DISCUSSION

Present study deals with the study of optic nerve head and fundus changes in myopia. Similar types of studies have been carried out by a number of workers. Different findings of this study are compared with the findings of other studies.

High myopic eyes, where the basic abnormality is excessive axial elongation, are associated with more chances of having degenerative changes in the sclera, choroids, retinal pigment epithelium and retina. There is also increased risk of choroidal neovascularization with high myopia.

cuhk.edu.hk/medint [88] noted that the axial elongation has a familial tendency and is present commonly with refractive errors greater that -6 O.D. The stretching of ocular tissues in myopia affects the hemodynamics of the choroids so choroidal thinning is resulted and CNV (Choroidal neovasularisation) is more likely to develop which are leaky and can easily bleed.

In present study high myopia found is higher than -6.89 diopter, 76 (35.35%) cases are found in this group. In present study 58.14% of choroidal markings are found and more (56.80%) are found in the higher myopia group than lower myopia group.

Cuhk.edu noted that the greater the degree of myopia, the higher the chances of developing complications that can threaten vision.

In present study degree of myopia ranges from -0.5 to -30 diopter and mean value of it is -6.89 diopter. There are 35.35% cases of high myopia (myopia more than -6.89 diopter) found in this study.

In this study disc diameter has observed by comparing its size with full photographs and its distance from Macula. Macula is situated two disc diameter (DD) to temporal side of edge of the disc or 3 mm from the disc, little below the level of the horizontal meridian. So, observation include Normal/Large/Very large as N/L/VL respectively. Distance between optic disc and macula is less in large optic disc and further decreased in very large disc. VL disc diameter is found only in higher myopia group in this study. Large disc diameter is found more (68.06%) in higher myopia group than lower myopia group.

Liang Xu et al., [911 observed that in the adult Chinese population, high myopia is associated with a larger optic nerve head, and decreased best-corrected visual acuity. The risk of early and late macular degeneration was lower for highly myopic participants than for non highly myopic participants.

In this study higher myopia cases are less in number (76) than lower myopia (139). Larger optic disc size is found more in higher myopia group (100% VL disc and 68.06% L disc) than lower myopia. In present study macular degeneration is 51(23.72%). Macular degeneration is found more (84.31%) in higher myopia group (equal and higher than -6.89 diopter) than lower myopia group (lower than -6.89 diopter).
Jost B. Jonas\textsuperscript{92} noted that the optic disc size depends on the refractive error with an increase in highly myopic eyes and decrease in highly hyperopic eye. In this study normal disc diameter found more (91.34\%) in lower myopia group and large disc diameter found more (68.06\%) in higher myopia group.

Wang TH et al.,\textsuperscript{93} observed that the optic disc area in highly myopic eyes was similar to that in mildly myopic eyes. In this study all cases of very large disc and more (68.06\%) cases of large optic disc are found in higher myopia group and normal disc found more (91.34\%) in lower myopia group.

Y Wang et al.,\textsuperscript{95} noted that optic disc area was significantly correlated with myopic refractive error. Optic disc area was not related with age or sex. They found that highly myopic eyes have significantly larger optic disc than emmetropic eyes.

In present study large optic disc size found more (VL disc diameter 56.25\% and L disc diameter 68.06\%) in higher age group than lower age group. As shown above in this study larger disc size also found more in higher myopia group.

Albert Dichtl et al.,\textsuperscript{95} observed that in the highly myopic eyes mean optic disc diameter was significantly larger in comparison with the non highly myopic eyes.

In present study also large disc diameter is found more (68.06\%) in higher myopia group than lower myopia group, and all cases of very large disc diameter are found in higher myopia group.

J. B. Jonas, R. Thomas et al.,\textsuperscript{97} noted that optic disc area was statistically independent of age and refractive error, its shape was slightly vertically oval and neuroretinal rim area was significantly and positively correlated with optic disc size and optic cup size. It was independent of age, sex, refractive error and axial length.

Present study observed that optic disc size is not independent of age and refractive error. It is found larger in higher myopia group and higher age group.

J.B. Jonas, R. Thomas et al.,\textsuperscript{97} had noted that the optic disc were significantly larger and ovaly configurated in highly myopic eyes but they noted larger disc was in more than -8.0 D. In present study larger optic disc is more in higher myopia group, equal and higher than -6.89 D.

They noted that highly myopic discs can be regarded as secondary acquired macrodiscs, the size of which is correlated with refraction and possibly age. In present study also optic disc size is correlated with refraction and age. All cases of very large disc diameter are found in higher myopia group (equal and higher than -6.89D) and large disc diameter is found more (68.06\%) in higher myopia group than lower myopia group. Very large (56.25\%) and large (68.06\%) disc diameter is found more in higher age group(equal and higher than 32 years) than lower age group.

Eugene Tay et al.,\textsuperscript{98} concluded that increased optic disc tilt was associated with higher myopia. Jonas JB, Papastathopoulos KI\textsuperscript{99} observed that for a myopic refractive error of less than -8 D, the normal eyes and the glaucoma eyes did not differ significantly in their slightly vertically oval optic disc shape. They noted that in the

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highly myopic group, the optic disc was significantly more oval and obliquely configured, and larger than in any other group. Like their findings, in present study also larger disc diameter is found more (68.06%) in higher myopia group than lower myopia group.

Jonas JB, Budde WM [100] in their study with stereo optic color photographs, concluded that in chronic open-angle glaucoma, optic nerve damage may be more pronounced in highly myopic eyes (equal or higher than -8D) with large optic discs than in non-highly myopic eyes. This may suggest a higher susceptibility for glaucomatous optic nerve fiber loss in highly myopic eyes than in non-highly myopic eyes. These findings are correlating with the present study as in present study also larger disc size is found more (68.06) in higher myopia group than lower myopia group.

Jonas JB, Dichtl A [101] noted significant difference of the optic disc morphology in primary open-angle glaucoma between highly myopic eyes (higher than -8D) and eyes with hyperopia or low to moderate myopia. The highly myopic eyes are characterized by secondary macro-discs with elongated shape. Glaucomatous optic nerve damage in highly myopic eyes, compared to eyes with a normal refractive error, is more diffuse than localized. In present study also all cases of very large disc diameter and larger disc size is found more in higher myopia group.

Christopher Kai-shun Leung et al., [107] concluded that while optic disc area generally increased with the axial length and myopic refraction, the HRT (Heidelberg Retina Tomography) measurements demonstrated that optic disc size was largely independent of axial length and refractive error between -8 and +4 D. OCT may overestimate optic disc size in myopic eyes and results in poor agreement between the two instrument. OCT findings correlate with present study findings, disc size is associated with refraction, but HRT findings differ from present study findings.

R R A Bourne, P J Foster et al., [113] found that Disc area (but not that of the rim) increases with age. They had also noted that Disc area (DA) was positively associated with AL -axial length and height but was unrelated to corneal thickness. DA remained positively associated with AL, height and age. Their findings are correlating with present study findings. In present study larger disc size found more (VL disc size 56.25% and L disc size 68.06%) in higher age group.

Schwartz JT, Reuling FH, Garrison RJ [115] noted that there was no significant association with sex, race, or refractive error in the mid-range. However, there was a significant association between size of the cup/disc ratio and age as well as intraocular pressure. It is not always recognized that the size of the normal physiological cup increases with age. But, allowing for individual variation, some persons could show a recognizable acquired increase in cup/disc ratio with age, even in the absence of glaucoma.

In present study, there is significant association found between optic disc diameter with myopia and age. Very large (100%) and Large (68.06%) optic disc diameter are found more in higher myopia group and higher age group (VL – 56.25%, L – 68.06%).

Discussion
Dichtl A, Jonas JB, Naumann, GO [96] found that in the highly myopic eyes compared with the non-highly myopic eyes, mean optic disc diameter was significantly larger. In present study larger optic disc diameter is found more in higher myopia group (equal and higher than -6.89 diopter) than lower myopia.

Koraszewska-Matuszewska B et al., [102] concluded that Optic nerve disc images in myopic and glaucomatous eyes in children are different. Smaller optic disc cup in myopic than in emmetropic eyes can show, that children myopic eyeballs enlarged without nerve fibers atrophy.

In present study very large, large and normal disc size are found in the myopia. All cases of very large disc diameter found in higher myopia group and Large disc diameter found more (68.06%) in higher myopia group, equal and higher than -6.89 diopter and normal disc diameter found more (91.34%) in lower myopia group.

Chameen Samarawickramaa et al., [106] noted that Optic disk parameters in childhood are influenced by axial length, but not by refractive error itself. Unlike this study they noted that disc size is not influenced by refractive errors in childhood.

Present study has found association between refractive errors and optic disc size. All cases of very large disc diameter found in higher myopia group, and Large disc diameter found more (68.06%) in higher myopia group, equal and higher than -6.89 diopter and normal disc diameter found more (91.34%) in lower myopia group.

Barr DB et al., [104] noted the disc-macula distance to disc diameter ratio (DM: DD ratio) has been advocated as a method of supporting the diagnosis of optic nerve hypoplasia. A DM: DD ratio of 3.00 has been claimed to be a satisfactory threshold value for this purpose. There was a trend of increasing DM: DD ratio towards myopia and decreasing DM: DD ratio towards hypermetropia; the DM: DD ratio may be falsely high in high myopia.

In present study size of optic disc is measured by comparing its distance with macula. Normally macula is situated two disc diameter (DD) to temporal side of edge of the disc or 3 mm from the disc, little below the level of the horizontal meridian. Distance between optic disc and macula is less in large optic disc and further decreased in very large disc. Thus, a present study finding about disc size is correlating with statement done by Barr DB et al.

John H. Fingerta et al., [105] concluded that the chromosomal location of a gene responsible for cavitary optic disk anomalies is a key step in identifying the genetic basis of this condition and ultimately may provide important insight into the pathogenesis of more common optic nerve diseases such as normal-tension glaucoma and primary open-angle glaucoma.

Robert A. Honkanena et al., [103] identified the chromosomal location of a gene responsible for ONH development. This may provide insight into the pathogenesis of glaucomatous ONH damage.

Nilufer Berker et al., [108] found a relationship between the severity of ocular Bachet’s disease and optic disc topography determined by HRT. In eyes with smaller optic
discs, uveitis was observed to have a more severe course with more frequent relapses than those with larger discs.

In present study smaller optic disc is not found, very large (7.44%) and larger optic disc (33.49%) is found. All cases of very large and more (68.06%) cases of large disc diameter are found in higher myopia group.

S. Zumbroa et al., [120] observed that macular schisis and detachment can occur in patients with presumed enlarged optic nerve head in the absence of obvious congenital anomalies of the disc. In present study enlarge optic disc found in 88 (40.93%) cases.

Klara Landau et al., [111] found topless optic disc (superior segmental hypoplasia of optic nerve) in the. Female sex, short gestation time, low birth weight, and poor maternal diabetes control. Pathogenesis remains obscure but the responsible pathogenic event may occur in the perinatal period. In present study enlarge optic disc found in 88 (40.93%) cases and normal disc size found in 127 (59.07%) cases. Smaller optic disc size is not found in this study.

Tong L, Saw SM et al., [112] noted that in subjects with severe myopia, the upper pole of the disk was rotated away from the fovea but to lesser extent than in those with emmetropia or milder myopia. In present study size of the optic disc is correlated with myopia, all cases of very large and more (68.06%) cases of large disc diameter is found in higher myopia than lower myopia with no changes in appearance.

Weiss AH, Ross EA [116] noted that six of 14 patients with unilateral optic nerve hypoplasia and 5 of 22 patients with bilateral involvement had at least 4 D of myopia. Nine of the 11 patients with asymmetric bilateral involvement had relative myopia in the eye with the more abnormal optic nerve.

In present study smaller optic disc size is not found. In Less than -6.89 diopter myopia, very large disc size is not found, 23 (31.94%) cases of large disc size and 116 (91.34%) cases of normal disc size is found.

Nakamura H, Maeda T, Suzuki Y, Inoue Y [118] observed by HRT that the mean cup depth and maximum cup depth were significantly deeper in myopic subjects. Large discs had large cup area. The Retinal nerve fiber layer thickness was smaller in larger discs. They concluded that the age, refraction, and disc area were related to several optic disc parameters obtained by the Heidelberg Retinal Tomography. Because of these relationships, care should be taken to analyze the appearance of the optic disc on the basis of these parameters in patients with glaucoma or other diseases.

In present study relationship is found between disc size, refractive error (myopia) and age. Larger disc is found more in higher myopia group (all cases of very large disc and 68.06% of large disc) and higher age group (56.25% very large disc and 68.06% large disc). While normal disc size found more in lower myopia group (91.34%) and lower age group (77.17%).

Nicolela MT, Drance SM, [119] in their study of optic disc stereo photographs, noted that patients with myopic glaucoma and generalized enlargement of the optic cup

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Discussion
discs were significantly younger than patients with focal ischemic and senile sclerotic discs. There were more women in the focal ischemic group. Patients with senile sclerotic discs had a significantly higher prevalence of ischemic heart disease; they also had a higher prevalence of systemic hypertension, which did not reach statistical significance. Intraocular pressure was significantly higher in the generalized enlargement group.

In present study enlarged optic disc diameter is found in 88 (40.93%) cases. Enlarge optic disc diameter is found more in higher age group (equal and higher than 32). All cases of very large disc diameter are found in higher age group and 68.06% of large disc diameter is found in higher age group.

Gael E Gordon noted that Optic disc drusen are hyaline bodies in the optic nerve head of unknown aetiology, which are present in approximately 2% of the population. Reduced visual acuity associated with optic disc drusen is rare, although visual field defects are common in cases of visible drusen. Although the condition is frequently bilateral, asymmetry is usual.

Rogrio A. Costa et al., found twenty eyes with CRA (chorioretinal anastomosis) and drusen identified in 11 patients, seven women (63.6%) and four men (36.4%) ranging in age from 69 to 82 years (median, 79 years).

Ronald Klein et al., observed, 15-year incidence of reticular drusen varied with age from 0.4% in those 43 to 54 years of age to 6.6% in those 75 years or older. Risk factors significantly associated with increased risk of incident reticular drusen included: being female, current smoking, less education, B-vitamin complex use, single vitamin B, history of steroid eye drops use, glaucoma and more severe drusen type (e.g., soft indistinct drusen), whereas diabetes at baseline).

I Droz, I Mantel et al., noted that the complement factor H Y402H polymorphism showed a genotype-phenotype association for some drusen features. Additional genetic factors are likely to influence drusen phenotype.

In present study optic disc drusen are not found. Very large (7.44%), large (33.49%) and normal (59.07%) optic disc diameters are found.

Arsaell Arnarsson et al., found, current alcohol consumption decreased the risk for drusen. Being married rather than divorced or widowed decreased the risk for soft drusen.

In present study 96 (44.65%) cases of crescents are found and 119 (55.35%) cases are without crescent. Amongst them temporal, annular, inferior, Inferonasal and nasal types of crescent are found. Temporal are of maximum number 65 (67.71%), annular 24 (25%), inferior 5 (5.21%) and rare inferonasal and nasal single case (1.04%) of each found. All crescents are found more in higher myopia group. Total crescents in higher myopia group are 63 (65.63%) and lower myopia group are 33 (34.38%).

Dichtl A, Jonas JB, Naumann GO found the peripapillary scleral ring was significantly broader in highly myopic eyes compared with the non highly myopic eyes.

Discussion
Jonas JB, Dichtl A [101] found that the highly myopic eyes are characterized by secondary macro-discs with elongated shape; the loss of neuroretinal rim was more concentric.

In present study, larger disc is found more (68.06%) in higher myopic eyes. 63 (65.63%) crescents are found in higher myopic group and 33 (34.38%) crescents are found in lower myopic group. Absent of neuroretinal rim are found in 119 (55.35%) cases. Absent crescents are found more 106 (89.08%) in lower myopia group than in higher myopia group (10.92%).

L Xu, Y Wang et al., [95] noted that in adult Chinese, the neuroretinal rim is statistically independent of age and sex. Compared with data from studies in Western countries, the neuroretinal rim is larger in adult Chinese than in adult white populations, corresponding to a larger optic disc size in the Chinese.

In present study neuroretinal rim is associated with age. All the types of neuroretinal rim are present more in higher age group in this study. Out of total 96 (44.65%) cases of crescent 57 (59.37%) cases are present in higher age group and 39 (40.63%) cases are present in lower age group. All types of crescents are found more in higher age group than lower age group.

R R A Bourne, P J Foster et al., [113] found that like disc, rim area also vary with sex, greater in men than women. Neuroretinal rim area (RA) was also significantly and positively associated with AL and also with height.

In present study relation of crescent with sex has not observed but there is significant association is found between crescent and refractive error, myopia in which increased axial length is one of the causes for it. In present study 96 (44.65%) cases of crescents are found. All crescents are found more in higher myopia group. Total crescents in higher myopia group are 63 (65.63%) and lower myopia group are 33 (34.38%).

J.B. Jonas, R. Thomas, R.George, E. Berensthein and J. Muliyie [97] observed that the neuroretinal rim area was significantly and positively correlated with optic disc size and optic cup size. It was independent of age, sex, refractive error and axial length.

In present study there is association found between crescent and age and refractive error. It is found more 63 (65.63%) in higher myopia group(equal and higher than -6.89 diopter) than lower myopia group and found more 57 (59.37%) in higher age group (equal and higher than 32 years) than lower age group.

Nakamura H, Maeda T, Suzuki Y, Inoue Y [118] studied by HRT that Rim volume was unaffected by age, refraction, or disc area. Unlike their study in present study crescent has association found with refractive error and also with age. Higher myopic group and higher age group have more cases of crescent found. There are 65.63% in higher myopia group (equal and higher than -6.89) and 59.37% in higher age group (equal and higher than 32 year).

Discussion
Albert Dichtl, Jost B. Jonas, Gottfried O. H. Naumann \cite{96} observed that in the highly myopic eyes, the peripapillary scleral ring was significantly broader in comparison with the non-highly myopic eyes.

While Wang TH, Lin SY, Shih YF, Huang JK, Lin LL, Hung PT \cite{93} observed that the neuroretinal rim area and the tilting of the disc were not significantly different between the severe and mild myopia group.

In present study it is noted that all type of crescents out of their present number found more in highly myopic group than lower myopic group. There are 65.63\% in higher myopia group and 34.38\% in lower myopia group.

Peter Martus et al., \cite{121} observed that for patients with elevated intraocular pressure, significantly predictive factors for eventual progression were older age, smaller neuroretinal rim, advanced perimetric damage and larger area of parapapillary atrophy.

In present study same found in myopia but instead of smaller neuroretinal rim it is found that presence of it is found more in higher myopia and higher age group. There are 65.63\% in higher myopia group (equal and higher than -6.89) and 59.37\% in higher age group (equal and higher than 32 year).

Yaxing Wang et al., \cite{122} observed that in adult Chinese as in Caucasians, the neuroretinal rim usually follows the ISNT rule i.e. the neuroretinal rim was significantly wider in the inferior disk region followed by the superior disk region the nasal disk region and it was the smallest in the temporal disk region.

In present study amongst all crescents, maximum cases of temporal crescent 67.71\% are found. Annular 25\%, then inferior 5.21\% and rare Inferonasal and nasal single case of each (1.04\%) are found in descending order. All types of crescents are found more in higher myopia and higher age group.

K. Yasuzumi et al., \cite{123} evaluated peripapillary crescent enlargement in highly myopic eyes by FA & ZA (Fluorescein Angiography and Indocyanine green Angiography). They observed two zones of the myopic crescent. In present study crescents are found in 96 (44.65\%) cases done by fundus photography. All types of crescents are found more in higher myopia group (65.63\%) and higher age group (59.37\%).

Michael Moore et al., \cite{109} observed a progressive optic nerve cupping and neural rim decrease in a patient with autosomal dominant optic nerve coloboma in both eyes with normal intraocular pressure.

Myung-Kyoo Ko, Dong-Seob Kim and Yoon-Koo Ahn \cite{124} observed cases with the circle of zinn-Haller which appeared as concentric or zigzag – shaped vascular fillings within the temporal crescent region in pathological myopia with peripapillary atrophy and tilted disc.

In present study neuroretinal rim is found in less number of cases; 96 (44.65\%) than absence of it; 119(55.35\%). But out of total number of cases more are found of

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temporal type, 65 (67.71%), and amongst them more number of it found in higher myopia group and higher age group; 34 (52.31%).

Tekiele BC and Semes L [125] found that the fundus findings in moderately to highly myopic eyes were more prevalent in the posterior pole (44.7%). Posterior pole lesion is optic nerve head crescent. In present study, crescent is of 44.65%. It is found more in higher myopia (65.63%) and higher age group (59.37%).

Shimada N et al., [126] identified peripapillary detachment in pathologic myopia in 31 of 632 highly myopic eyes (4.9%). The optical coherence tomographic scan across the PDPM lesion revealed a localized detachment of retinal pigment epithelium adjacent to the optic nerve. Although PDPM was always situated adjacent to the inferior edge of the optic disc, in some patients it surrounded almost the entire optic disc. Study indicates that PDPM is not uncommon among highly myopic eyes. In present study all type of crescents are found more in higher myopia group (65.63%) than lower myopia group.

Atsuhiro Kanda et al., [127] noted age-related macular degeneration stands out among degenerative retinal diseases, as it leads to visual dysfunction in a significant fraction of the elderly population worldwide. It primarily affects the macular region of the retina; early signs of the disease include the appearance of soft drusen and regions of altered pigmentation in the retina, whereas advanced stages exhibit choroidal neovascularisation or atrophy of photoreceptors and the retinal pigment epithelium.

In present study macular degeneration is found in 51 (23.72%) cases. It is found more in higher myopia (84.31%) and higher age group (74.51%). Macular pigmentation is found in 34 (15.81%) cases. Macular pigmentation found more in higher myopia (85.29%) and higher age group (82.35%).

Asbjorg Geirsdottir et al., [128] observed 54% (469 of 863) of all those 75 years and older had advanced age related macular degeneration, 64% (258 of 406) of all those 85 years and older, 74% (37 of 50) of all those 95 years and older, and all (eight of eight) 100 years and older had advanced age related macular degeneration. They concluded that with increasing age, a gradually larger proportion of participants had advanced age related macular degeneration.

In present study macular degeneration is found more in higher age group (74.51%) than lower age group (25.49%). In present study macular degeneration found more in higher age group (74.51%). Ning Cheung et al., [129] studied middle aged population from their fundus photographs, found no association between Carotid artery stiffness with signs of early age related macular degeneration which provide no evidence of a link between age-related elastoid changes and early atherosclerotic processes in the carotid arteries and early age related macular degeneration.

Hem K Tewari, Vijay B. Wagh et al., [130] observed that the macular thickness and volume parameters have a significant correlation with age but not with gender, axial length and refraction.

In present study there is a significant association found between macular degeneration and other macular changes with refraction and with the age. It is found more in higher

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myopia (Equal and higher than -6.89) and higher age group (Equal and higher than 32). Macular degeneration is found 84.31%, macular scar is found 85.71%, macular haemorrhage is found 88.89% and macular pigmentation is found 85.29% in higher myopia group. Macular degeneration is found 74.51%, macular scar is found 78.57%, macular haemorrhage is found 77.78% and macular pigmentation is found 82.35% in higher age group.

Sandra C. Tomany, Jie Jim wang et al., [209] observed that smoking was related to an increased risk of incident age related macular degeneration. Current smokers were at higher risk of incident age related macular degeneration than both past smokers and those who never smoked.

Jay C. Eriea et al., [131] observed that a higher urinary Cadmium (Cd) Level, which reflects the total body burden of Cd, was associated with age related macular degeneration in smokers. Accumulated Cd exposure may be important in the development of smoking related age related macular degeneration.

In present study macular degeneration is found more in higher myopia (84.31%) and higher age group (74.51%). This shows that smoking with higher myopia and higher age increases the risk of developing degeneration.

Michael D. Knudtson et al., [132] observed that alcohol Consumption is unlikely to strongly increase (or decrease) the risk of age related macular degeneration. Elaine W.-T. Chong et al., [133] found, heavy alcohol consumption (more than three standard drinks per day) is associated with an increased risk of early age related macular degeneration. Although this association seems to be independent of smoking, residual confounding effects from smoking cannot be excluded completely.

In present study macular degeneration is found more in higher myopia (84.31%) and higher age group (74.51%). This shows that alcohol consumption with higher myopia and higher age increases the risk of developing degeneration.

Morsal Mehryar et al., [142] concluded that altered uric acid metabolism could play a role in age related macular degeneration damage and pathogenesis. Elena Rochtchina et al., [144] found that homocysteine >15 μmol/l was associated with an increased likelihood of age related macular degeneration in participants aged <75 years. A similar association was found for vitamin B12 <125 pmol/l. Increased homocysteine and low vitamin B12 were independently associated with an increased risk of AMD.

In present study macular degeneration is found 74.51% in age equal and higher than 32 and it is found 25.49% in age less than 32 year.

Samantha Fraser-Bell et al., [143] observed higher Diastolic B.P and uncontrolled diastolic hypertension were associated with exudative age related macular degeneration. Suggest that in Latinos cardiovascular risk factors may play a role in advanced age related macular degeneration. Latinos have a high prevalence of cardiovascular risk factors, reducing these risk factors may also have a beneficial impact on the risk of having early and advanced age related macular degeneration.
Robert B. Nussenblatt and Frederick Ferris \cite{141} concluded that the loss of the downregulatory immune environment is central to the development of age related macular degeneration.

In present study macular degeneration is found 74.51\% in age equal and higher than 32 and it is found 25.49\% in age less than 32 year. Increased age has chances of hypertension so they have increased risk of developing macular degeneration.

Hirvela H. et al., \cite{134} observed, the prevalence of age related macular degeneration increased steadily with age without overall significant difference between men and women. In present study macular degeneration found more (74.51\%) in higher age group.

Milam A. Brantley et al., \cite{136} observed that the Y 402 H CFH Variant Carried a significantly increased risk for developing age related macular degeneration. S V Goverdhan et al., \cite{137} concluded, the pro-inflammatory homozygous Interleukin8 – 251AA genotype is an important risk factor for age related macular degeneration.

Sarah Ennis et al., \cite{138} noted that the findings are consistent with evidence that, in addition to the widely described Y402H variant, there is at least one and, most probably, several other mutations in the complement factor H gene which determine disease manifestation in age related macular degeneration.

Jane-Ming Lina et al., \cite{139} concluded, vascular endothelial growth factor (VEGF) +936 C/T and complement factor H (CFH) Y402H polymorphisms are dependently associated with wet age related macular degeneration in the Taiwan Chinese population \cite{139}. They also found that the pigment epithelium derived factor (PEDF) Met72Thr T allele may be a risk factor for wet age related macular degeneration in the Taiwan Chinese population. PEDF may play a role in the pathogenesis of wet age related macular degeneration \cite{139}.

R. Keith Shuler jr. et al., \cite{140} found that the LOC387715 variant appears to be an independent risk factor for grade 5 (neovascular) age related macular degeneration. This variant may also be associated with an earlier onset of age related macular degeneration.

In present study macular degeneration is found in 51 (23.72\%) cases and it is more in higher myopia group (84.31\%) and higher age group (74.51\%).

Ilse Krebs et al., \cite{135} found that persistent attachment of the posterior vitreous cortex to the macula may be another risk factor for the development of exudative AMD via vitreoretinal traction inducing chronic low-grade inflammation, by maintaining macular exposure to cytokines or free radicals in the vitreous gel, or by interfering in transvitreous oxygenation and nutrition of the macula.

Rogrio A. Costa et al., \cite{155} concluded, morphologic features and changes demonstrated by OCT suggest that fibrovascular detachment of the retinal pigment epithelium followed by development of occult chorioretinal anastomosis are the initial events occurring in eyes with CRA in age-related macular degeneration.

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Susanne Binder\textsuperscript{[145]} noted peripapillary choroidal neovascularisation comprises about 10% of all cases of choroidal neovascularisation. Starting at the nasal margin of the disc the condition does not become symptomatic until fluid, exudate, blood, or the membrane itself have extended from the disc toward the macula, threatening central vision. Although, less common than smaller PPCNVs, the very large ones may lead to severe visual loss.

Grossniklaus HE and Green WR\textsuperscript{[90]} noted subretinal neovascularisation 5.2% by histopatologic findings. Florence Coscas et al.,\textsuperscript{[146]} detected 62.7% occult CNV (choroidal neovascularisation) in AMD (age related macular degeneration) by OCT (optical coherence tomography) examination.

In present study choroidal markings are 58.14%. It is found more in higher myopia group (56.80%). It is also found more in higher age group (60.80%).

Toshiko Matsuo et al.,\textsuperscript{[147]} concluded that both genetic and environmental factors underlie the development of choroidal neovascularization in myopic eyes. Milam A. Brantley et al.,\textsuperscript{[36]} observed Genotype and phenotype correlations regarding choroidal neovascular lesion.

In present study choroidal markings are found 58.14%. They are of mild, moderate and marked form. Marked (76.79%) and moderate (70.97%) forms are found more in higher myopia group.

Noriaki Shimada et al.,\textsuperscript{[148]} noted that eyes at the atrophic stage of myopic CNV have a higher risk of developing a macular hole, so they recommend periodic OCT examinations for macular holes or macular retinoschisis, even in asymptomatic, highly myopic eyes, after the CNV has progressed to the atrophic stage. In present study chorio retinal changes are found more in higher myopia group (84.75%) and higher age group (83.05%). Macular hole found only in 2 cases and both the cases are found in lower myopia group but higher age group.

Izumi Yamamoto et al.,\textsuperscript{[150]} and H Sakaguchi et al.,\textsuperscript{[153]} found that intravitreal bevacizumab seems to be safe and potentially efficacious in eyes with subfoveal CNV secondary to pathological myopia.

Gianni Virgili et al.,\textsuperscript{[151]} suggest that PDT may halt the progression of the disease in most cases. Alfredo Pece et al.,\textsuperscript{[152]} found, Verteporfin PDT is a promising treatment modality resulting in stable or improved vision in 76% of the myopic eyes with juxtafoveal CNV. Younger patients appear to respond more favorably to treatment.

In present study choroidal markings and chorio retinal findings found more in myopia equal and higher than -6.89 and age equal and higher than 32 year, except macular hole and prominent vascularisation, they are found more in lower myopia bur higher age group.

Arsaell Arnarsson et al.,\textsuperscript{[158]} in fundus stereo color photographs found that person consuming dietary fiber rich vegetables and meat and meat products once a week or less frequently was a risk factor for developing soft drusen and decreased the risk of pigmentary abnormalities. They also found that being single decreased the risk of

\textit{Discussion}
hypopigmentation as compared with being divorced or married. Samantha Fraser-Bell et al., [43] found that Obesity was associated with increased retinal pigment in Latino eye study.

In present study it is found that macular pigmentation is 15.81%. It is found more in higher myopia group (equal and higher than -6.89), 85.29% and higher age group (age equal and higher than 32), 82.35%.

Malgorzata Mrugacza et al., [160] found, newborns with Retinopathy of prematurity (ROP) and with retinal hemorrhages, macular pigmentary changes were found in 3 (6%) patients. Of these 3 patients, the first had prethreshold ROP, the second threshold ROP and had underwent diode laser photoacoagulation, and the third patient had stage 2 ROP. In the patients with prethreshold and threshold ROP retinal hemorrhages appeared 6 weeks after birth and macular pigmentary changes were found 6 months after birth. In the patient with stage 2 ROP hemorrhages appeared 7–8 weeks after birth and macular pigmentary changes were detected 12 months after birth. Their results may suggest that the presence of the macular pigmentary changes may be related to the hemorrhage and not to the specific therapy or to the disease.

In present study macular pigmentation is found in 34 (15.81%) cases. Macular hemorrhage is found in 9 (4.19%) cases. Macular pigmentation (85.29%) and hemorrhage (88.89%), both are more in higher myopic group. Both are found more in higher age group, pigmentation is 82.35% and macular hemorrhage is 77.78%. So in this study hemorrhage is found in less cases than pigmentation and both are more in higher myopia and higher age group.

Stefan Mennel [159] noted that hemorrhage at the macula causes deterioration of visual acuity within seconds or minutes. Biomicroscopy reveals a dome-shaped acute bleeding in the macular area, but the precise localisation of the blood that is, subhyaloidal or macular is mostly unknown. Different primary causes of subhyaloidal or macular haemorrhage are Valsalva retinopathy (most common) and Terson syndrome. In addition, such haemorrhages may occur secondary to vascular diseases such as arteriosclerosis, hypertension, retinal artery or vein occlusion, diabetic retinopathy, retinal macroaneurysm, chorioretinitis, blood disorders as well as shaken baby syndrome, age-related macular degeneration, and can also occur spontaneously.

In present study macular hemorrhage is found in 9 (4.19%) cases. It is found more in higher myopia group (88.89%) and only one case of it (11.11%) is found in lower myopia group, less than -6.89 diopter. Also it is found more in higher age group; age more than 32 (77.78%). So in this study it is associated with refractive error (myopia) and age.

Karolien De Maeyer et al., [161] observed Sub-ILM (Interlimiting membrane) haemorrhages in five patients (median age 32 years) based on the fundoscopic appearance and clinical findings. Vision was severely impaired in all patients (to hand movements in four of five) because of a premacular location of the haemorrhage. Concluded that Sub-ILM haemorrhages often occur in a specific clinical context and can lead to severe visual impairment in young patients. In present study macular hemorrhage is found (4.19%), which is more (88.89%) in higher myopia group,

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equal and higher than -6.89 diopter than lower myopia group and also more (77.78%) in higher age group, equal and higher than 32 years than lower age group.

Kokame GT et al., [162] concluded that intrapapillary hemorrhage with adjacent peripapillary subretinal hemorrhage is more common in myopic eyes and spontaneously resolves without treatment. The unique structural architecture of the elevated nasal edge of the myopic tilted disc and the choroidal blood supply of the prelaminar optic nerve may predispose patients to bleeding from the optic discs, which may be spontaneous or may be precipitated by acute disc edema, valsalva maneuver, or vitreopapillary traction. In present study macular hemorrhage (4.19%) is found and it is found in myopia and more (88.89%) in higher myopia and more (77.78%) in higher age group.

Allen C et al., [163] noted a macular hole is a full-thickness defect of retinal tissue involving the anatomic fovea, thereby affecting central visual acuity. Recently, Gass has postulated that tangential vitreous traction may play a role in pathogenesis of macular hole. Cellular components surrounding the rim of macular holes may also contribute tangential traction forces and elevate the rim. Pseudomacular holes may be mistaken for macular hole lesions, despite careful clinical examination. Careful biomicroscopic examinations help to ensure accurate diagnosis. Newer imaging technology, such as optical coherence tomography, helps distinguish true macular holes from pseudoholes and may provide additional insight into the pathogenesis of this condition. Surgical management can improve vision in selected cases.

In present study done by fundus photography, macular hole is found in myopia, which also shows that it is a defect of retinal tissue involving the anatomic fovea thereby affecting the visual acuity. Macular hole is found in 2 (2.82%) cases, both cases are found in lower myopia group (less than -6.89D) and both are found in higher age group (higher than 32 years).

Noriaki shimada et al., [148] noted higher risk of development of macular hole in atrophic stage of myopic CNV. A macular hole was detected by OCT (optical coherence tomography) in six eyes (14%) had a myopic CNV surrounded by CRA (chorioretinal atrophy) larger than 1 disk area (43 eyes). so periodic OCT examination recommended in highly myopic eyes, after the CNV has progressed to the atrophic stage.

In present study macular hole is found in 2 (2.82%) cases. It is found in lower myopia group and higher age group. Chorioretinal changes found are 59 (27.44%). They are found more (84.75%) in higher myopia group. so in these cases also periodic examination is recommended.

Copp AM et al., [164] detected macular hole by OCT in 24 of 383 (6.26%) myopic eyes. These MHs were defined as asymptomatic (AMHs). The presence of AMHs was more prevalent in myopic patients younger than 50 years and with concomitant myopia of > -20 D. In present study findings differ than Copp findings. Macular hole is found in 2 (0.93%) of 215 myopic eyes. Both (2.82%) are found in higher age group (more than 32 years) and in lower myopia group (less than -6.89D).
Raimondo Forte et al., [165] studied high myopia using en face optical coherence tomography (OCT), observed a macular hole present in three eyes (1.5%). They detected posterior retinal detachment in 37 cases (18.5%). In 15 eyes (7.5%) detachment was associated with a macular hole. In the remaining 22 eyes (11%), the detachment was located in the area of the staphyloma, and was associated with vitreoretinal traction in four eyes (18.2%) of 22 eyes. Concluded that En face OCT provides accurate imaging of retinal abnormalities in high myopia. Thus, it can represent a noninvasive way to detect minimal changes during follow-up.

In present study of myopia done by fundus photography, observed a macular hole in 2 cases (2.82%) and staphyloma in 11 (5.12%) cases. Staphyloma is of advance (2.79%) and early (2.33%) type. All the cases of macular hole found in lower myopia and all cases of staphyloma found in higher myopia group. While both the cases of macular hole and more cases of staphyloma (66.67% advance type and 80% early type of staphyloma) are found in higher age group. Thus, fundus photography is also found a noninvasive way to detect changes in myopia.

Hideyasu Niwa et al., [168] found three (11%) of 27 fellow eyes in patients with unilateral idiopathic macular hole developed a full-thickness macular hole. Yoshinori oie and Kazuyuki Emi et al., [167] observed that the probability of the fellow eyes with high myopia developing MHRD (Macular Hole resulted Retinal Detachment) was significantly higher than that of eyes without high myopia, which indicates that the fellow eyes should be examined and followed carefully. The incidence of MHRD among the highly myopic fellow eye was 12.8%. The average interval was 51 months. The Kaplan-Meier estimated probability of the fellow eye developing MHRD was 3.7% at 18 months and 8.0% at five years.

In present study uniocular myopia is found in 35 (16.28%) cases. Amongst them 18 (51.43%) cases are of myopia equal and higher than -6.89, while 17 (48.57%) cases are of myopia lower than -6.89. Thus higher myopia eyes with fellow eyes should be examined carefully as macular hole resulted retinal detachment is higher than that of eyes without high myopia.

David Gaucher et al., [166] observed in twenty-nine operated and non operated cases of Macular Foveoschisis with Mean refraction was -14.4 diopters, by OCT scans, revealed that a lamellar macular hole in six (20.7%) of 29 eyes. During follow-up, foveoschisis and visual acuity worsened in 20 eyes, a macular hole occurred in nine eyes, six of which had previously exhibited foveal detachment. Eleven eyes with foveoschisis underwent surgery, which improved visual acuity significantly but three eyes developed a macular hole.

In present study operated cases are excluded because there are chances of misinterpretation of operated scar. Macular hole is found only in 2 cases (2.82%) and both are found in higher age group and lower myopia group.

Arevalo JF et al., [169] found that in 60% of cases, the MH developed < or =6 months after LASIK, and in 30% of cases it developed > or =1 year after LASIK. Eighteen of 19 (94.7%) patients were female. Mean age was 46 years (range, 25-65). All eyes were myopic (range, -0.50 to -19.75 diopters [mean, -8.9]). In present study operated cases have excluded from the study. Macular hole is found in 2 cases, mean diopter is

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-6.89, mean age is 32 years. Both cases of macular hole are found in lower myopia group and higher age group.

Hans Hoerauf\cite{171} noted that recent literature on macular hole surgery report very high success rates, but regardless of the specific surgical techniques used, not all macular holes are able to be closed after primary surgery. Therefore, persistence of a macular hole after vitrectomy is still one of the major complications. Jost Hillenkamp et al.,\cite{170} done anatomical closure in 19 of 28 eyes (68%) with a persisting macular hole after vitrectomy, ILM (internal limiting membrane) peel, and gas tamponade. BCVA (best corrected visual acuity) improved in 11 of 19 eyes with anatomical closure, and in one of eight eyes without closure.

Alexandre Guillaubey et al.,\cite{172} noted, retinal detachment remains the most common serious complication of macular surgery. Careful examination of the peripheral retina is a key issue in preventing retinal detachment occurring after macular surgery.

Benson T O Cheung et al.,\cite{173} concluded that High Density Silicon oil seemed to be an effective tamponade agent for myopic macular hole retinal detachment in 12 eyes of 12 patients. After the removal of HDSO, 10 (83%) eyes had macular hole closure with retinal reattachment without any tamponade. One eye had retinal reattachment after re-operation and the other refused further surgery. The mean age of the patients was 67.8 years and the mean spherical equivalent refractive error was -13.4 diopter.

In present study mean age is 32 years and mean refractive error is -6.89 D. So operative procedures noted above by different authors may be comparatively more effective because there is less mean age, lower myopia and only 2 (2.82%) cases of macular hole out of total 71 chorioretinal findings are found in present study.

Jerry Vongphanit et al.,\cite{174} observed in persons aged 49 years or older, staphyloma present in 26 participants (0.7%), bilateral in 35%, with a strong concordance of staphyloma location. In present study staphyloma is found in 5.12%. It is of two type advance, 2.79% and early, 2.33%. All staphyloma is found in higher myopia group (equal and higher than -6.89). Advance (66.67%) and early types (80%) of staphyloma found more in higher age group (higher than 32years).

Muka Moriyama et al.,\cite{175} analyzed 57 highly myopic eyes of 36 patients by Indocyanine green angiograms; a displacement of the entry site of the posterior ciliary arteries into the choroid was observed in 76.6% of the eyes with posterior staphyloma. These findings indicate that the choroidal vasculature can be significantly altered in highly myopic eyes, and this is more prevalent in eyes with posterior staphyloma. In present study posterior staphyloma is found more (66.67% advance and 80% early staphyloma) in higher myopia group. This study is done by fundus photography.

Huang Wei Hsiang et al.,\cite{176} studied two hundred and nine eyes of 108 consecutive patients, younger than 50 years and 50 years and older with high myopia. Ninety percent of 209 eyes had a staphyloma. The prevalence of staphylomas and more advanced grades of staphylomas (> grade 2) were significantly higher in the older than in the younger patients. The higher grades of staphylomas were associated with more severe myopic retinal degeneration. The morphologic feature of staphylomas worsens as the patient ages. The progression from type II to type IX probably

*Discussion*
increases the mechanical tension on the macular area of highly myopic eyes, which then leads to myopic fundus lesions.

In present study posterior staphyloma is found in 5.12%. Amongst them 2.79% is of advance type and 2.33% is of early type of staphyloma found. All cases of Advance type are found in higher myopia group (equal and higher than -6.89D) and it is found more (66.67%) in higher age group (equal and higher than 32 years). In present study gross myopic degeneration is found 46.48%, myopic degeneration in temporal quadrant is found 16.90% and myopic degeneration in nasal quadrant is found 2.82%.

Akizawa Y and Masahiro I concluded that the posterior part of the eyeball of myopic eyes was displaced superotemporally in the muscle cone. The more the eyeball expanded, the farther it was displaced, the most elongated high myopic eyes would dislocate out of the muscle cone.

David Gauchera et al. found a dome-shaped macula within a myopic staphyloma, visible on both B-scan ultrasonography and OCT: a characteristic bulge of the macular retina, RPE (retinal pigment epithelium), and choroid within the concavity of the moderate posterior staphyloma. The mean refractive error of the affected eyes was -8.25 diopters.

In present study mean refractive error is -6.89 diopters. Posterior staphyloma is found 5.12%. All cases of it are found in higher myopia group.

Baba T et al. concluded, in highly myopic eyes with posterior staphyloma, the prevalence of foveal retinal detachment without macular hole was 9.0%. In eyes with this type of retinal detachment, visual acuity varies and foveal retinal detachment tends to be missed on routine examination. Periodic examination using OCT is recommended for highly myopic eyes with severe myopic degenerative changes and posterior staphyloma.

Present study is done by fundus photography. Gross myopic degeneration is found 46.48%. Degeneration in temporal and nasal quadrant found is 16.90% and 2.82% respectively. Posterior staphyloma is found 5.12% and it is present in higher myopia group.

Grossniklaus HE, Green WR noted posterior staphyloma, 35.4% in pathologic myopia obtained from 202 patients by histopathologic findings. In present study posterior staphyloma is 5.12% obtained from 215 myopic eyes by fundus photography. All cases of posterior staphyloma are found in higher myopia group (equal and higher than -6.89D).

Jerry Vongphanit et al. found Staphyloma in 26 participants (0.7%). Lacquer cracks in 8 participants (0.2%), Fuchs spot in 3 (0.1%), and chorioretinal atrophy in 7 (0.2%). Forty-six eyes (68.7%) with myopic retinopathy were reexamined after 5 years; 8.7% had new or increased numbers of lacquer cracks and 15.2% had new or expanded areas of chorioretinal atrophy. In present study, staphyloma is found in 11 (5.12%) participants, lacquer cracks (Angioid streaks) are found in 7 (9.86%) participants out of 71 chorioretinal findings. Gross chorioretinal findings found are 27.44% out of 215 myopic eyes.

**Discussion**
Pruett et al., [180] studied the pattern of break formation in 60 eyes with myopic lacquer cracks, angioid streaks, or traumatic tears in Bruch's membrane, using a graphics composition technique and computer analysis of digitized images. Lacquer cracks were found in a reticular distribution within a posterior staphyloma; angioid streaks occurred in a spider-web configuration centered on the optic nerve; traumatic tears were characteristically curved, perineural, and eccentric temporally. The specific break patterns imply the operation of biomechanical forces.

In present study Angioid streaks are found 7 (9.86%) cases out of 71 cases of gross chorioretinal findings of 215 myopic eyes. Myopic changes are studied by fundus photography.

Ohno-Matsui K, Tokoro T [181] found Lacquer cracks in the posterior fundus of 4.3% of highly myopic eyes. The lacquer cracks progressed in 37 eyes (56.1%). Of these 37 eyes, the number of lacquer cracks increased in 14 eyes and turned into other myopic fundus changes in 25 eyes. These changes included patchy atrophy, diffuse atrophy, and choroidal hemorrhage with neovascular membrane (Fuchs' spot). Concluded, a high incidence of lacquer cracks progressed into advanced fundus changes during a mean follow-up period of 6 years. Even faint lacquer cracks may characterize an unfavorable prognostic course, leading to macular pathology in patients with pathologic myopia.

Present study of myopic fundus changes done by fundus photography, Angioid streaks are found 9.86% in myopic eyes. These Angioid streaks are found more (85.71%) in higher myopic group (equal and higher than -6.89D). Of total 71 cases of chorioretinal findings, 7 (9.86%) cases of Angioid streaks and 8 (11.27%) cases of other fundus chorioretinal changes found. Other chorioretinal changes include neovascularisation, paramacular haemorrhage, paramacular scar, degeneration inferior to disc and haemorrhage near disc. In gross chorioretinal findings, gross myopic degeneration is 46.48%, myopic degeneration in temporal quadrant is 16.90% and myopic degeneration in nasal quadrant is 2.82%.

Wen F, Wu D, Wu L [182] found lacquer cracks In 9 of 14 eyes, appeared at the sites of macular hemorrhage or around the hemorrhage. They concluded that Subretinal neovascularization and the formation of lacquer cracks result in two forms of high myopia (divided into two forms by causes): macular hemorrhage with and without subretinal neovascularization. ICGA (indocyanine green angiography) combined with FFA (fundus fluoroscien angiography) is more useful in evaluating the two forms of hemorrhage.

In present study Angioid streaks are found in 7 (9.86%) cases out of 71 cases of gross chorioretinal findings. Total 215 myopic eyes are studied by fundus photography in present study. Other chorioretinal findings include neovascularisation in this study. Angioid streaks are found more (85.71%) in higher myopic group (equal and higher than -6.89D). Macular heamorrhage is found in 9 (4.19%) cases.

Liang Xu et al., [183] found that the most frequent cause of low vision/blindness in adult Chinese is cataract (36.7%/38.5%), followed by degenerative myopia.
(32.7%/7.7%), and glaucomatous optic neuropathy (14.3%/7.7%), with degenerative myopia dominating in younger groups and cataract dominating in elder groups.

In present study gross myopic degeneration found is 46.48%, myopic degeneration in temporal quadrant is 16.90% and degeneration in nasal quadrant found is 2.82%. All cases of nasal degeneration are found in higher myopia group. Gross degeneration (93.94%) and degeneration in temporal quadrant (91.96%) is found more in higher myopia group. All cases of nasal degeneration, gross degeneration (87.88%) and degeneration in temporal quadrants (83.33%) are found more in higher age group (equal and higher than 32years).

Tekiele BC and Semes L [125] found that the fundus findings in moderately to highly myopic eyes were more prevalent in the posterior pole alone (44.7%), the retinal periphery alone (21.4%), those occurring in both the posterior pole and retinal periphery (10.7%). This study also confirms that the most-prevalent posterior pole lesion is optic nerve head crescent and the most-frequent peripheral retinal change is lattice degeneration.

In present study crescent is found in 96 (44.65%) cases. All types of crescents are found more in higher myopia group (equal and higher than -6.89D). In higher myopia group total crescents found are 65.63%. Gross myopic degeneration found is 46.48%, degeneration in temporal quadrant is 16.90% and degeneration in nasal quadrant is 2.82%. Gross degeneration (93.94%) and degeneration in temporal quadrant (91.67%) are found more in higher myopia group. All cases of degeneration in nasal quadrant are found in higher myopia group (equal and higher than -6.89D).

Grossniklaus HE and Green WR [90] noted myopic degeneration of the retina, 11.4% and lacquer cracks, 0.6%. In present study gross myopic degeneration is found 46.48%, myopic degeneration in temporal quadrant found 16.90% and degeneration in nasal quadrant is found 2.82%.

Dantas AP et al., [184] found that in children who had severe malnutrition during the first six months of life with visual acuity from 0.3 to 0.1 and less than 0.1, the fundoscopic alterations were pale optic nerve (2.2%), increased disc cup (4.4%), increased vascular tortuosity (6.6%), alteration of retina color (13.2%) and retinal pigment epithelium cell atrophy (12.0%). They concluded that early malnutrition interferes in the individual's visual health but further studies are necessary to establish a more precise cause-effect relationship.

In present study prominent vascularisation is found in 7 (9.86%) cases out of 71 cases of gross chorioretinal findings. It is found more in lower myopia group (57.14%) and higher age group (71.43%). Gross chorioretinal findings are 27.44% out of 215 cases of myopia. They are found more in higher myopia group (84.75%) and higher age group (83.05%).

Liang Xu et al., [185] observed in population-based studies on Chinese, myopia was more prevalent in younger subjects, was associated with urban region, educational background, female gender, decreasing visual acuity, and nuclear cataract. Myopia of >0.50 D, 1.0 D, >6.0 D and >8 D, respectively, occurred in 22.9%, 16.9%, 2.6%, and 1.5% of the subjects, respectively.

Discussion
In present study myopia equal and higher than -6.89D is found in 76 (35.35%) and myopia lower than -6.89D is found in 139 (64.65%). In present study age equal and higher than 32 is found in 87 (40.47%) and lower than 32 years of age is found in 128 (59.53%).

Prost M [186] performed Eye examinations before and after delivery in 42 patients with high myopia and 4 patients with high myopia and retinal detachment, surgery in one eye. Found no progression of retinal changes and development of retinal tears, but in some patients retinal hemorrhages and macular edema were observed. Concluded that High myopia is not the indication for the cesarean section, but the patients should be examined after the delivery.

Luo HD et al., [187] noted that in children, increasing axial myopia was associated with reduced macular volume and thickness. These findings suggest that early anatomic changes may be present in the retinas of children with axial myopia.

In present study gross chorioretinal changes are found in 59(27.44%) cases. It is found more (84.75%) in higher myopia group (equal and higher than -6.89D) and more (83.05%) in higher age group (equal and higher than 32 years).

S H Melissa Liew et al., [188] found, Genetic factors appear to play an important role in CRT, central retinal thickness. CRT statistically related to refractive error, with increasing myopia associated with a thinner CRT. In present study gross chorioretinal findings are related to refractive error and age. They are found more (84.75%) in higher myopia group than lower myopia group and found more (83.05%) in higher age group than lower age group.

Jonas JB, Berenshtein E et al., [189] noted, in highly myopic eyes, the lamina cribrosa is significantly thinner than in non-highly myopic eyes, which decreases the distance between the intraocular space and the cerebrospinal fluid space and steepens the translaminar pressure gradient at a given intraocular pressure, which may explain the increased susceptibility to glaucoma in highly myopic eyes.

Faschinger C [190] noted that an increase of the thickness of the lens induced by senile cataract, drugs or diabetes mellitus, a forward shift of the lens or the iris-lens-diaphragm will lead to refractive myopia and may provoke an angle closure glaucoma. Pigmentary glaucoma occurs in younger patients in connection with low or medium myopia and more rapidly destroys the optic nerve head due to higher intraocular pressure values in comparison to the primary open-angle glaucoma. Due to the increased risk to develop glaucoma patients especially with high myopia are advised to consult their ophthalmologist on a regular basis.

Mamidipudi R. Praveena et al., [192] observed that nuclear cataract was associated strongly with high axial myopia. The density of the cataract was higher in the high myopia group. No association was observed between cortical cataract and high axial myopia.

Xu L et al., [191] noted that marked to high myopia with a myopic refractive error exceeding -6 D may be a risk factor associated with glaucomatous optic neuropathy.

Discussion
In present study mean refractive error found is -6.89D. Higher myopia group is equal and higher than -6.89 diopter, 76 (35.35%) cases of it are found in present study. Mean age is 32 years, 87 (40.47%) cases of age equal and higher than 32 years and 128 (59.53%) cases of age lower than 32 years are found in present study.

Gregg FM, Feinberg EB [1941] examined a patient with decreased visual acuity and macular changes attributable to pathologic myopia. A pedigree spanning six generations was constructed that demonstrated an X-linked mode of inheritance.

Dwight Stambolian et al., [1931] found that the locus on chromosome 8p23 independently confirms a report by Hammond and associates, mapping myopia quantitative trait loci (QTL) present to this region.

In present study macular changes found are more in higher myopia group (equal and higher than -6.89 diopter). Higher myopia cases are 76(35.35%) in present study. Macular changes are macular degeneration 51 (23.72%); macular scar 14 (6.51%); macular haemorrhage 9 (4.19%) and macular pigmentation 34 (15.81%). All macular changes are found more in higher myopia group than lower myopia group. Macular degeneration is 84.31%, macular scar is 85.71%, macular haemorrhage is 88.89% and macular pigmentation is 85.29% found in higher myopia group.

Jorge L Alioa et al., [1951] concluded that LASIK For myopia of up to -10 D and over – 10 D is a safe procedure with myopic regression that slows down with time and a high rate of Best spectacle-corrected visual acuity (BSCVA) increase in the long-term. In present study mean refractive error is -6.89 diopter. Myopia equal and higher than -6.89 diopter is found 76 (35.35%) cases and myopia lower than -6.89 diopter is found 139 (64.65%) cases in present study.

Antonio Leccisotti et al., [1961] concluded, Angle-supported IOLs (Intraocular lens) can effectively correct high myopia, although residual refractive errors may require secondary procedures. In present study mean refractive error is -6.89 diopter and higher myopia group equal and higher than -6.89 diopter is found in 76 (35.35%) participants out of total 215 myopia cases.

Andrew Ewen, Kristine E. Lee, B.E.K. Klein; and Ronald Klein [1971] observed that measurement of optic disk & cup diameter taken from nonstereoscopic digital images through a dilated pupil were similar to those taken from stereoscopic film images. Lack of stereoscopic effect may lead to small differences in measuring the optic disk and cup diameters. They had noted advantages of digital imaging over film based imaging:

(a) The photographs are provided with nearly immediate feedback.
(b) Low illumination of the fundus can often be immediately observed and illumination readjusted to attempt to improve the image.
(c) Digitally captured images can be sent electronically to clinicians or to reading centers for grading.
(d) Images can be cataloged and tracked more efficiently.

Present study is done by digital imaging, fundus photography after full dilatation of pupil. All advantages noted above are confirmed during the study period.

Discussion
S S Sandhu and S J Talks [199] found that OCT is good at detecting the presence of CNV in patients suspected of having new CNV. However, it is less accurate at identifying the exact components of CNV. OCT cannot at present replace FFA in accurately diagnosing CNV components. However, this imaging method may have a role as a screening tool to help prioritise FFA requests.

Present study is done by fundus photography. In present study other chorioretinal changes observed are neovascularisation, paramacular haemorrhage, paramacular scar, degeneration inferior to disc and haemorrhage near disc. Other chorioretinal findings found are 8 (11.27%) out of 71 total cases of gross chorioretinal findings. In present study they are found more (75%) in higher myopia group (equal and higher than -6.89 diopter).

Garcia-Layana A et al., [200] noted, OCT appears to be useful for indicating CNV activity. Therefore, it may serve as a complementary technique for deciding the need for PDT and re-treatment in patients with pathological myopia.

In present study fundus photography is found useful technique for detecting early myopic changes. So changes can be treated earlier and person can go for early surgical treatment. Thus fundus photography is found useful procedure before any treatment or surgery. It is helpful for detecting different changes in myopia, such as optic disc size, finding different types of crescents, different macular changes, finding of staphyloma, tessellations, finding of different chorioretinal changes such as macular hole, angioid streaks, choroidal neovascularisation etc.

Agnis Glacet-Bernard et al., [201] noted that OCT can show various aspects of stage 3 macular holes. Present study is done by fundus photography, macular hole is found in 2 cases. All 2 cases of macular holes are found in lower myopia group but in higher age group.

Mrugacz M et al., [202] noted that optical coherence tomography can be employed to assess the retinal thickness and thus facilitate the detection of the evolution of alterations in myopia. Present study is done by fundus photography. Chorioretinal changes are found in 59 (27.44%) cases out of total 215 myopic cases. These changes are found more 50 (84.75%) in higher myopia group. Thus fundus photography is useful for the detection of chorioretinal changes and comparing their presence and absence in different myopia group.

Menchini U et al., [204] found that macular retinoschisis with stellate foveal appearance may rarely be associated with pathologic myopia. OCT was useful to establish the true extension of these macular changes.

In present study foveal reflex is found dull, 80 (37.21%) and normal, 135 (62.79%). Dull foveal reflex is found more (81.25%) in higher myopia group and normal foveal reflex is found more (91.85%) in lower myopia group. In present study dull foveal reflex is found more (77.50%) in higher age group and normal foveal reflex is found more (81.48%) in lower age group. Thus fundus photography is found useful technique for detection of foveal reflexes and comparing it with myopia and age.

Discussion
Pollack AL and Brodie SE [205] estimated the rate of detection through routine dilated fundus examination of clinically significant fundus lesions in asymptomatic patients at 2.73%. Present study is done by fundus photography, found different fundus changes in 215 cases of myopia. Different fundus changes include optic disc size, crescents and macular changes: degeneration, scar, haemorrhage, pigmentation, posterior staphyloma, and different chorioretinal findings in present study.

Yaniv Barkana, Noga Harizman, Yariv Gerber, Jaffrey M. Liebemann and Robert Rithch [198] observed a large range of differences in estimating disk size with Heidelberg retinal Tomography (HRT), optical coherence Tomography (OCT) and fundoscopy. This precludes interchangeable use of these measurements in clinical practice, and does not allow simple conversion formulas to be proposed. i.e. Estimation of both absolute and relative disk size can only be defined separately for each measurement modality.

In present study fundus photographs are used to find out optic disc size and it is compared with different degree of myopia and with different age group. Optic disc size is found very large, 7.44%; large 33.49% and normal 59.07%. All cases of very large disc diameter is found in higher myopia group and large disc diameter found more (68.06%) in higher myopia group and normal disc diameter found more (91.34%) in lower myopia group. Very large (56.25%) and large disc (68.06%) diameter are found more in higher age group and normal disc diameter is found more (77.17%) in lower age group.

Weiss AH [203] noted that clinical conditions associated with unilateral high myopia can be identified in the majority of patients and often account for the associated visual impairment. 45 (94%) of the 48 patients had unilateral axial myopia. In present study uniocular myopia found is 35 (16.28%). Uniocular high myopia, equal and higher than -6.89 diopter found is 18 (51.43%). Uniocular myopia in lower than -6.89 diopter group is 17 (48.57%).

Yoshinori Oie and Kazuyuki Emi et al., [167] observed that the probability of the fellow eyes with high myopia developing MHRD (Macular Hole resulted Retinal Detachment) was significantly higher than that of eyes without high myopia, which indicates that the fellow eyes should be examined and followed carefully. The incidence of MHRD among the highly myopic fellow eye was 12.8%. The average interval was 51 months. The Kaplan-Meier estimated probability of the fellow eye developing MHRD was 3.7% at 18 months and 8.0% at five years.

In present study unilateral myopia found is 35 (16.28%). It is found more (51.43%) in higher myopia group, equal and higher than -6.89 diopter. In myopia lower than -6.89 diopter, unilateral myopia found is 48.57%. Unilateral myopia found more (65.71%) in higher age group, age equal and higher than 32 years. It is found 34.29% in age lower than 32 years. Probability of the fellow eyes with high myopia developing Macular Hole resulted Retinal Detachment is higher than that of eyes without high myopia. So, fellow eyes in high myopia should be examined and followed carefully.

Discussion

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