Optimization of Routine Eye Examination in Asymptomatic Patients in Tertiary Eye Care Center in Western Uttar Pradesh

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ABSTRACT

An eye examination is a series of tests performed by an ophthalmologist and optometrist as-sessing vision and ability to focus on objectsand other tests and examinations pertaining to the eyes. It is important to determine the percentage of asymptomatic patients of all age groups.Routine eye examinationsresult in spectacle prescription change, new critical diagno-sis, or new management of existing conditions.This study aimsto identify the visual/eye con-ditions and their functioning in an asymptomatic patient.A prospective study carried out among the enrolled participants. A total of 400 eyes of 200 asymptomatic patient's data were analysed. Out of which 98 (49.0%) were male, and 102 (51.0%) female. The mean age of the patient was 33.87 ± 21.09 years. A comprehensive eye examination used to analyse the visual condition. 40 (20%) patients were aware of systemic disease, and 160 (80%) were unaware. 112 (56%) patients already having glasses and 88 (44%) were not, 101 (50.5%) patients hav-ing a change in their PGP, and 99 (49.5%) were not having any change.This study concludes that it is important for everyone to have a routine eye examination.

KEY WORDS: ROUTINE EYE EXAMINATION (REE) AND ASYMPTOMATICPSTIENTS, PREVIOUS GLASS PRRSECRIPTION (PGP), EYE HEALTH.

INTRODUCTION

An eye examination is a series of tests performed by an ophthalmologist and optometrist to evaluate eyesight and ability to focus on objects, as well as other eye-related tests and exami-nations. Because many eye illnesses are asymptomatic, health care specialists recommend that all persons receive periodic and thorough eye examinations as part of routine primary care. There is a need to determine the proportion of asymptomatic patients across all age groups. Routine eye exams (REEs) may result in a change in spectacle prescription, a new significant diagnosis. The quality of life of a person is closely related to vision and eye health (Feder et al 2016 and Ali, et al 2021). Furthermore, the economic impact of vision loss is significant.

Comprehensive eye examinations can help avoid vision loss in such circumstances by screen-ing asymptomatic diseases. According to one study, more than half of asymptomatic people who had a standard eye exam had a change in ocular condition or care, compared to 77% of symptomatic people who had a routine eye exam (Brown et al., 2001). Children and adolescents should have their visual vision tested if they complain of headaches or focus de-ficiency while performing near vision activities (Chan et al., 2014). Similarly, the evi-dence rationalizes the frequency of eye examinations for individuals at high risk of acquiring ocular disorders, such as those with diabetes (Fraser et al., 2001). In contrast, the ideal REE frequency in asymptomatic patients is unknown. Because visual outcomes and associated ex-penses vary with age, recommendations should be age-specific (Hussain et al., 2020, Jin et al 2012 and Kristinsson et al., 1997).

Many disorders treated if they diagnosed at an advanced stage. Comprehensive routine eye examinations (REE) play a preventive role in vision loss by screening for asymptomatic eye illness. Routine eye examinations are thus essential for both symptomatic and asymptomatic people. Asymptomatic eye disease affects between 14 and 26 percent of persons, and accord-ing to Quigley, it affects less than half of those with glaucoma (KAHN, et al 1977 and Klaver et al 1998). Therefore,our study aims to examine if routine eye exams in asymp-tomatic patients result in a change in spectacle prescription or the development of a new di-agnostic criterion.

METHODOLOGY

This prospective study conducted at CL Gupta Eye Institute of Moradabad District, U.P, In-dia, from July 2017- Feb 2018. The institutional ethical committee approved the studyfrom theDepartment of Optometry and Vision Science.The data were collected daily from the pa-tient's assessment sheet and history, maintained by the medical record department(MRD), for patients who visited the tertiary eye hospital for a routine eye examination and were assessed by the qualified ophthalmologist Optometrist. The visually asymptomatic REEofpatients of all age groups with no eye-related symptoms, e.g., headaches, diplopia, blurred vision, flashes and floaters, or with anyrefractive error(RE), was included in the stud. Those who initially presented for an REE but reported symptoms when specifically questioned excluded from the study.A total of 400 eyes of 200 asymptomatic patientsobtained.A spectacle prescription change was significant if in at least one eye, the Sph, Cyl or any reading addition power changed by $\pm0.5D$ from the initial phase to the existing spectacleprescription.

Statistical Analysis: The collected data from the questionnaire and comprehensive eye examination and demo-graphic data was transcribed to Microsoft Excel for further analysis. The Statistical Package for Social Sciences (SPSS) Version 16 was used; The data collected from the clinical test were analysed using Microsoft Excel (2017) and SPSS software (version 17.0 for Windows, SPSS Inc., Chicago, IL, USA).
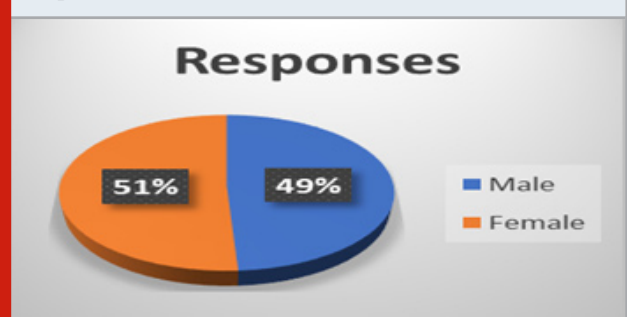
RESULTS AND DISCUSSION

The 400 eyes of 200 patients were analysed.The demographic variables include medical rec-ord number (MR.NO), Age, Gender, any Systemic history, using glasses or not, duration and last Previous glass prescription (PGP), duration and power, new spectacle prescription, change in glasses, Diagnosis, and Management. (Table-1) The mean age of the patient was 33.87 ± 21.09 years. 98(49.0%) of them were male, and 102 (51.0%) were female.(Graph-1)40(20%) patients were aware of systemic disease, and 160 (80%) were unaware. 112 (56%) patients already having glasses and 88 (44%) were not; out of 112 patients, 50 (44.6%) were having a change in their PGP and 47 (41.9%) were not re-quire any treatment and 15 (13.3%) were having some other pathologies.(Graph-2) Out of 88 patients, 48 (54%) were prescribed glasses, 32 (36%) were not require any treat-ment and 8 (9%) were having some other pathologies.101 (50.5%) patients having a change in their PGP, and 99 (49.5%) were not having any change. (Table-2) (Table-3).

Out of 200 asymptomatic patients documented, 44%

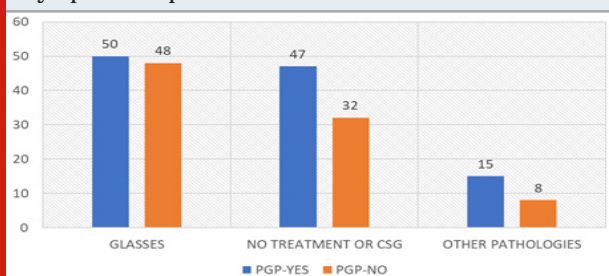| Table 1. Demographic characteristics of studied population					
Variables	Total	Min	Max	Mean	Std. Deviation
Age	200	3	86	33.86	±21.1
Using Glasses	200	0	440	52.86	±125.7
Last PGP(months)	200	0	240	18.11	±35.06

Graph 1: Gender Distribution

were not using glasses. (58%) of asymptomatic patients presented for an REE and had a change in ocular statuscomparedwith (77%) of symptomatic REE patients. In symptomless patients,age is a strong predictor of having a significant difference. This was true regardless of the assessment interval and corre-sponds well withknown age-related ocular changes such as presbyopia and increasingpreva-lence of eye disease. It also makes sense that the odds of having a significant change also in-creased when the assessment intervalincreased.

Table 2. Estimation of various variables among the studied population

GENDER		AGE GROUP					
Male	Female	0-5	6-10	11-18	19-30	31-50	>50
102(51%)	98(49%)	11(5.5%)	24(12%)	27(13.5%)	37(18.5%)	45(22.5%)	56(28%)

CHANGE IN GLASS PRESCRIPTION (N=200)		PREVIOUS GLASS PRESCRIPTION (N=200)					
Y	N	GLASSES		NO TREATMENT OR CSG		OTHER PATHOLOGY	
		Y	N	Y	N	Y	N
101(50.5%)	99(49.5%)	50(44.6%)	48(54%)	47(41.9%)	32(36%)	15(13.3%)	8(9%)

SYSTEMIC DISEASES (n=200)

HTN	Cholesterol	DM	DM, Asthma, CAD	HTN, DM	DM, CAD	HTN,CAD,DM	Thyroid	Not aware of
15(7.5%)	1(0.5%)	9(4.5%)	1(0.5%)	11(5.5%)	1(0.5)	1(0.5%)	1(0.5%)	160(80%)

FUNDUS EXAMINATION(n=400)

Retina On, No Treatable Lesion	Small Hyperemic Disc	Micro Aneurysms	Myopic Tessellated Fundus	Retina On, Total Near Cupping	0.7:1 Inferior Rim Thinning	Disc Cupping 0.8:1 HNRR, Retina On	Disc Cupping 0.9:1 HNRR, Retina On	Lattice Degeneration, inferiorly	Choroidal ColobomaInfero-Nasally with Hazy View
376(94%)	3(0.75%)	2(0.5%)	2(0.5%)	2(0.5%)	2(0.5%)	1(0.25)	1(0.25)	1(0.25)	1(0.25)

FUNDUS EXAMINATION (n=400)

Microaneurysms, NVE	Microaneurysms, NVE, DME	CRA Patches Inferiorly	No View, Differ	Retina On, Macular Scar,	Retina On, With Hazy View	CRA Patches Near the Macula Area	Tessellated Myopic Fundus,
1(0.25)	1(0.25)	1(0.25)	1(0.25)	1(0.25)	1(0.25)	1(0.25)	1(0.25)

Where Y Indicates= Yes; N Indicate=No; HTN= Hypertension; DM= Diabetics Mellitus; CAD= Coronary Artery Disease;HNRR= Healthy Neuro Retinal Rim;NVE=Neovasculartzation Elsewhere ; DME=Diabetic Macular Edema ;CRA= Central Retinal Artery

Graph 2: Estimation of previous prescribe glasses among asymptomatic patients.

It observed thatthe longer a patient waits for their following assessment, themore chances of increasing their risk of age-relatedconditions. However, we also found an association between assessmentinterval and detection of a signif-icant change when controllingfor age. Although the association between age and assessment intervaldoes play a role, it is not the sole explanation. More significant assessmentintervals would allow more time for a disease or condition to develop, irrespective of age.Many factors influence the assessment interval for patients, including patient age, cost of the examination, insurance coverage, recommendations given by practitioners or professionalbodies, andpatients' perceived risk of visual impairment and their understandingof the consequences of not seeking eye care.

The observedmedian assessment interval for the various asymptomatic REE agegroups matches the recommended optometric guidelines more closelyto the age-relatedcause in the currentstudy. Apparently, this can be due to the approach of how practitioners instruct them. REEs for patients aged 20 to 64 yearswere not publicly funded except for 8 defined medical conditions.Annual REEs for patients G20 and 964 years were publiclyfunded (Michaud

and Forcier 2014). It showed that de-insurance of eye examinationsreduced the uptake of eye examinations for people in lower-income levels. Funded age groups had smaller time in-tervals betweenassessments than non-

funded age groups, suggesting thatthose with above-average socioeconomic statusmay also be affectedby a lack of insurance or public funding.

Table 3. Documented diagnosis and Interventions among asymptomatic patients.

DIAGNOSIS(n=400)	Frequency	INTERVENTION(n=400)	Frequency
Myopia	136(34%)	New glasses	196(49%)
Emmetropia	67(16.75%)	Continue same glasses	96(24%)
Hypermetropia with presbyo-pia	53(13.25%)	No treatment required	70(17.5%)
Presbyopia	36(9%)	Cataract surgery	18(4.5%)
Hypermetropia	24(6%)	Eye drop	9(0.2%)
Cataract	22(5.5%)	YAG PI	2(0.5%)
Myopia with presbyopia	15(3.75%)	Continue same glasses and alternate patching	2(0.5%)
Early Cataract	10(2.5%)	Need P.R.P	2(0.5%)
Pseudophakia	8(2%)	Eviscerations	1(0.3%)
Disc Suspect	3(0.75%)	LVA -Magnifier +5	1(0.3%)
NPDR	2(0.5%)	Alternative Patching (OU)	1(0.3%)
Myopia with intermittent exotropia	2(0.5%)	OCT	1(0.3%)
Myopia with exotropia	2(0.5%)	SIP Trab-	1(0.3%)
Hypermetropia with ametrop-ic amblyopia	2(0.5%)		
Emmetropia with meibomitis	2(0.5%)		
Myopia and dry eye	2(0.5%)		
C.M.E -P.D.R	1(0.25%)		
Closure angle glaucoma	2(0.5%)		
Hypermetropia with presbyo-pia and P.O.A.G	1(0.25%)		
Macular Scar	1(0.25%)		
Total Glaucomatous Atrophy	1(0.25%)		
Cataract and iris coloboma	1(0.25%)		
Anisometropic Amblyopia with presbyopia	1(0.25%)		
Absolute Glaucoma	1(0.25%)		
P.D.R	1(0.25%)		
Phthisical eye	1(0.25%)		

Where NPDR indicates=Non Polyferative Diabetic Retinopathy ; CME-PDR= CME Polyfer-ative Diabetic Retinopathy; POAG=Primary Open Angle Glaucoma ;YAG PI=YAG Periph-eral Iridectomy; LVA= Low Vision Aids ;OU= Uniocular; OCT= Ocular Chorance Tomog-raphy ; SIP Trab= SIP Trabeculectomy

Furthermore, based on the Canadian Longitudinal National Population Health Survey data, regions where REEs were not funded had reduced patient awareness about glaucoma, cata-racts, and vision loss for patients aged above 65 years (Robinson et al., 2012). It is diffi-cult to compare our data with the existing literature because the age groups, study popula-tions, diagnosis, exclusion criteriaand time of studies mayreflect the scope of practice and may increase 1.25 times per year since the last visit to a hospital in studiedpatients with newly diagnosed glaucoma and adjustedodds ratios (Hussain et al., 2020).

The WatES clinic population does compare favourably in terms of patient age and sex distri-bution to a nationwide

survey of Canadian optometric practicesfoundthat 32.6%of patients that presented to optometric practices camefor an REE and expressed no concerns compared with 41% of theWatES clinic patient population classified as asymptomatic REEpatients. Both of these values contradictthe claim that asymptomatic patients are rarely seen in an op-tometryclinic. It is possible that many patient symptoms and/or findingsnot recorded despite routine questioning.Missed examination findings would result in conservative esti-mates,whereas missed signs would overestimate significant changes ifasymptomatic person-sare not accidentally included.In general, the assessment intervals of the various asympto-maticREE patient age groups matches the Canadian OptometricGuidelines.

CONCLUSION

According to the findings of this study, everyone needs to get a regular eye examination at least once every six months. Patient communication conducted through awareness sessions and instructional materials distributed to patients and practitioners. Routine eye examina-tionsplay an essential role in avoiding vision loss by screening for asymptomatic eye diseases. However, the appropriate frequency of tests for patients who do not have any vision im-pairments or eye-related symptoms is undetermined. Current recommendations differ and are based on expert opinion rather than factual information.

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