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### RESEARCH ARTICLE

#### AWARENESS OF GLAUCOMA AMONG RISK GROUP PATIENTS IN GEORGIA

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#### Abstract

**Objectives:** This study aimed to estimate awareness of Glaucoma among risk group patients in the outpatient settings of Tbilisi (capital of Georgia).

**Methods:** To assess general, basic knowledge about glaucoma through direct interviewing of patients, 224 respondents in risk groups for developing Glaucoma were studied using the awareness questionnaire provided by the American National Eye Institute (NEI).

**Results:** The total awareness score for the entire group was 3.7, corresponding to a low awareness level. The study results show that the recognition rate does not differ by gender; the mean score in females was  $3.9 \pm 1.6$ , and in males -  $3.5 \pm 1.8$ . The study results show that the level of awareness varies significantly depending on the level of education. The very low awareness rate is significantly high among individuals with secondary education. However, no significant differences between the groups were observed in the responses to individual questions.

**Conclusions:** Individuals with a high-risk factor for Glaucoma and people with a family history of Glaucoma should be educated about it and screened for it as early as possible. Glaucoma awareness needs to be raised. Public awareness campaigns, whether seminars, flyers, websites, or posters, can reach the public and show them the importance of early diagnosis and treatment to prevent blindness from glaucoma.

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#### Introduction:-

Glaucoma is the leading cause of irreversible blindness worldwide and is associated with a reduced quality of life. The patients with arterial hypertension, diabetes, family history, and age 60+ are at an increased risk of glaucoma. Glaucoma is a chronic, multiphase eye disease characterized by constant or periodic increases in intraocular pressure and changes in the field of vision (Thomas, Hodge, 2015).

Glaucoma is a significant, chronic, multifocal eye disease characterized by constant or periodic increase of intraocular pressure characteristic changes in the vision field. Typically, glaucoma remains asymptomatic until very severe. During glaucoma, damage to the optic disc and retinal ganglion cells, characteristic of glaucoma, develops - glaucomatous optic neuropathy. These changes lead to vision loss and even complete blindness (Mahabadi et al., 2022).

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Despite modern advances in medicine, Glaucoma remains a significant public health problem worldwide.

January is a Month of the National Glaucoma Awareness. The aim of awareness is the mediation to reduce the number of individuals with glaucoma-induced blindness. The main cause of 12% of all blindness cases in the United States alone was glaucoma (Grin Eye Care, 2023).

Glaucoma is a disease that causes damage of the optic nerve and remains a significant public health problem worldwide, according to Belete's 2022 article. Late detection of the disease is the leading risk factor for blindness caused by Glaucoma (Belete et al., 2022).

A large body of evidence indicates that delayed diagnosis of Glaucoma is a significant risk factor for blindness. Blindness is also associated with low rates of awareness of the disease.

Patient awareness and awareness-raising project is an essential part of the global fight strategy against blindness (Becerril-Ledezma et al., 2022). This study aimed to estimate awareness of Glaucoma among risk group patients in the outpatient settings of Tbilisi (capital of Georgia).

### Methods:-

Our study was conducted regarding the awareness of glaucoma in Georgia; the study was conducted in two outpatient settings of Tbilisi through direct interviewing of patients. The study aimed to determine the extent to which patients in glaucoma risk groups have information about Glaucoma. Participation in the study was voluntary and anonymous. To assess general, basic knowledge about Glaucoma the selected tool for interviewing the patients was a questionnaire provided by the American National Eye Institute (NEI).

### Eye Q test

The NEHEP Eye Q test was developed as a public health tool to assess knowledge in patients at risk for Glaucoma. The questionnaire consists of 10 questions and selectable answers, such as "true," "false," or "do not know." From this questionnaire, we used 9 in our study based on relevance.

After we received a positive response from the National Eye Institute (NEI) regarding the right to use the mentioned questionnaire, we started the research.

### Awareness of Glaucoma research

Selection for participation in the study was made taking into account risk factors: patients in the risk group with a history of arterial hypertension and/or diabetes mellitus and/or had a family history of Glaucoma and/or age 60+. In total, 224 respondents were interviewed using the awareness questionnaire. The research participants were interviewed in two medical institutions in Tbilisi. Evex and Medcapital outpatient settings participated in the survey.

### Results and Discussions:-

70.5% (158) of the participants in the study were female, and 29.5% (66) were male. Representative 13.4% (31) of the research participants were respondents aged <50. 3.6% (7) patients were in the 51-55 age group, 1.8% (4) were in the 56-60 age group, and 81.3% (182) respondents were in the 60+ age group. 93.8% (210) of the respondents were residents of Tbilisi, and 6.2% (14) were from the regions of Georgia. 79.0% (177) of the respondents had higher education, and 21% (47) had secondary education.

72.3% (162) of the respondents were married, 4.5% (10) were getting married, 5.8% (13) were single, 1.3% (3) were divorced, and 16.1% (36) were widowed. 73.7% (165) of the interviewed persons were employed, and 26.3% (59) were unemployed. According to the risk factors for the development of Glaucoma, 34.8% (78) had arterial hypertension, 13.4% (30) family history, 26.3% (59) diabetes mellitus, and 81.3% (182) respondents were in the 60+ risk group.

**Table 1:-** The distribution of the answers to glaucoma awareness questions.

Questions	False: 0 point		True: 1 point	
	n	%	n	%
Q1: Glaucoma tends to run in families	163	63.8	81	36.2

Q2: A person can have glaucoma and not know it	96	42.9	128	57.1
Q3: People over age 60 are more likely to get glaucoma	72	32.1	152	67.9
Q4: Eye pain is often a symptom of glaucoma	195	87.1	29	12.9
Q5: Glaucoma can be controlled	60	26.8	164	73.2
Q6: Glaucoma is caused by increased eye pressure	211	94.2	13	5.8
Q7: Vision lost from glaucoma can be restored	125	55.8	99	44.2
Q8: A complete glaucoma exam consists only of measuring eye pressure	147	65.6	77	34.4
Q9: People at risk for glaucoma should have an eye examination through dilated pupils	128	57.1	96	42.9

The familiarity average score for the entire group was 3.7 points, ranging from 0 to 9 points. The median score was 4.0 points, and the mode, that is, what is found most often, was 4.0 points. The results of the respondents were divided into four parts (quartiles). Quartile 1 - 0-2 points, which corresponds to a very low degree of awareness. Quartile 2 corresponded to 3-4 points, a low degree of awareness. Quartile 3 - 5-7 points corresponded to an average degree of awareness. , and the last Quartile, 4 - 8-9 points corresponded to a high level of familiarity.

According to gender, the mean score for females is  $3.9 \pm 1.6$ , and for males,  $3.5 \pm 1.8$ . In the case of females, deficient awareness was recorded for 38 interviewed persons (17.0%), low awareness for 62 interviewed female persons (27.7%), medium awareness for 56 interviewed persons (25.0%), and high awareness for two persons (0.9%). In the case of males, deficient awareness was observed in 20 respondents (30.3%), low awareness in 25 female respondents (37.9%), medium awareness in 21 respondents (31.8%), and high awareness in none of the male respondents.

The study results show that the recognition rate does not differ by gender. According to gender, almost the same high level of awareness is recorded on the 3rd question: Is glaucoma more common in older people of 60 years of age? 69.0% for females and 65.0% for males. There is also a high awareness of the 5th question: Can Glaucoma be controlled? 74.7% of females and 69.7% of males answered correctly.

Moreover, sharply low awareness is recorded in both sessions equally on question 6: Does an increase in eye pressure cause glaucoma? 5.1% of female respondents and 7.6% of male respondents answered correctly.

According to the level of education, the average number of points in the case of secondary education was  $3.2 \pm 1.7$ , and in the case of higher education -  $3.9 \pm 1.7$ . ( $p = 0.009$ ) 42.6% of persons with secondary education had a very low level of awareness, (20) 31.9% of persons (15) had low awareness, 25.5% of interviewed persons (12) had average awareness, and no person with secondary education had high awareness. As for the interviewed persons with higher education, 21.5% of respondents (38) had deficient awareness, 40.7% of respondents (72) had low awareness, 36.7% (65) had average awareness, and 1.1% (2) of people with higher education had high awareness.

The study results show that the level of awareness varies significantly depending on the level of education. The very low awareness rate is significantly high among individuals with secondary education. However, no significant differences between the groups were observed in the responses to individual questions.

Regardless of the level of education, to the 4th question: Is eye pain often a symptom of Glaucoma? Low awareness was observed in both groups; 13.0% of respondents with higher education recorded a low answer, and 12.8% of respondents with secondary education recorded a correct answer. To the 7th question: Is it possible to recover vision lost due to Glaucoma? 38.3% of the respondents with secondary education gave the correct answer, while 45.8% with higher education showed high awareness. Also, to the second question: - Is it possible for a person to have Glaucoma and not know about it? 60.5% of higher-education respondents stated the correct answer, and 44.7% with secondary education.

According to the marital status, the following result of the points indicators was recorded: the general rate of married patients was  $3.8 \pm 1.7$ . Other -  $3.6 \pm 1.7$ .

24.7% of the married interviewees had a very low awareness rate (40). 38.9% (63) low rate of awareness. Among the interviewed persons, 35.2% (57) are married, and 1.2% (2) are highly aware of Glaucoma. 29.0% (18) of the respondents (married, single, widow) had a very low rate, 24 38.7% (24) had a low rate, 32.3% (20) had an average rate, and none of them had a high rate.

The study results show that the familiarity level does not significantly differ depending on marital status. The answers to a separate question could show no significant difference between the groups.

Separately, according to the questions, both groups report high awareness of the question - can Glaucoma be controlled? 73.5% and 72.6%. The lowest awareness is recorded on question 6: Does increased eye pressure cause glaucoma? 5.6% of married respondents and "other" (marriageable, single, widowed) 6.5%.

The study results show that the level of familiarity does not differ between groups divided by employment. The distribution of respondents according to familiarity is similar. The answers to a separate question could show no significant difference between the groups.

**Table 2:-** The analysis of questions by the employment.

Questions	False: 0 point		True: 1 point		Statistics	
	n	%	n	%	Chi2	p
Q1: Glaucoma tends to run in families	51	36.7	30	35.3	0.044	0.833
Q2: A person can have glaucoma and not know it	74	53.2	54	63.5	2.271	0.132
Q3: People over age 60 are more likely to get glaucoma	98	70.5	54	63.5	1.171	0.279
Q4: Eye pain is often a symptom of glaucoma	15	10.8	14	16.5	1.503	0.220
Q5: Glaucoma can be controlled	104	74.8	60	70.6	0.480	0.489
Q6: Glaucoma is caused by increased eye pressure	5	3.6	8	9.4	3.248	0.072
Q7: Vision lost from glaucoma can be restored	62	44.6	37	43.5	0.025	0.875
Q8: A complete glaucoma exam consists only of measuring eye pressure	50	36.0	27	31.8	0.412	0.521
Q9: People at risk for glaucoma should have an eye examination through dilated pupils	62	44.6	34	40.0	0.455	0.500

Also, in these groups, on the 6th question: Does an increase in eye pressure cause glaucoma? A low rate is recorded: 9.4% of employed respondents give the correct answer, and 3.6% of non-employed respondents give the correct answer.

Also, in the case of the 4th question, awareness is low, almost equally; in the case of employed respondents, 16.5%, and in the case of non-employed respondents, 10.8% gave the correct answer. Moreover, relatively high awareness is fixed on questions 5 and 3 (Table 2).

Finally, in order to study the joint influence of many factors on the awareness index, a multiple regression analysis was conducted, in the model of which the outcome was the awareness score assessed by the questionnaire and the role of independent variables (risk factors and confounding factors) was age, gender, level of education, marital status, employment. , glaucoma risk factors - age 60+, arterial hypertension, family history, diabetes, and their total number. By stepwise method (exclusion of the most implausible variable for each BJ) as a result of regression, we found the following as significant risk factors: level of education, presence of arterial hypertension, presence of diabetes mellitus, and number of risk factors. The regression is significant (Fisher's F-test = 6.69,  $p < 0.001$ , see table). However, the association of arterial hypertension and diabetes with awareness is negative; i.e., their presence is associated with impaired awareness.

### Conclusions:-

Individuals with a high-risk factor for Glaucoma and people with a family history of Glaucoma should be educated about it and screened for it as early as possible. Glaucoma awareness needs to be raised. Public awareness campaigns, whether seminars, flyers, websites, or posters, can reach the public and show them the importance of early diagnosis and treatment to prevent blindness from glaucoma.

Since glaucoma is one of the leading causes of vision loss, it can affect many aspects. Patients' quality of life disrupts their ability to perform such daily activities as reading, walking, driving, and moving. Delayed diagnosis is associated with an increased risk of glaucoma-related disability and significantly reduced quality of life.

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