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Follow-up Regularity in Eye-Care among Disease Conscious Population in Delhi-NCR: A Gender-Based Retrospective Study

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Abstract---In contemporary society, most females are deprived of proper education, healthcare, job opportunities, etc., to uphold family customs, patriarchal dominance, and occasionally negligence towards the feminine gender. According to researchers, gender inequalities in health care, especially in eye care, are evident between accessing the care and getting treatment in developing countries. Therefore, we aim to measure the gender-wise eye-care follow-up regularity in accessing long-term glaucoma consultation among various age groups with a sample size of 564 in Delhi-NCR, India. The age groups (in years) are 15-29 (Group I), 30-44 (Group II), 45-59 (Group III), 60-74 (Group IV), and 75 and above (Group V). Groups I to V show, intragroup males have higher odds of getting regular eyecare by 20% (OR 1.20, 95% CI 0.413 to 3.4871), 2.08% (OR 1.0208, 95% CI 0.4637 to 2.2472), 3.4% (OR 1.034, 95% CI 0.6369 to 1.6787), 8.46% (OR 1.0846, 95% CI 0.6783 to 1.7344), and 45.83% (OR 1.4583, 95% CI 0.4575 to 4.6484) respectively. The probable causes of gender-wise irregularity are lack of seriousness, financial limitations, dependency, loneliness due to widowhood, etc. To make eye-care services equally accessible to everyone, healthcare agencies should first take various progressive policies to overcome gender-wise socio-economic barriers.

Keywords---Glaucoma, eye-care follow-up, follow-up regularity, gender-wise eye-care, Delhi-NCR population.

Introduction

Indian society has been witnessing the dominance of patriarchy for ages. Social discrimination based on caste, class, race, religion, gender, etc., is the standard form of discrimination usually noted nowadays. There are many Govt. and non-Govt. services, jobs, education, health care, etc., where females are either completely deprioritized or discriminated compared to males with same level qualification (Deshpande et al., 2018; Mohanty, 2021). Even in many social customs and institutions of each stratum of the society, gender-based discrimination is very prominent. In rural and urban Indian culture, most homemakers and daughters are deprived of proper education, adequate nutrition compared to their male siblings (Pande, 2003), health care (Mondal & Dubey, 2020), job opportunities, etc., to uphold family customs, patriarchal dominance (Agewell Research and Advocacy Centre, 2015; Rathore & Das, 2021), social status (Agewell Research and Advocacy Centre, 2015), and occasionally negligence towards the feminine gender (Agewell Research and Advocacy Centre, 2015; Bhagat & Unisa, 2007; Gupta, 1987). This discriminatory act of society has a very crude effect on its present generation women and, to some extent, next-generation off-springs.

Many health problems like gynecological issues, sexual issues, sexually transmitted diseases, diabetes, refractive error of the eye, etc., have been tabooed (Shipra Shukla, 2020), stigmatized (Atre et al., 2011), and neglected even in current Indian society (Dixit et al., 2020; Srivastav, 2011). These kinds of problems are usually unheard by the kin of the patients (Saikia et al., 2016), and in some cases, patients themselves cannot discuss their sufferings with family members (Tuli et al., 2019). This act of negligence brings calamity to the patients' life and their own family (Kumar et al., 2021). In the same manner, there are a lot of vision and eye impairments or diseases that have been ignored irrationally for females (Saikia et al., 2016), resulting in a life-threatening cause, or at least it causes moderate to severe vision impairment.

In eye care, many diseases and vision impairments need continuous regular consultation to halt the degradation of ocular health and maintain vision. Glaucoma is one such disease that requires regular consultation. Intraocular pressure (IOP) should be kept within normal limits to maintain retinal health (Gessesse & Damji, 2013). Glaucoma is a disease in which retinal nerves get permanently damaged due to persistent high IOP (Kang & Tanna, 2021; Weinreb et al., 2014). To better understand, Glaucoma could be compared to high blood pressure or hypertension in which patients need a regular follow-up of their blood pressure to maintain a healthy heart. To maintain normal IOP and good retinal health, the patient must take medications regularly and go for regular follow-ups as advised by an ophthalmologist from time to time (Kang & Tanna, 2021). Like systemic hypertension (Schreuder et al., 2008), sometimes Glaucoma is also a congenital condition (François, 1980). Initially, if the problem is ignored, the vision gets severely impaired and may be lost entirely, leading to blindness (Kang & Tanna, 2021).

Women are deprioritized in health care (Mondal & Dubey, 2020) due to various socio-economic factors like financial dependency, poor education, low income,

poor autonomy, everyday household work, lack of property ownership (Bhagat & Unisa, 2007; Roy & Chaudhuri, 2008). Overcoming these factors can equalize the health care accessibility between both genders (Bloom et al., 2001; Jayaraman, 2013). Even in the case of older women, financial independence makes them avail primary and secondary health care services better or equal to the same age range of men (Roy & Chaudhuri, 2008). The prevalence of blindness in India is higher in females than males, but the same is reducing over time (Murthy et al., 2016). The risk of blindness is 1.41 times and 1.51 times higher in females than males in rural and urban areas, respectively (Murthy et al., 2016). The causes of blindness vary from country to country, but the results of getting eye care are almost the same everywhere. According to WHO, cataract is one of the leading causes of preventable blindness in India (Family Health and Development Research Service Foundation, 2007).

Here women have higher odds of blindness due to cataract by 69% (OR 1.69, 95% CI 1.44 to 1.95) than men (Prasad et al., 2020). In the case of gender-wise surgical coverage of the same cataract, it has been noticed that women have lower odds by 27% than men (OR 0.73, 95% CI 0.45 to 1.01) (Prasad et al., 2020). In terms of availing cataract surgery in south India, among the genders, females walk-in for subsidized (56%) or no cost (55%) cataract surgery is proportionately higher compared to paid surgery (42%, OR 1.40, 95% CI 1.25–1.57 and OR 1.33, 95% CI 1.19–1.49, respectively), due to poor socio-economic and educational status (Joseph et al., 2013).

Gender-based discrimination in health care is not only limited to Indian society but also in many societies of Africa and Asia, including other developing countries (Vlassoff, 2007). Incidence of blindness is more in women than men, even in industrial countries during 1980 to 1999 (Abou-Gareeb et al., 2001). The blindness odd ratio of women to men is 1.43 (95% CI 1.33–1.53), ranging from 1.39 (95% CI 1.20–1.61) to 1.41 (95% CI 1.29–1.54) and 1.63 (95% CI 1.30–2.05) in Africa, Asia, and industrial countries respectively (Abou-Gareeb et al., 2001).

In a longitudinal retrospective study (from 1996 to 2007) Khandekar Rajiv et al. stated that the overall prevalence of bilateral blindness in women aged ≥ 40 years was more than same age group men in 1996 (OR 0.36 95% CI 0.24 – 0.53), but the difference of same was insignificant in 2005. Prevalence of other treatable diseases such as cataracts showed no significant differences in both genders except trachomatous trichiasis (less seen in the male) in 1996. In 2005, the prevalence of bilateral blindness and surgery coverage (Cataract, Glaucoma, Trachomatous Trichiasis) showed no statistical difference between genders. However, the prevalence of cataracts was higher in males, and the prevalence of myopia (refractive error) with the usage of spectacles due to the same was higher in girls (12–13 years of age).

Researchers agreed that everywhere the gender inequalities in health care, especially in eye care is very evident between the phase of accessing health care and at the level of getting treatment (Jayaraman, 2013; Murthy et al., 2016; Nirmalan et al., 2004; Roy & Chaudhuri, 2008). All the Meta-analysis studies showed that women have a higher rate of blindness, but in the case of getting eye health treatment, they are getting less coverage than men. The reasons are

different in each country and mostly unclear. Khandekar Rajiv et al. (2009) showed the blindness difference in Oman in the years 1996 & 2005; this study gives an idea of the same in the population of Oman. Another meta-analysis of population-based prevalence surveys by Iman Abou-Gareeb et al. (Abou-Gareeb et al., 2001) showed the ratio of blindness instead of presenting the gender-wise eye care services. However, the same study did not show the gender-wise report to eye care but provided a rough idea of the gender-wise eye health anomaly. A few studies conducted by Aravind Eye Care System, Madurai, India, offered a gross knowledge only about the older population (Nirmalan et al., 2004).

So far, no specific study in India provides factual knowledge on gender-wise eye care accessibility and regularity pattern with logical explanations for the young adult to the older population. This study aims to determine the gender-wise differences in maintaining follow-up care regularity of perceptible illness in eye care in the Delhi-NCR region of north India. To determine the probable causes, we have included all the patients between 15 and 92 years who came for Glaucoma consultation in both the eye care centers.

Materials and Methods

There are many subspecialty areas in eye care, but we have concentrated on a specific disease (Glaucoma) where regular follow-ups are necessary. We carried out this collaborative study with Dr. Ashwani Ghai Eye Care Clinic, New Delhi and Mojiram Lions Eye Hospital, Delhi at Shree Guru Gobind Singh Tricentenary University, Gurugram, India, with 388 males and 176 females. We divided the patients into five age groups based on WHO age standardization rate (Ahmad et al., n.d.). These are 15-29 years (group. I), 30-44 years (group. II), 45-59 years (group. III), 60-74 years (group. IV), and 75 years & above (group V). We compared the odds of follow-up over 24 months since the first visit between the male (n=388) and female (n=176) of each group. All the patients visited for glaucoma consultation between the years 2000 to 2017 at Dr. Ashwani Ghai Eye Care Clinic, New Delhi, and between years 2015 to 2017 at Mojiram Lions Eye Hospital, Delhi. We focused on all the glaucoma patients who obtained glaucoma consultation service at eye care centers and need a regular follow-up as advised by the treating Ophthalmology Consultants. We included only those patients who are from Delhi-NCR region and visited the eye care centers for glaucoma consultation within December 2017. We excluded inappropriately recorded data, patients outside Delhi-NCR region, and the consultation after December 2017 (as the follow-up limit was up to December 2019) because patient follow-up was partially suspended due to the COVID-19 outbreak and subsequent pan India lockdown from March 2020.

Results and Discussions

We have compared the follow-up visit of males (n=388) and females (n=176) in each group. The numbers (n) of male and female patients in group I-V (at 1st visit day) are 33 & 11, 49 & 24, 135 & 67, 141 & 65, 30 & 9 respectively. We analyzed the odds ratio to check the gender-wise follow-up regularity every three months up to two years from the 1st visit day. The mean age and the odds ratio have been shown in the table. 1.

Group	Age (Mean±SD)	OR (95% CI)
I	22.36±3.97	1.20 (0.413 to 3.4871)
II	37.31±4.08	1.0208 (0.4637 to 2.2472)
III	52.68±4.10	1.034 (0.6369 to 1.6787)
IV	65.90±4.12	1.0846 (0.6783 to 1.7344)
V	78.71±4.39	1.4583 (0.4575 to 4.6484)

Table 1
Group-wise mean±SD age and gender-wise intra-group odd ratio.

Group I

We observed (Fig.1) that the dropouts started from 3 months and increased linearly over time up to 24 months. In this group, male patients have higher odds of getting regular eye care services by 20% (OR 1.20, 95% CI 0.413 to 3.4871) than females up to 24 months since the day of 1st visit.

Group II

All the patients, irrespective of gender, showed the same trend as the group I, i.e., the dropouts increased every three months (Fig.2). In this group, male patients have higher odds of getting regular eye care services by 2.08% (OR 1.0208, 95% CI 0.4637 to 2.2472) than females up to 24 months since the beginning.

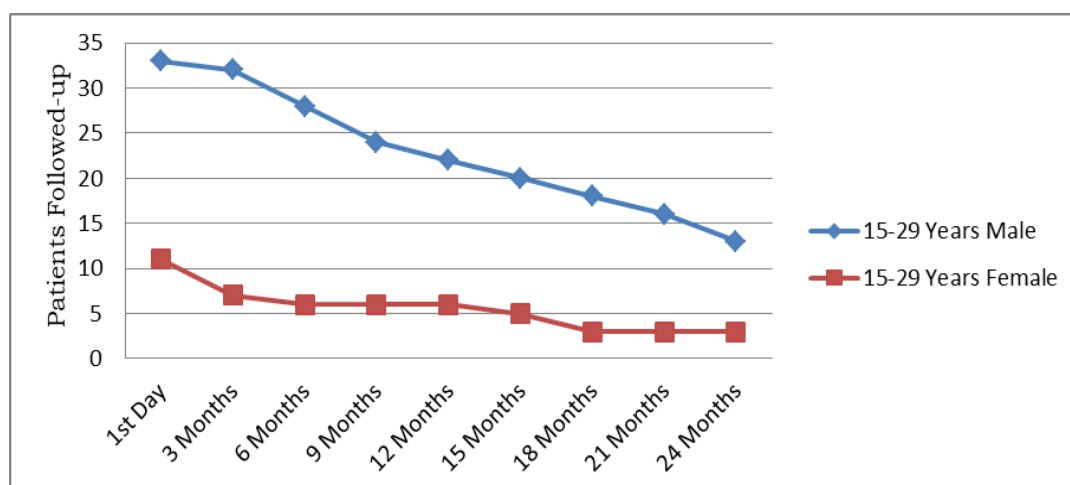


Figure 1. Dropout trend of group I, at every three months over 2 years.

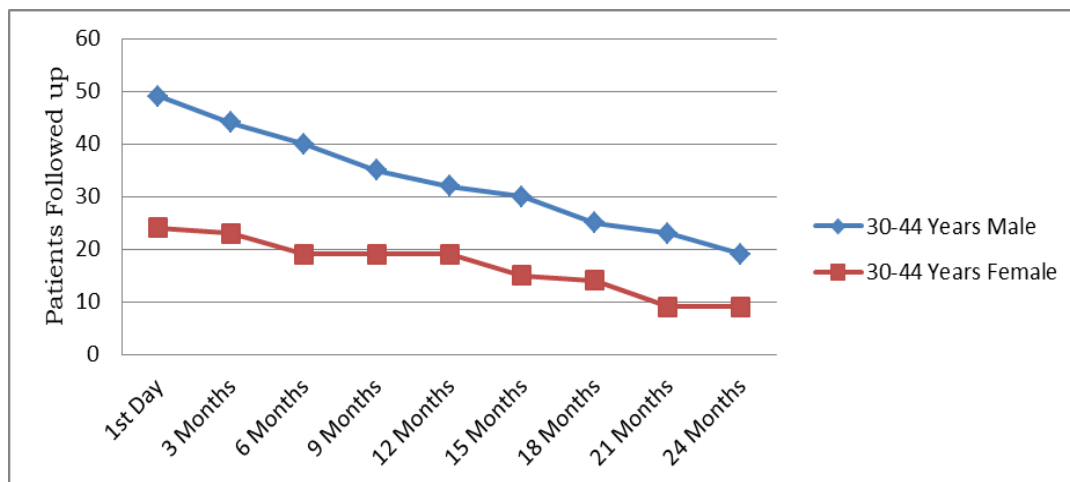


Figure 2. Dropout trend of group II, at every three months over 2 years.

Group III

Long-term follow-up between genders has shown the same trend as the abovementioned groups (Fig.3). Male patients of this group have shown higher odds of getting regular eye care services by 3.4% (OR 1.034, 95% CI 0.6369 to 1.6787) than female patients up to 24 months since the 1st day.

Group IV

The patient dropout trend has not shown any exception for this group (Fig. 4), and the male patients have higher odds of getting regular eye care services 8.46% (OR 1.0846, 95% CI 0.6783 to 1.7344) than females up to 24 months since the beginning.

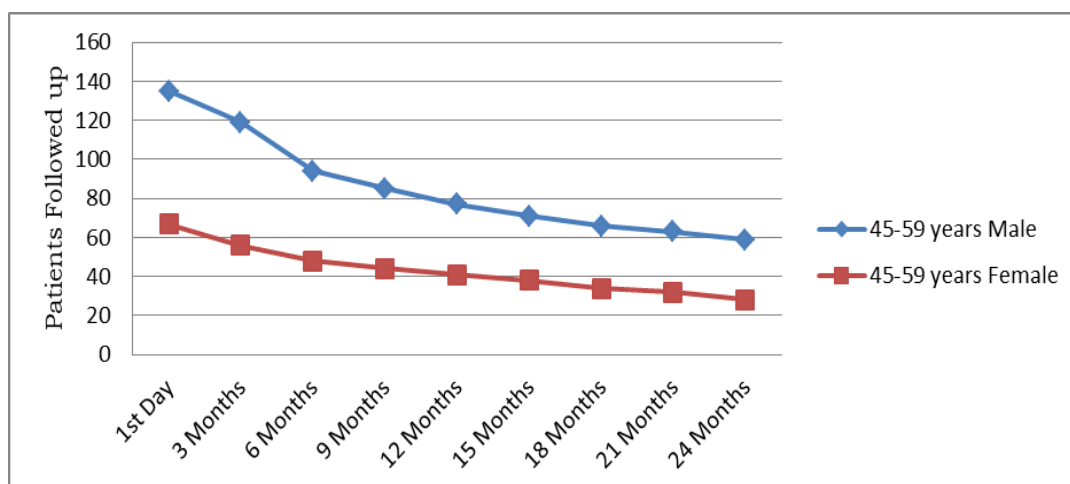


Figure 3. Dropout trend of group III, at every three months over 2 years.

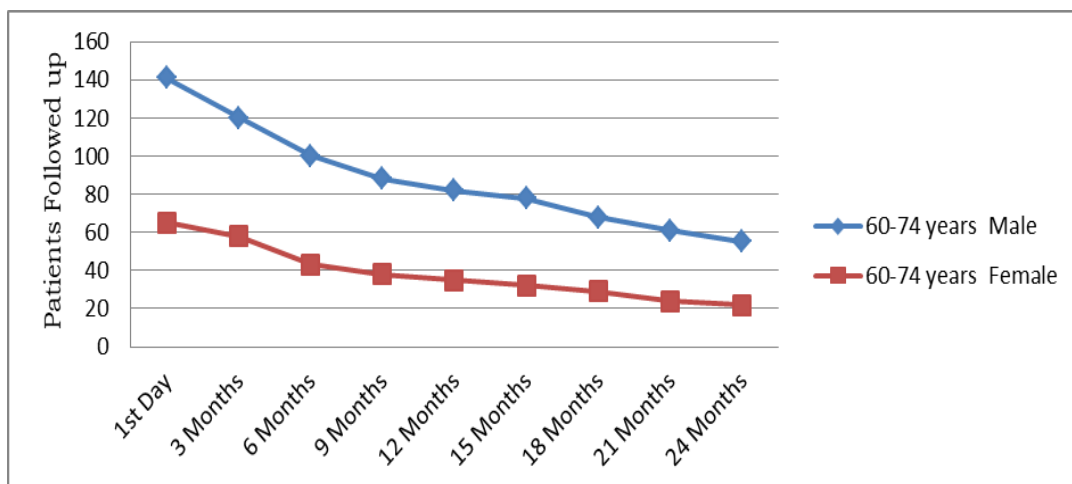


Figure 4. Dropout trend of group IV, at every three months over 2 years.

Group V

In this group, the male patients have higher odds of getting regular eye care services by 45.83% (OR 1.4583, 95% CI 0.4575 to 4.6484) than females up to 24 months (Fig. 5).

Overall Assessment

We noticed the dropout cases from 3 months since 1st-day consultation for all ages from 15-92 years (Fig. 6), and males have higher odds of getting regular eye care by 8.29% (OR 1.0829, 95% CI 0.812 to 1.4442) than females for long term eye care follow-up up to 24 months.

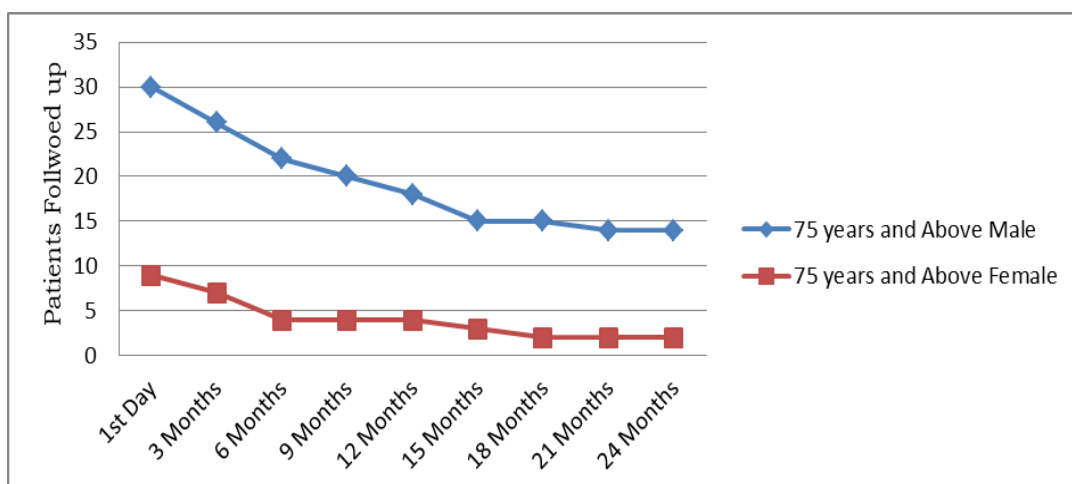


Figure 5. Dropout trend of group V, at every three months over 2 years.

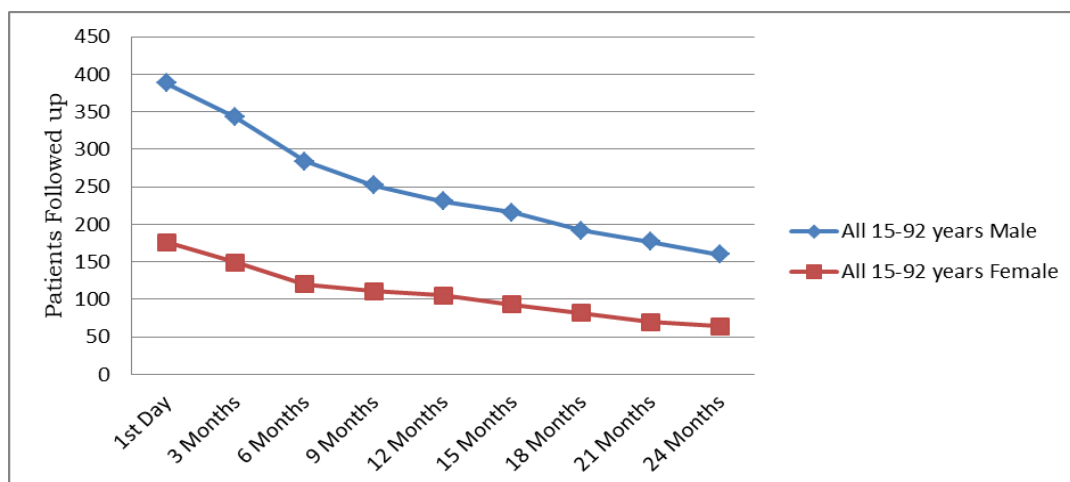


Figure 6. The dropout trend of all ages, at every three months over 2 years.

In contemporary Indian society, the male has maintained a strong foothold in various social institutions. Females have always been deprived of many opportunities like education, finance, health care, job, etc. (Raju, 2014; Shastri, 2014). Our study shows that males have higher odds of getting regular eye care follow-up than females of all ages above 14 years. In groups I and V, the odds of getting regular eye care services for male patients are 20% (OR 1.20, 95% CI 0.413 to 3.4871) and 45.83% (OR 1.4583, 95% CI 0.4575 to 4.6484), respectively. This result shows in the age range (years) between 15 to 29 and 75 years and above patients; every male has significantly higher odds of getting regular eye care services than their female counterparts. Lack of seriousness and awareness on eye care among urban slum population of Delhi-NCR (Misra et al., 2017), household work for females (Burra, 2001; Raju, 2014), financial limitations for females (Karuppannan, 2016; Shastri, 2014), dependency on family members for this age range female population (Ram et al., 2014), negligence towards feminine gender (Pengpid & Peltzer, 2021), etc., are the probable causes of group I, among other vital factors. In the case of group V females, nearly all the reasons match with group I but with a few exceptions. These are loneliness due to widowhood (Beal, 2006), less acceptability among family members due to age (Agewell Research and Advocacy Centre, 2015; Pengpid & Peltzer, 2021), higher life expectancy than males (Baluja, 2016), which pushes them more to age-related blindness (Roger & Neyhouser, 2017), widowhood and dependence (Beal, 2006), least priority on elderly health (Agewell Research and Advocacy Centre, 2015; Saikia et al., 2016), etc. The very high follow-up odds of males in group V compared to group I indicate one of the most critical factors regarding females that is being ignored or deprived (Agewell Research and Advocacy Centre, 2015; Deva, 2016). In most cases, this negligence towards the old age females comes from their family members because the females of this age range generally do not hold significant financial and physical strengths (Agewell Research and Advocacy Centre, 2015; Deva, 2016). The result of group V points towards a very alarming situation of the Delhi-NCR-based Indian population where an old age male has

higher acceptability in his family than the same age-matched female (Agewell Research and Advocacy Centre, 2015).

Like groups I and V, in groups II, III & IV, the odds of getting regular eye care services for males are higher than females but comparatively very much lower than other two groups, i.e., 2.08% (OR 1.0208, 95% CI 0.4637 to 2.2472), 3.4% (OR 1.034, 95% CI 0.6369 to 1.6787) and 8.46% (OR 1.0846, 95% CI 0.6783 to 1.7344) respectively. This result shows that a male between 30 to 74 years of age has a higher odd of getting regular eye care services than his female counterpart, roughly by 2% to 8.5%. Thus, significantly lower odds than groups I and V. A careful observation of intra-group results of II, III, and IV shows that group IV has comparatively higher odds for the male patients than II and III. The causes are obvious and probably the same as group V but with very low severity. Although in these groups (II, III & IV), the chance of getting a higher opportunity for regular eye care services for males is minimal but still cannot be neglected for a gender-based study.

In the case of groups II, III & IV, the probable reasons for getting an almost equal chance of regular eye care follow-ups in both genders could be gender-wise almost equal socio-economic opportunities. Few of these are similar health consciousness between genders (Soni et al., 2016), more autonomy for females (Bloom et al., 2001), sufficient time to visit eyecare centers, better financial empowerment for females compared to other age group females due to various govt. schemes (Baluja, 2016), financial stability (because most females in these age groups are usually waged or salaried workers (Klasen & Pieters, 2015)), having organized and caring family members, etc. Though the gender-wise inequality in eye care can be overcome by adopting many different progressive measures, the outcome of group V is highly alarming. It can only be equalized by stringent policies, campaigns, and laws (Misra et al., 2017).

Conclusion

This study provides a conclusive idea on gender-wise follow-up regularity among the disease-conscious north Indian population, especially in the Delhi-NCR region. We selected a specific disease (Glaucoma) for this study as patient with Glaucoma needs a continuous regular follow-up (Kang & Tanna, 2021). The outcomes of this study also establish that in north Indian society between 15-29 years and 75 years and above, females experience high inequalities in eye care. Needless to say, middle-aged and older women in Delhi-NCR, up to the age of 74 years are much more independent regardless of their financial and social conditions compared to other age-ranged women. To make eye care services equally accessible to everyone irrespective of gender and age, government and non-govt. health care agencies should first take various progressive policies to overcome all these gender-wise socio-economic barriers. As a retrospective study, we could not design a well-organized open and close-ended questionnaire to assess the exact factors of dropouts. Although this study focuses on the north Indian population, we believe it will be a pioneer to the researchers who want to assess the regularity in eye care among the rest of the Indian population based on gender and age.

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