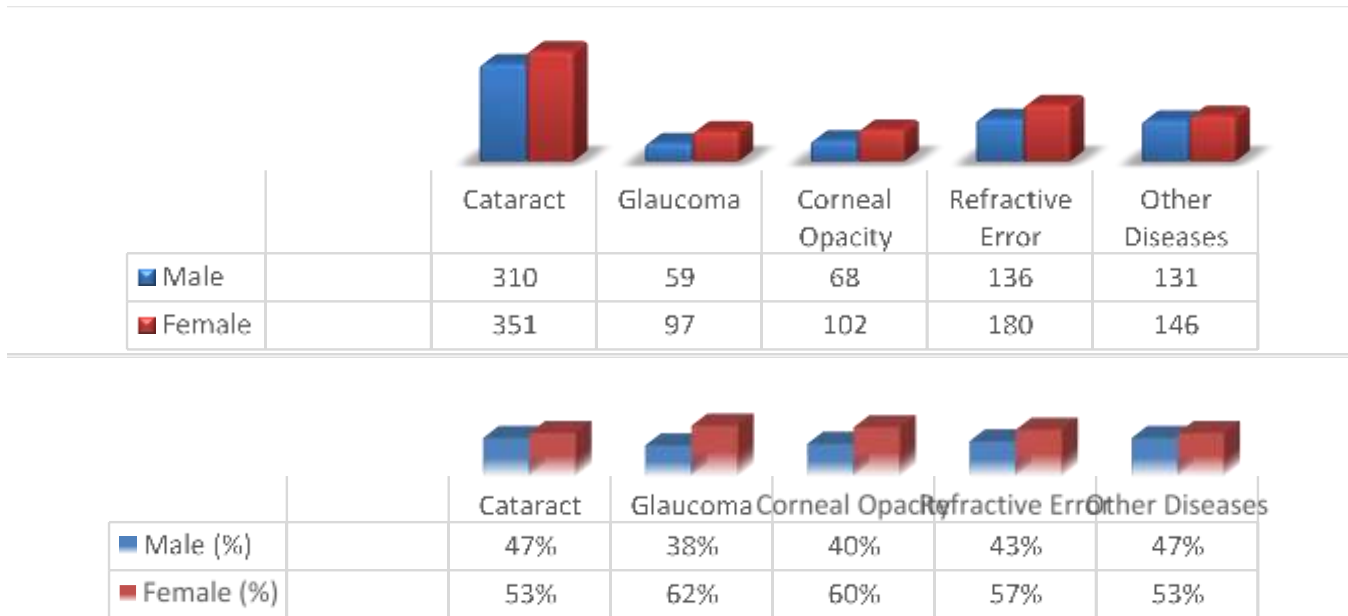


Fig 2: Frequency of eye diseases with respect to gender

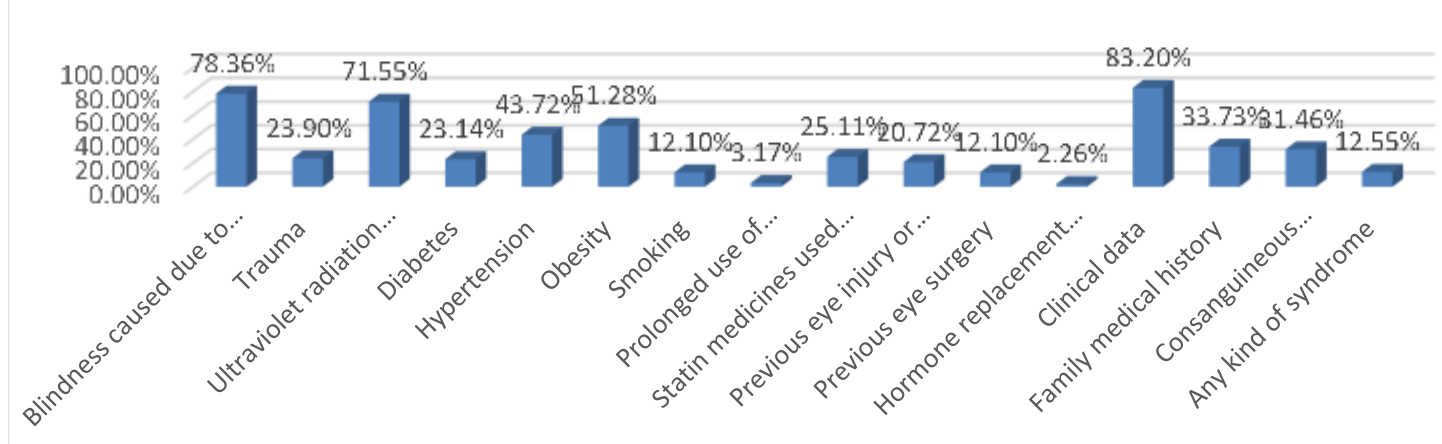


Fig 3: Frequency of risk factors associated with cataract

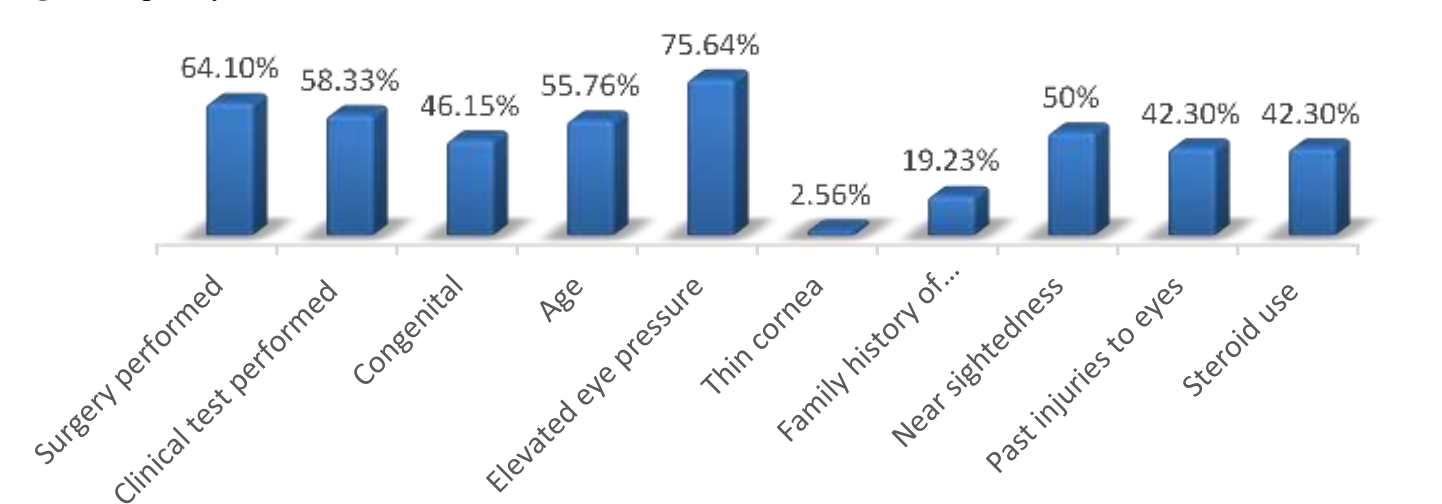


Fig 4: Frequency of risk factors associated with glaucoma

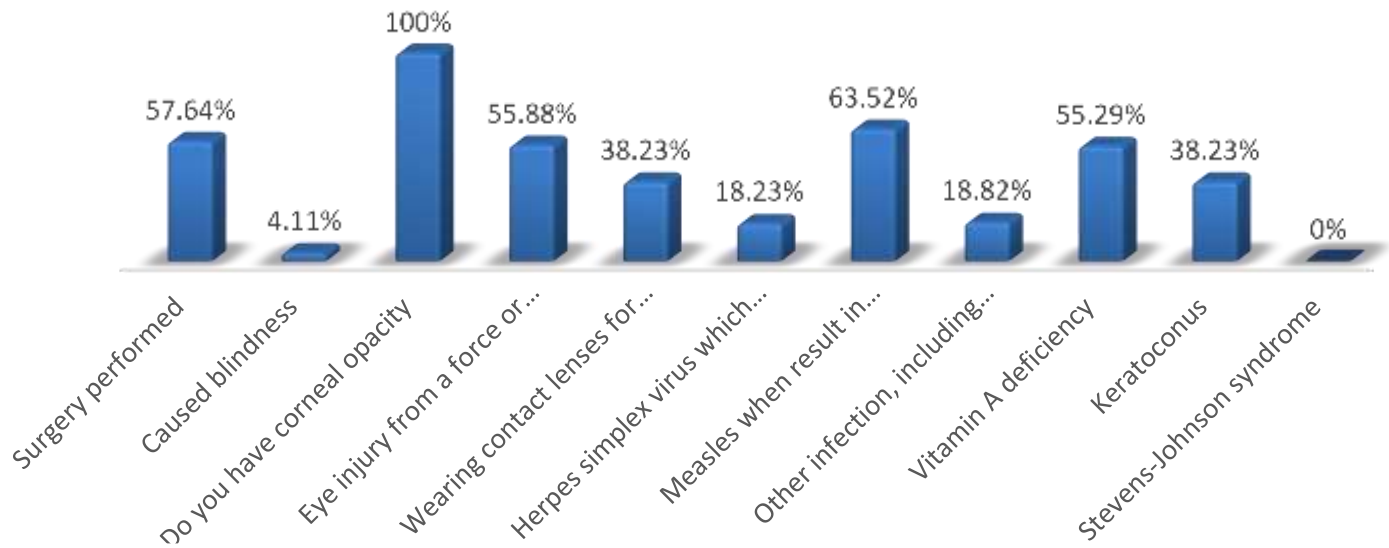


Fig 5: Frequency of risk factors associated with corneal opacity