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AWARENESS OF GLAUCOMA AND PERCEIVED BARRIERS TO SCREENING AMONG OPHTHALMOLOGY OUTPATIENTS IN JODHPUR

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Abstract

Background: As a leading cause of irreversible blindness globally, glaucoma frequently advances silently until late in its disease course and represents an immense physical and psychological burden for patients. Early diagnosis through population-based screening is crucial; however, knowledge and participation in screening activities are often poor.

Objective: Objective: This study aimed to assess the knowledge of glaucoma and perceived barriers to glaucoma screening among ophthalmology outpatients in Jodhpur, India.

Methods: A cross-sectional survey was conducted among 390 ophthalmology outpatients using a structured questionnaire. Data were analysed using descriptive statistics, the Chi-square test, and the independent sample t-test.

Results: The majority of the participants were over 45 years (75.4%) and mostly urban dwellers (57.4%). Despite the fact that 98.2% were aware of glaucoma, only 21% had high awareness. The chi-square test indicated that the relationship between education and knowledge was significant, $\chi^2(8, N = 390) = 250.70$, $p < 001$, had a large effect size (Cramér's V=0.40). An independent samples t-test revealed that those participants who had not received a screening examination perceived more barriers than their counterparts ($t(388)=6.03$, $p<. 001$, $d=0.7$). The major barriers were high cost of eye tests (55.4%), dread for diagnosis (17.7%) and no perceived need (11.3%).

Conclusion: Although glaucoma is well known, awareness is superficial, and attendance was poor for the screening. The level of education was strongly associated with awareness, and perceived barriers were very problematic, including both financial and psychological ones. Measures to address health literacy, lower economic barriers, and implement community-based eye screenings are crucial to reducing blindness in primary eyes.

Keywords: Patient Awareness, Barriers to Screening, Glaucoma, Ophthalmology, Public Health.

1. Introduction

Glaucoma is an important public health problem and one of the leading causes of irreversible blindness in the world. Marked by gradual optic neuropathy, it results in loss of vision and may ultimately cause permanent blindness if not intervened. The disease usually progresses insidiously until extensive visual field loss is present. This asymptomatic progression underscores the importance of early detection through routine ophthalmic screening, as timely recognition and management are crucial for preventing sight-threatening vision loss.

Globally, more than 76 million individuals were affected with glaucoma in 2020, and the prevalence is projected to surpass 111 million by 2040, with an asymmetric burden in developing nations. India also makes a substantial contribution to the worldwide prevalence as glaucoma is the second leading cause of blindness following cataract. However, there is still a lack of knowledge about glaucoma, and screening is suboptimal. So many people do not even realise that they have the disease until it is too late, after permanent vision damage has already been done.

Various reasons underlie this discrepancy between awareness and prevention. Barriers include low health literacy, poor access to care in ophthalmologist speciality clinics, financial difficulties, reluctance to seek a diagnosis, and a lack of provider recommendation. In India, these challenges are further exacerbated by socio-economic inequality, urban–rural disparities and differences in education. Previous research has revealed that higher levels of education, high social status, and greater exposure to health information are related to better knowledge and an increased tendency to actively seek HC services.

However, data on levels of awareness in different regions of the country and perceived barriers are scarce. Rajasthan is unique in terms of demographics due to the simultaneous urbanisation and population growth in remote rural areas, resulting in varied access to eye care. Against this background, Jodhpur, being a large city and referral centre, is an apt place to study community knowledge on glaucoma and perspectives towards glaucoma screening.

Knowledge of these factors is crucial in developing effective public health plans that promote early detection and treatment. This prompted us to conduct this study to find out the knowledge of glaucoma and to know about barriers to undergoing glaucoma screening in ophthalmology OPD attendees at Jodhpur. The study also sought to explore the correlates of awareness and education, as well as the differences in perceived barriers between screened and unscreened individuals. The results of this study are anticipated to provide critical data for policymakers, healthcare providers, and community health planners aiming to improve the awareness and utilisation of glaucoma screening among similar patient populations.

Objectives

The aims of the present study were:

- To know the awareness related to glaucoma among ophthalmology outpatients visiting Jodhpur.
- To determine the perceived barriers to screening for glaucoma.
- To investigate the relationship between educational level and awareness of glaucoma.
- To examine whether screened respondents were more likely than nonscreened respondents to report more perceived barriers.
- To suggest ways of improving glaucoma awareness and attendance at screening.

Methodology

3.1 Study Design and Setting

Methods A descriptive cross-sectional study was carried out to determine awareness of glaucoma and perceived screening barriers at our ophthalmology outpatient clinic. The study was carried out in a tertiary eye care hospital of Jodhpur, Rajasthan, which is a large referral center for urban and rural population western part of India. This environment was well suited for recruiting an eligible heterogeneous population with differing levels of education, socioeconomic status, and residency. The study also was time-limited, so patients were captured in a systematic manner that was representative of normal outpatient attendance.

3.2 Sample Size and Sampling Methodology

A total of 390 respondents, aged 18 years and above, who visited the ophthalmology OPD during the study period, were selected for the study. Participants meeting the inclusion criteria were enrolled using a convenience sampling approach with informed consent. Adult individuals attending the OPD with any eye-related complaints and who voluntarily agreed to participate were included. Excluded

were those with cognitive inability to consent, severe visual disability that inhibited questionnaire completion, and refusal to provide consent.
The required sample size of 390 per cent group provided sufficient power to detect clinically significant associations in the analyses. It was feasible regarding the number of patients seen during the study period.

Inclusion Criteria:
Participants were included in the study if they met the following conditions:
1. Adults aged 18 years and above attending the ophthalmology outpatient department of the selected tertiary eye care hospital in Jodhpur during the study period.
2. Individuals who were residents of Jodhpur or nearby areas, representing both urban and rural populations.
3. Participants who were able to understand and respond to the questionnaire either in English or Hindi.
4. Individuals who provided written informed consent and voluntarily agreed to participate in the study.

Exclusion Criteria:
Participants were excluded from the study based on the following conditions:
1. Individuals below 18 years of age or those not meeting the adult inclusion criteria.
2. Patients who were critically ill, mentally incapacitated, or cognitively impaired, rendering them unable to provide reliable responses.
3. Individuals with severe visual impairment or blindness found it difficult to participate in the interview process.
4. Patients who declined to participate or withdrew consent at any stage of the study.
5. Respondents who provided incomplete or inconsistent responses during data collection.

3.3 Data Collection Instrument
An interviewer-administered pre-tested structured questionnaire was used and adapted from other similar studies. Questionnaire Using easy-understand language, the questionnaire was prepared. It was divided into four main parts:
Socio-demographic Details: age, gender, education status, place of residence and history of eye disease in first degree relatives.
History of Previous Glaucoma Screening: whether the participant was previously screened for glaucomatous disease, the number of times the patient had been screened and willingness to undergo further screening.
Perceived Barriers: Barriers to participation were measured by reasons that precluded women from screening (e.g., cost, fear, unawareness, being too busy, or a physician not recommending).
The draft instrument was considered by a panel of ophthalmology experts and tested for validity and reliability on a small sample of patients prior to finalisation.
3.4 Data Collection Procedure
The face-to-face interviews were performed by trained field investigators, within the waiting area of the ophthalmology outpatient clinic To minimize errors, completeness and consistency of data were verified on a daily basis. All of the participants were instructed regarding the study objectives, and agreed to participate voluntarily.

3.5 Data Analysis
Data were compiled in Microsoft Excel and analysed with JASP statistical software (version 0.18). Socio-demographic characteristics and awareness were summarized using frequencies and percentages in descriptive statistics.
Association between level of education and categories of awareness (low, moderate, high) were examined using the Chi-square test of independence (χ^2).

To compare the mean of perceived barriers between glaucoma screened and unscreened individuals, independent samples t-test was conducted.
The strength of the association was measured by Cram ers V for Chi-square test and Cohens d for t test. $P < 0.05$ was considered statistically significant.

3.6 Ethical Considerations
The Institutional Ethics Committee of the participating hospital approved the study. Before data was collected, subjects were told about the study's purpose and procedures and that they could participate or not. All participants gave their written informed consent. Confidentiality and anonymity were consistently observed, and all the data collected was for academic and research purposes only. Participants had the right to decline participation in the project at any time without negative outcome.

Result and Discussion
The results of the present study are presented and interpreted in this section. The findings are discussed in relation to existing literature and the study's objectives.

Descriptive Statistics
The descriptive analysis presents the fundamental features of the dataset, offering a concise summary of the demographic and variable-wise distributions. This forms the basis for subsequent inferential analysis.

Frequencies for age_group

age_group	Frequency	Percent	Valid Percent	Cumulative Percent
18-30	23	5.9	5.9	5.9
31-45	73	18.7	18.7	24.6
46-60	128	32.8	32.8	57.4
>60	166	42.6	42.6	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

Age distribution of the participants The age distribution of the respondents showed a prevalence of elderly (42.6%; >60 year). Men aged 46–60 years comprised the second-largest proportion, at 32.8%. 18.7% were members of the 31–45 years group, with a minority (5.9%) belonging to the 18–30 years age bracket. The data in general indicate that the majority of surveyed participants were middle-aged or older adults, typical of the age distribution for risk and development of glaucoma and other eye health concerns.

Frequencies for gender

gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	182	46.7	46.7	46.7
Male	208	53.3	53.3	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

With regards to sex, males were slightly more than females in the study population (53.3 vs 46.7%). The balanced sex ratio indicates that both male and female patients were almost equally involved as ophthalmology outpatients in the study.

Frequencies for education

education	Frequency	Percent	Valid Percent	Cumulative Percent
No formal	31	7.9	7.9	7.9
Primary	70	17.9	17.9	25.9
Secondary	125	32.1	32.1	57.9
Graduate	125	32.1	32.1	90.0
Postgraduate	39	10.0	10.0	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

Participants educational attainment revealed that the highest proportions were among those having secondary (32.1%) and graduates (32.1%) education, so that almost two-thirds of the samples graduated at least from Secondary school). A smaller proportion (17.9%) had primary education, and only 7.9% had no formal education. Postgraduate respondents formed 10% of the sample. This distribution indicates a fairly literate population, which is important for estimating knowledge of glaucoma awareness and health care seeking behavior.

Frequencies for residence

residence	Frequency	Percent	Valid Percent	Cumulative Percent
Rural	93	23.8	23.8	23.8
Semi-urban	73	18.7	18.7	42.6
Urban	224	57.4	57.4	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

Among 302 respondents, the majority (57.4%) were urban dwellers while the rest were rural (23.8%), and semi-urban residents (18.7μ%). The prevalence of urban participants could be attributed to the nature (catchment area) of the hospital as an urban center, and perhaps better accessibility of the ophthalmic care facilities by urban dwellers compared with rural residents.

Frequencies for family_history_eye_disease

family_history_eye_disease	Frequency	Percent	Valid Percent	Cumulative Percent
No	286	73.3	73.3	73.3
Not sure	44	11.3	11.3	84.6
Yes	60	15.4	15.4	100.0
Missing	0	0.0		
Total	390	100.0		

Frequencies for family_history_eye_disease

family_history_eye_disease	Frequency	Percent	Valid Percent	Cumulative Percent

Source: Survey Data

With respect to known family history of eye disease, a large proportion (73.3%) reported no history in the family, while 15.4% had a positive family history with ocular diseases. Furthermore, 11.3% of participants did not know if they had a family history of eye disease. That implies that few patients (15, 23 %) considered genetic / family background risk factors in connection with the eye diseases under focus here including glaucoma.

Frequencies for heard_of_glaucoma

heard_of_glaucoma	Frequency	Percent	Valid Percent	Cumulative Percent
No	7	1.8	1.8	1.8
Yes	383	98.2	98.2	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

Nearly all (98.2%) respondents had heard about glaucoma, and only few (1.8%) said they did not hear of the disease. Such a high rate of awareness implies that the term “glaucoma” is familiar to many, however, it does not necessarily represent an adequate level of awareness or knowledge.

Frequencies for awareness_score_0_6

awareness_score_0_6	Frequency	Percent	Valid Percent	Cumulative Percent
3-4	190	48.7	48.7	48.7
0-2	118	30.3	30.3	79.0
5-6	82	21.0	21.0	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

By awareness scores, about half of the respondents (48.7%) scored between 3 and 4 thus indicating that their level of knowledge on glaucoma is fair. Cognitive questioning: “What is diabetes?” Results Figure 3 depicts the percentage of participants with a score of 0, revealing low awareness (30.3% scored between 0–2) and high awareness scores (21% scoring between 5-6). These results suggest that overall general awareness was moderate with a smaller however significant subset of individuals demonstrating high awareness for the disease.

Frequencies for awareness_level

awareness_level	Frequency	Percent	Valid Percent	Cumulative Percent
High	82	21.0	21.0	21.0

Frequencies for awareness_level

awareness_level	Frequency	Percent	Valid Percent	Cumulative Percent
Low	118	30.3	30.3	51.3
Moderate	190	48.7	48.7	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

In terms of categorical categorization, 48.7% had moderate awareness of glaucoma, 30.3% were poorly aware and 21.0% were highly aware of glaucoma. This distribution also indicates that as much as there might be a large section of the patients with fair knowledge, substantial proportion still does not possess a good level of knowledge reiterating the requirement for continuous health education.

Frequencies for sources_of_info

sources_of_info	Frequency	Percent	Valid Percent	Cumulative Percent
Doctor	167	42.8	42.8	42.8
Family/Friends	45	11.5	11.5	54.4
Health camps	3	0.8	0.8	55.1
Internet/Social Media	132	33.8	33.8	89.0
Print Media	38	9.7	9.7	98.7
Television	5	1.3	1.3	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

The doctors (42.8%) were the most commonly reported source from where information was received about glaucoma, highlighting of eye-health knowledge among them. The internet or social media (33.8%) and family or friends (11.5%) were next most common. Lower percentages mentioned print (9.7%), television (1.3), and health camps (0.8). The Findings: dominance of professional and digital sources on awareness emerges.

Frequencies for barriers_list

barriers_list	Frequency	Percent	Valid Percent	Cumulative Percent
Distance from eye hospital or clinic	1	0.3	0.3	0.3
Fear of diagnosis or treatment	69	17.7	17.7	17.9
High cost of eye tests	216	55.4	55.4	73.3
Lack of awareness about glaucoma	25	6.5	6.5	79.7
Lack of time / busy schedule	11	2.8	2.8	82.6
No doctor recommendation	23	5.9	5.9	88.5
No eye problems, so did not feel the need	44	11.3	11.3	99.7

Frequencies for barriers_list

barriers_list	Frequency	Percent	Valid Percent	Cumulative Percent
Unavailability of eye care services nearby	1	0.3	0.3	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

The high cost of eye tests was the most commonly reported (55.4%) perceived barrier for glaucoma screening, and its rank was first. Fear of diagnosis or treatment (17.7%) and because they did not have eye problems so there was no need to do screening (11.3%) were other common barriers reported. Fewer percentages replied lack of knowledge about glaucoma (6.5%), no physician recommendation (5.9%) and no time (2.8%). The distance to the hospital (0.3%) and non-availability of eye services (0.3%) were rarely mentioned as barriers. These findings indicate that economic and psychological barriers are more significant than geographical or service obstacles.

Frequencies for ever_screened

ever_screened	Frequency	Percent	Valid Percent	Cumulative Percent
No	334	85.6	85.6	85.6
Yes	56	14.4	14.4	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

Glaucoma screening history More than four fifths (85.6%) of the subjects had not undergone glaucoma screening during their life time, and only 14.4% claimed to be screened at least once. This marked discrepancy indicates a huge contrast between awareness and practice, which means even though the glaucoma is widely known, screening practice was restricted in the studied population.

Frequencies for screening_frequency

screening_frequency	Frequency	Percent	Valid Percent	Cumulative Percent
Every 6 months	7	1.8	1.8	1.8
Never	334	85.6	85.6	87.4
Occasionally	39	10.0	10.0	97.4
Once a year	10	2.6	2.6	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

Regarding frequency of eye screening, 85.6% of respondents indicated that they had never undergone glaucoma screening, which reiterates previous finding. Of those who reported previous screenings, 10.0% were screened “whenever,” 2.6% reported annual examinations and only 1.8% reported a

screening frequency of every six months (Table 3). This pattern indicates low compliance with screening recommendations and also poor preventive behaviour in a population informed about the sickle cell disease.

Frequencies for willing_if_free

willing_if_free	Frequency	Percent	Valid Percent	Cumulative Percent
No	123	31.5	31.5	31.5
Yes	267	68.5	68.5	100.0
Missing	0	0.0		
Total	390	100.0		

Source: Survey Data

To the question whether participants would like to be screened for glaucoma if it were available free of charge, 68.5% answered yes and 31.5% no. The high response rate to the offer indicates that economic barriers to screening are important in reducing uptake and that free or low cost screening programmes would greatly enhance participation.

Inferential Analysis

Hypothesis testing was conducted to examine the relationships between key variables and to determine the statistical significance of the observed patterns. The tests were performed at a predefined level of significance.

Hypothesis

- **H_0:** There is no significant association between education level and awareness of glaucoma.
- **H_1:** There is a significant association between education level and awareness of glaucoma.

Contingency Tables

education		awareness_score_0_6			Total
		3-4	0-2	5-6	
No formal	Count	3.00	28.00	0.00	31.00
	Expected count	15.10	9.38	6.52	31.00
	% within row	9.68 %	90.32 %	0.00 %	100.00 %
	% within column	1.58 %	23.73 %	0.00 %	7.95 %
Primary	Count	24.00	45.00	1.00	70.00
	Expected count	34.10	21.18	14.72	70.00
	% within row	34.29 %	64.29 %	1.43 %	100.00 %
	% within column	12.63 %	38.14 %	1.22 %	17.95 %
Secondary	Count	84.00	37.00	4.00	125.00
	Expected count	60.90	37.82	26.28	125.00
	% within row	67.20 %	29.60 %	3.20 %	100.00 %
	% within column	44.21 %	31.36 %	4.88 %	32.05 %
Graduate	Count	72.00	8.00	45.00	125.00
	Expected count	60.90	37.82	26.28	125.00
	% within row	57.60 %	6.40 %	36.00 %	100.00 %

Contingency Tables

education		awareness_score_0_6			
		3-4	0-2	5-6	Total
Postgraduate	% within column	37.89 %	6.78 %	54.88 %	32.05 %
	Count	7.00	0.00	32.00	39.00
	Expected count	19.00	11.80	8.20	39.00
	% within row	17.95 %	0.00 %	82.05 %	100.00 %
	% within column	3.68 %	0.00 %	39.02 %	10.00 %
Total	Count	190.00	118.00	82.00	390.00
	Expected count	190.00	118.00	82.00	390.00
	% within row	48.72 %	30.26 %	21.03 %	100.00 %
	% within column	100.00 %	100.00 %	100.00 %	100.00 %

Relationship between educational level (5 levels) and glaucoma awareness level (0–2 = low, 3 & 4 = moderate, 5 & 6 = high) was tested using a Chi-square test of independence (χ^2).
This was selected as a test, as in this case the two variables are categorical and we were interested in whether there is a difference between levels of awareness across educational levels.
The test assumptions were met:
• All observations were independent.
• With the exception of some cells, there were more than 5 expected events per cell, meeting Chi-square recommended sample size (N = 390).
A statistically significant relationship was found between the education level and awareness of the glaucoma using Chi-square analysis.
45 = 250.70, p <. 001.

Chi-Squared Tests

	Value	df	p
X^2	250.7	8	< .001
N	390		

Note. Continuity correction is available only for 2x2 tables.

The large value of Chi-square and a p-value less than 0.05 suggested that the null hypothesis could be rejected and also confirmed that there was evidence of significant association between education level and glaucoma awareness.
Cramér's V was 0.40 indicating large effect size, thus education was a strong predictor of awareness.
An Independent Samples t-test was conducted to determine whether the perceived number of barriers differed according to prior glaucoma screening attendance.
The number of reported barriers for all participating soldiers (ranging from 0 to 6) was the dependent variable.
The categorical factor was screening status (yes or no).
We used a t-test since it can compare the mean number of barriers between two separate groups.
Normality and independence of observation were checked, and were found prior to analysis.
However, the Brown–Forsythe test was significant (p <. 05) (different variances between groups); hence the Welch correction that produces more robust results in case of heterogeneous variance.

Hypothesis

- **H_0:** There is no significant difference in the number of perceived barriers between respondents who have undergone glaucoma screening and those who have not.
- **H_1:** There is a significant difference in perceived barriers between the two groups.

Independent Samples T-Test

	t	df	p	
barrier_count	6.026	388	< .001	[a]

Note. Student's t-test.

[a] Brown-Forsythe test is significant ($p < .05$), suggesting a violation of the equal variance assumption

The results of Independent Samples t-test indicate that there is a significant difference in perceived barriers among screened and non-screened subjects.
$t(388) = 6.03$, $p < .001$.
This result suggests that the mean number of reported barriers differs significantly between the two groups.
More precisely, they were participants who had never been screened to glaucoma and on average mentioned a higher number of barriers ($M \approx 2.3$; $SD \approx 1.2$) than those who already have been screened to glaucoma in the past ($M \approx 1.3$; $SD \approx 1.0$).
It was not just statistically significant; it was also practically relevant, given a Cohen's $d \approx 0.7$, which corresponds to an effect-size moderate-to-large size.
which indicates that one of the causes of variation on perceived barriers among respondents is their screening status.
The findings result in rejecting the null hypothesis (H_0) and accepting the alternative hypothesis (H_1): there is a substantial difference between screened and non-screened respondents concerning perceived barriers.
The direction of difference is in line with the anticipated negative association between perception of barriers and likelihood to be screened for glaucoma.
This result emphasizes the importance of perceived barriers in preventive health behavior.
Key barriers mentioned in the model also include unawareness, cost of screening, fear of diagnosis, time constraints and distance to the health facility.
These are barriers that might prevent people from having timely eye exams (even) where there is services.
One such significant barrier is the presence of a perception of several barriers (three or more) which seemed to strongly inhibit participation in screening.
These results are consistent with prior evidence from the public health and ophthalmology literature, which has observed that structural and attitudinal obstacles (e.g., economic deprivation, poor awareness, and fears of post detection disease) have a substantial role in low engagement of screening.
Interventions targeted at costs reduction, knowledge increasing, and provision of convenient and community-based eye screening practices could therefore greatly contribute to increasing detection rates for glaucoma.

Conclusion

In Jodhpur, awareness about glaucoma and perceived barriers to glaucoma screening were evaluated in the ophthalmology OPD. The results revealed that education was a strong predictor of knowledge whereby the higher educated individuals were significantly more knowledgeable about the disease. Although almost all had heard about glaucoma, only a small to moderate number had sufficient information on its causes, risk factors, and prevention.

The comparison showed that most study participants had not yet known their glaucoma status according to the above-discussed determinant which reflects a significant difference between awareness and screening experience. The most commonly reported barriers were the cost of eye tests, fear related to diagnosis or treatment, lack of knowledge, and no recommendation from a doctor. These findings indicate that socio-economic and psychological factors have greater influence on screening behaviour than geographic access.

Overall, the results support the implementation of a health education programme to raise awareness in this underserved community, where affordable eye care services are not accessible and also community-based interventions that could improve uptake of glaucoma screening. Strengthening early detection for effective management of common causes will help curtail the quest to seek avoidable visual impairment and blindness in the region.

Recommendations

Health Education Initiatives:

Launch organized awareness campaigns in hospitals, community centers and schools to increase understanding of the risk factors for glaucoma and early signs as well as the need for regular eye check ups.

Integration with Primary Health Care:

Focus group activities Eye health awareness should be included in general health check-up camps and routine medical outreach programmes at primary healthcare level, particularly in rural and semi-urban areas.

Affordable Screening Services:

Subsidized/free glaucoma screening camps need to be conducted periodically and specifically focusing on pockets of poor/underprivileged population.

Training of Health Professionals:

Ophthalmologists, optometrists, and health workers should have ongoing training to be able to effectively advise patients on the benefits of early detection of glaucoma.

Digital and Mass Media Utilization:

Digital platforms, local TV and social media campaigns should be used by health authorities to inform and encourage public for regular eye check-ups.

Policy and Infrastructure Support:

Policymakers are to set aside funds for growing the eye-care infrastructure, that allows specialized glaucoma diagnostic services to be available even in peripheral health centres.

Limitations of the Study

There are some limitations to the study, although it does give very useful tips. Second, the cross-sectional design allows only associations and does not support causality among variables. Second, the sample collected in this study was drawn from ophthalmic outpatients of a single city and it may not be representative of ophthalmology patients across Rajasthan or India. Third, the dependence of self-reported data might lead to response bias in asking questions on the screening history and awareness level. Furthermore, a quantitative approach did not record more in-depth relevant qualitative views

about individual or social attitudes towards eye health. To address these limitations, future research using mixed-methodological approaches may be useful.

Scope for Future Research

Subsequent studies could extend the scope of large size in both urban and rural areas via various districts or states for better generalization. Interviews or focus groups in qualitative studies would enable a better insight into the psychosocial and cultural determinants of glaucoma screening behavior. Longitudinal studies may also be useful to understand the effect of educational interventions or policy changes over time. It would be helpful to conduct comparative studies in other socioeconomic or ethnic groups to better understand these differences in glaucoma awareness and screening services.

Implications for Public Health Practice

The results have important implications for public health policy and eye care. Awareness campaigns for glaucoma, together with removal of screening barriers can lead to timely diagnosis and irreversible blindness prevention. Interdisciplinary cooperation between ophthalmologists, public health workers, and local health providers is essential in order to develop culturally tailored interventions. To increase the utilization of eye care and sustainable community-based eye health outcomes, affordable eye care was promoted and public sensitization enhanced.

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