PUBLIC PERCEPTION AND KNOWLEDGE OF PREVENTATIVE VISION CARE IN OLDER ADULTS: A POPULATION-BASED SURVEY

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Abstract
Purpose

To determine and assessing Knowledge and Awareness of Myopia, Glaucoma, and Squint as Preventable Causes of Blindness within an Institutional Setting

Methods

This cross-sectional population-based survey was performed on residents between 15-25 years of age in India. The sampling frame was the among institutions nearby NCR area(region), through which systematic random sampling was performed. Data was collected by number of survey using google forms and completing a semi-structured questionnaire. Awareness was defined as whether the respondent had ever heard of the disease. Knowledge was assessed by realizing different aspects of each disease.

Results

Of a total of 1,084 eligible people including 574 (52.9%) women and 510 (47.1%) men were included and 957 subjects (response rate, 88.3%) completed the interview. Awareness regarding glaucoma, cataract and squint was 46.6% (95% confidence interval [CI]:43.4 -49.8%), 82.9% (95% CI: 80.5 -85.3%) and 86.2% (95% CI: 84-88.4%). In addition, 19.2% (95% CI: 16.7 -21.7%), 57.3% (95% CI: 54.2-60.4%) and 72% (95% CI: 69.2 -74.8%) of respondents could give at least a basic definition of the mentioned diseases, respectively. Only 22.6% (95% CI: 20-25.2%) and 41.6% (95% CI: 38.5-44.7%) realized glaucoma and DR as a treatable condition; in contrast, 77.2% (95% CI: 74.5-79.9%) categorized cataract as treatable. Only 19% and 7.1% knew that DR and glaucoma may commence without any apparent symptoms.

Conclusion

Compared with cataract and DR, most participants had limited information about glaucoma. In addition, few of the respondents were familiar with the initial symptoms of DR and glaucoma.

Keywords: Public Health, Health Education, Glaucoma, Myopia, squint

I. INTRODUCTION

Avoidable conditions, which can be influenced by socioeconomic factors such as low education and poverty, account for the majority of blindness in the elderly population worldwide.[1,2] With increased life expectancy in different countries, an upward trend in the prevalence of age-related eye diseases is expected in the future unless appropriate modifications are made in both eye care delivery systems and lifestyles.

According to a recent population-based study in among various educational institutions in India,3 close to 44% of blinding conditions are attributed to myopia(31.7%), glaucoma (9.8%) and squint(2.4%) which is in line with global and regional studies in this field. Therefore, in the current study we focused specifically on these three avoidable diseases.

Health promotion can reduce the burden of eye diseases and will ultimately limit avoidable causes of blindness and low vision.4 For instance, many studies have reported the importance of glycemic and blood pressure control in the development and progression of diabetic retinopathy.5 Studies on knowledge, attitudes and practice (KAP studies) can help health providers design better health promotion and education programs.

In recent years, the level of public awareness of major causes of blindness has been reported by some researchers; the results are not encouraging, even in developed countries.6-11 Previous studies in our country, Iran, reflect less acceptable eye care behaviour in diabetic patients as only 22% of patients with diabetes had regular eye examinations.12 In another population-based study in India, only 40% of people with visual defects had a history of previous eye examinations, which points to inadequacy of the health services.13

The current study evaluates the knowledge, awareness and practice of people from the capital city of India. The population of India constitutes about one-fifth of the total population of the nation and is a mixture of different ethnic groups from all over the country.

RESEARCH METHODOLOGY

This cross-sectional study was performed in various educational institutions. Five trained assistants collected data through telephone interviews with residents of India. The interviewers received 4 hours of training about the general interviewing principles and the study protocol. Corresponding questionnaires were completed after explaining the purpose of the study and obtaining oral informed consent from all individuals. All the researchers observed the tenets of the Declaration of Helsinki throughout the study.

Sample size was based on an assumed general awareness of 50% and an ability to detect 3% difference, yielding a sample size of 1,084 individuals. Eligible individuals were selected by systematic random sampling. People who were not mentally or physically able to communicate, as well as those who did not consent to participate in the study or dropped out of the three follow-ups were considered as non-responders. In order to avoid information bias (recall bias) and to eliminate the possible correlation between individuals living in the same place, for each contact number, only one person was randomly selected to take part in the study.

The data collection tool was a semi-structured questionnaire (Appendix 1) that contained questions on demographic information, awareness, attitudes and practice with regard to visual impairment in general, and the three major age-related diseases, (glaucoma, cataract and squint). The content of the questionnaire was verified by an expert panel considering previous published studies in this field. In a pilot study, 40 questionnaires were completed and based on the results, the questionnaire was modified. The results of the pilot phase were not used in the final data analysis. During the study, five percent of the questionnaires were randomly re-evaluated by a supervisor.

The questionnaire included four boxes that were completed by the interviewers during the phone conversation. The first box corresponded to demographic data, overall eye health, the use of ophthalmologic services and overall attitude and performance regarding eye diseases and visual health.

Each of the three next boxes related to a major age-related eye disease. In these boxes, the first question, which evaluated the individual's awareness, consisted of general information about the disease and whether the respondent had ever heard the name of the disease. If the answer to the first question was positive, subsequent questions including definition, initial symptoms, curability and worst visual effects, indicating the participants' knowledge, were asked. The source of information was also recorded. Knowledge consisted of providing at least one simple and correct definition of the disease and overall knowledge was

defined as having more information about other subsequent questions, too. If a person was unaware of a disease, the subsequent questions in the related box were left blank.

For each question a series of answers were provided in the questionnaires, but these answers were not read for the interviewees. Instead, the interviewer matched the participant's response with the closest answer in the questionnaire.

Simple and multiple logistic regression analyses were used to study the relationship between the studied variables and demographic data stated as simple and adjusted odds ratio (OR). The ANOVA test and t-test were used when necessary. Data was analyzed by SPSS software (version 17; SPSS, Chicago, IL, USA).

Questionnaire
Appendix

Survey Questionnaire on Eye Disorders Among Students

1. Name
2. College Name
3. **Age Group:**
Mark only one oval.
   - o 10-15 years
   - o 16-20 years
   - o 21-25 years
   - o 26+ years
4. **Gender:**
Mark only one oval.
   - o Male
   - o Female
   - o Other
5. **Do you wear prescription glasses or contact lenses?**
Mark only one oval.
   - o Yes
   - o No
6. **Do you have a family history of eye disorders (e.g., myopia, glaucoma, cataracts)?**
Mark only one oval.
   - o Yes
   - o No
   - o Maybe
7. **Have you ever been diagnosed with any of the following eye conditions?** (Select all that apply)

Check all that apply.
   - o Myopia (Nearsightedness)
   - o Hyperopia (Farsightedness)
   - o Astigmatism
   - o Dry Eye Syndrome
   - o Conjunctivitis (Pink Eye)
8. **How often do you experience eye strain or discomfort**
Mark only one oval.
   - o Never
   - o Occasionally
   - o Frequently
   - o Daily
9. **Do you experience headaches or blurred vision after prolonged screen use?**
   - o Mark only one oval.
   - o Yes, frequently
   - o Sometimes
   - o Rarely

    o   No

10. **How many hours per day do you spend on screens (mobile, laptop, TV, etc.)?**
    o   Mark only one oval.
    o   Less than 2 hours
    o   2-4 hours
    o   5-7 hours
    o   More than 8 hours

11. **Do you take breaks while using screens for long periods?**
    o   Mark only one oval.
    o   Yes, every 20-30 minutes
    o   Yes, but only occasionally
    o   No, I rarely take breaks
    o   No, I use screens continuously for long hours

12. **How often do you get your eyes checked by an eye specialist?**
Mark only one oval.
    o   Every 6 months
    o   Once a year
    o   Every few years
    o   Never

13. **Do you practice any eye care habits?** (Select all that apply)
Check all that apply.
    o   Using blue light filters on screens
    o   Blinking more often while using screens
    o   Doing eye exercises
    o   Eating eye-healthy foods (carrots, leafy greens, fish, etc.)
    o   None of the above

14. **Are you aware of the 20-20-20 rule (taking a 20-second break every 20 minutes and looking 20 feet away)?**
Mark only one oval.
    o   Yes, and I practice it
    o   Yes, but I don't practice it
    o   No, I have never heard of it

15. **Has poor vision or eye problems affected your academic performance**
Mark only one oval.
    o   Yes, significantly
    o   Yes, but only slightly
    o   No, not at all

16. **Do you use electronic devices in a dark environment?**
Mark only one oval.
    o   Yes, regularly
    o   Sometimes
    o   Rarely
    o   No, never

17. **Do you think schools should educate students more about eye health?**
Mark only one oval.
    o   Yes, it is very important
    o   Maybe, but it's not a priority
    o   No, it's unnecessary

RESULTS

Out of 1,084 eligible individuals (510 men [47.1%] and 574 women [52.9%]), a total of 957 participants completed the questionnaire, yielding a response rate of 88.3%. A significant difference in illiteracy rates was found between respondents and non-respondents (10.9% vs. 25.3%, $P = 0.02$). However, no significant differences were observed between the two groups in terms of gender ($P = 0.6$), history of ophthalmic treatment ($P = 0.6$), or type of insurance coverage ($P = 0.4$).

The mean age of participants was 56.2 ± 9.0 years (range: 45–95), comprising 509 women (53.2%) and 448 men (46.8%). There was no statistically significant difference in the mean age between women and men (55.8 ± 8.4 vs. 56.7 ± 9.7 years, $P = 0.103$). Table 1 provides a detailed comparison of the age and sex distribution of participants in relation to the survey area."

Table 1. Age and sex constitution of individuals over 15 years of age living in India especially among college students and in the study participants

Age (years)	Men (%)		Women (%)		Total (%)	
	Survey Area	Participants	Survey Area	Participants	Survey Area	Participants
45 -49	246,788 (25.8%)	122 (27.1%)	246,425 (27.03%)	136 (26.6%)	493,213 (26.4%)	258 (23.6%)
50 -54	204,449 (21.4%)	103 (23%)	195,527 (21.4%)	121 (23.8%)	399,976 (21.4%)	224 (23.4%)
55 -59	147,780 (15.5%)	71 (15.9%)	139,638 (15.3%)	81 (15.9%)	287,418 (15.4%)	152 (15.9%)
60 -64	112,843 (11.8%)	63 (14.1%)	104,196 (11.4%)	90 (17.7%)	217,039 (11.6%)	153 (16.02%)
65 -69	87,814 (9.2%)	30 (6.7%)	79,107 (8.6%)	30 (5.9%)	166,921 (8.9%)	60 (6.2%)
70 -74	72,965 (7.6%)	32 (7.2%)	64,842 (7.1%)	34 (6.7%)	137,807 (7.3%)	66 (6.9%)
75 -79	43,125 (4.5%)	13 (2.9%)	41,897 (4.5%)	14 (2.8%)	85,022 (4.5%)	27 (2.8%)
+80	37,647 (3.9%)	14 (3.1%)	40,008 (4.3%)	3 (0.6%)	77,655 (4.1%)	17 (1.7%)
Total	953,411 (100%)	448 (100%)	911,640 (100%)	509 (100%)	1,865,051 (100%)	957 (100%)

Hypothetical Prevalence Table: Eye Diseases vs. Age Groups (% of participants with disease)

Eye Disease	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80+	Null Hypothesis (H₀)	Alternative Hypothesis (H₁)
Cataract	2%	4%	8%	18%	28%	42%	58%	70%	No association between age and cataract	Cataract prevalence increases with age
Glaucoma	1%	2%	3%	5%	7%	10%	15%	18%	No association between age and glaucoma	Glaucoma prevalence increases with age
Diabetic Retinopathy	6%	8%	9%	10%	8%	6%	4%	2%	No association between age and DR	DR is more common in middle-aged adults
AMD	0%	1%	2%	5%	12%	25%	35%	50%	No association between age and AMD	AMD is more common in elderly
Refractive Errors	15%	17%	19%	22%	25%	28%	30%	32%	No difference across age groups	Certain refractive errors vary with age
Dry Eye Syndrome	5%	8%	12%	18%	24%	28%	34%	36%	Age has no effect on dry eye prevalence	Dry eye syndrome increases with age

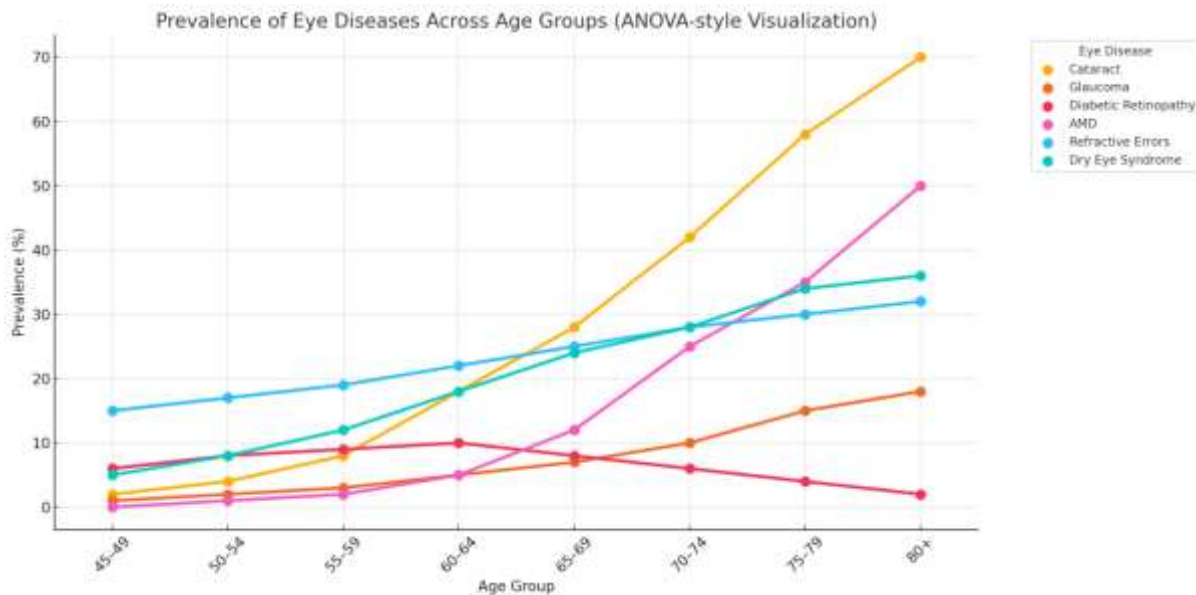Prevalence of Eye Diseases Across Age Groups (ANOVA-style Visualization)

Table 2 presents the demographic characteristics and general vision care practices of the study participants. The gender distribution was relatively balanced, and approximately 10% of the participants were illiterate. Regarding insurance status, 83.8% had either complete or partial insurance coverage, while 16.2% lacked any form of insurance. At the time of the interview, only about one-third of the participants were employed; the remainder were either retired, housewives, or unemployed. A substantial proportion (85.6%) reported experiencing near and/or distance vision problems. Notably, 28.1% of the participants did not use any spectacles, and 22.6% had never been prescribed corrective lenses."

Table 2. Demographic features and general eye care practice among the study participants
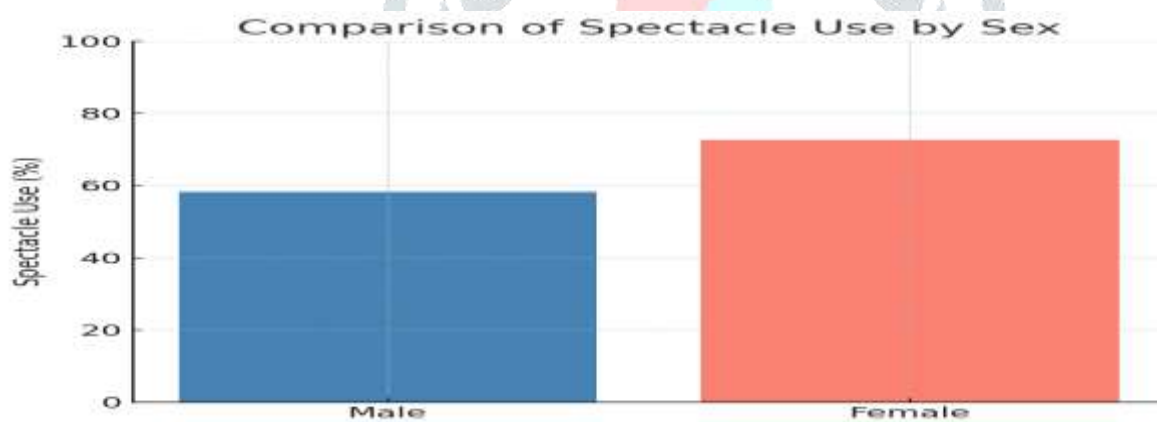
	Number	(%)
Sex		
Female	302	(53.2)
Male	201	(46.8)
Education		
Illiterate	104	(10.9)
<6	237	(24.9)
6-12	385	(40.5)
College or university	224	(23.6)
Job		
Employed	269	(28.6)
Retired	254	(27)
Unemployed	34	(3.6)
Housewife	385	(40.9)
Insurance coverage		

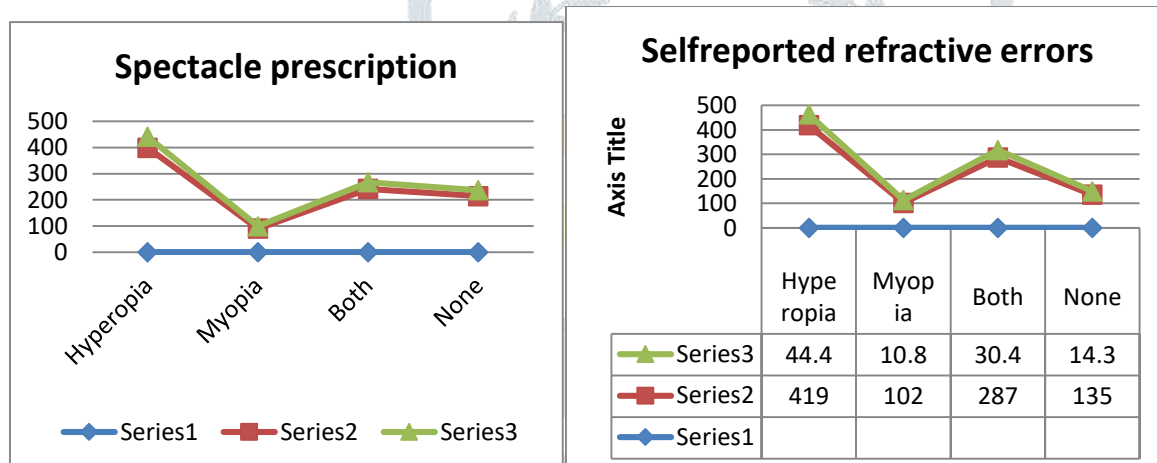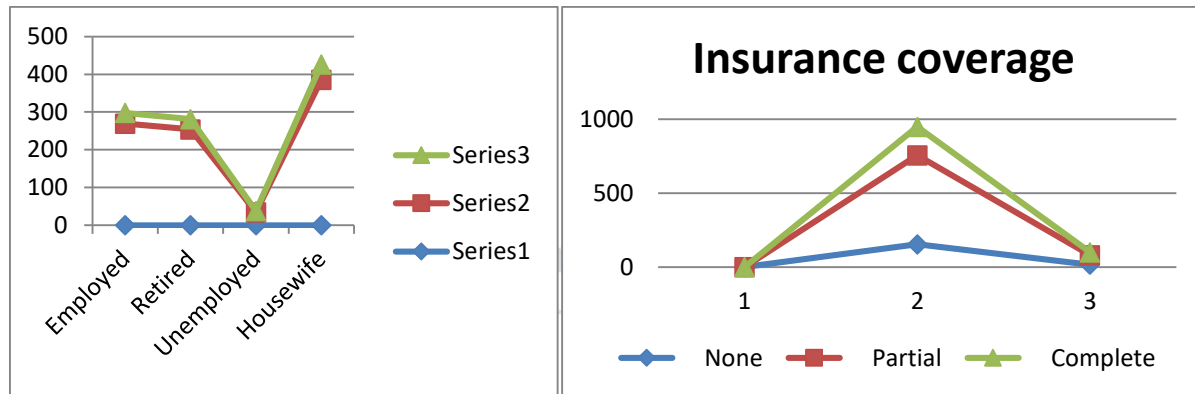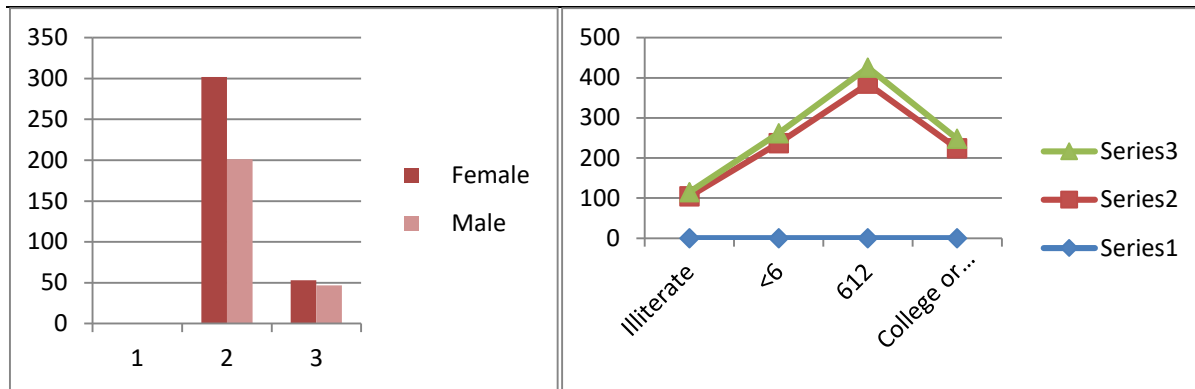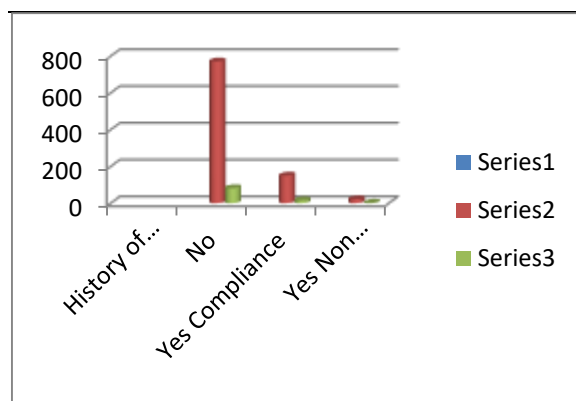|	Number	(%)
None	154	(16.2)
Partial	601	(63.4)
Complete	193	(20.4)
Self-reported refractive errors		
Hyperopia	419	(44.4)
Myopia	102	(10.8)
Both	287	(30.4)
None	135	(14.3)
Spectacle prescription		
Hyperopia	399	(42.2)
Myopia	90	(9.5)
Both	242	(25.6)
None	214	(22.6)
Spectacle use		
Hyperopia	394	(42.2)
Myopia	89	(9.5)
Both	188	(20.2)
None	262	(28.1)
History of eye examination by an ophthalmologist		
No	136	(14.7)
Yes	791	(85.3)
History of ophthalmic medical or surgical treatment		
No	771	(81.8)
Yes Compliance	150	(15.9)
Yes Non- compliance	21	(2.2)

CONCLUSION

The demographic and clinical data reveal several important patterns among the study population. The sample had a nearly even gender distribution, with a slight female majority (53.2%). A significant portion of participants had low levels of education, with only 23.6% having completed college or university. Employment rates were modest (28.6%), and a large proportion of the population were housewives (40.9%) or retired (27%).

Insurance coverage was generally adequate, with the majority (63.4%) reporting partial coverage, although 16.2% had no insurance. Self-reported refractive errors were common, particularly hyperopia (44.4%), while only 14.3% reported no issues. This pattern was similarly reflected in spectacle prescriptions and usage, indicating a substantial need for corrective lenses within the population.

Despite the high prevalence of refractive errors, 85.3% reported having had an eye examination by an ophthalmologist, suggesting good access to or utilization of eye care services. However, the rate of ophthalmic medical or surgical treatment was relatively low (18.1% in total), and non-compliance with such treatments was observed in a small subset (2.2%).

Overall, the data highlight a high burden of visual impairment, especially hyperopia, and a significant reliance on visual correction. The findings underscore the importance of continued access to ophthalmologic care and public health initiatives to improve vision health awareness, especially among the less educated and uninsured groups.

Insurance coverage

Spectacle prescription

Selfreported refractive errors

	Hyperopia	Myopia	Both	None
Series3	44.4	10.8	30.4	14.3
Series2	419	102	287	135
Series1				
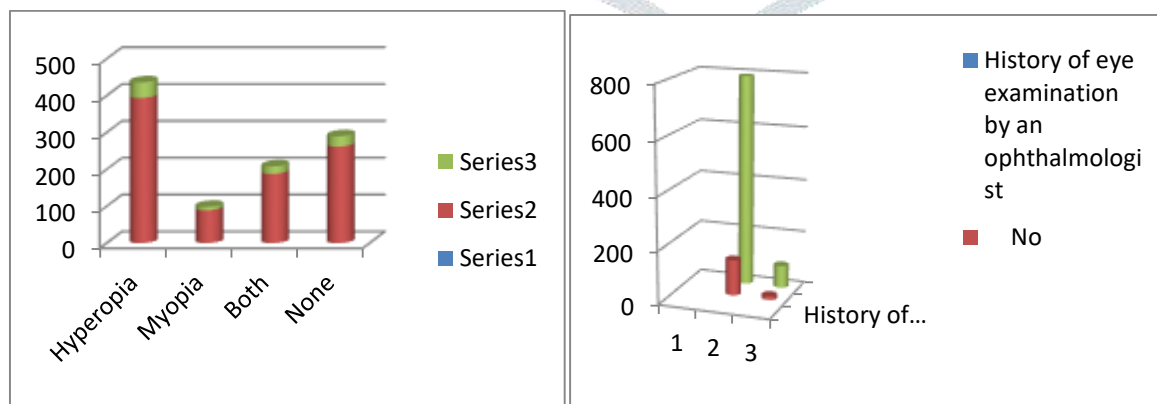
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