MARMARA
MEDICAL JOURNAL

Original Article

https://dergipark.org.tr/tr/pub/marumj

Glaucoma awareness in Family Health Centers

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Submitted: 10.02.2022 **Accepted:** 27.06.2022

ABSTRACT

Objective: This study aims to evaluate the glaucoma knowledge and awareness in individuals who visit to two Family Health Centers in a district of Istanbul.

Patients and Method: This descriptive study, using a three-part questionnaire consisting of 20 questions, was carried out on individuals who applied to two Family Health Centers in a district of Istanbul between May and June 2019. Data from 260 were collected through face to face interviews.

Results: A total of 44 (16.9%) participants had heard the word glaucoma before, while 179 (68.8%) said that glaucoma was treatable, 78 (30%) knew about asymptomatic course glaucoma. In addition, 47(18.1%) believed that eyes with glaucoma could not be operated, 152 (58.5%) thought that blindness resulting from glaucoma was reversible. Interestingly, 167(68.7%) participants thought that routine ophthalmologic visits should be done at least once a year, whereas 222 (86.9%) consulted an ophthalmologist less than 10 times in their lifetime.

Conclusion: There was no statistically significant difference between individuals with family members that have glaucoma and those that do not, when asked about glaucoma being asymptomatic, the preventability of blindness and whether or not they have heard of glaucoma before. The study findings stress the need to spread awareness about glaucoma for prevention of glaucoma related blindness.

Keywords: Awareness, Glaucoma, Knowledge

1. INTRODUCTION

Glaucoma is a chronic and progressive optic neuropathy that frequently presents with elevated intraocular pressure and results in visual field defects [1, 2]. Glaucoma, a possible cause of irreversible blindness, affects approximately six million people worldwide [3]. With the increase of life expectancy in recent years, the prevalence of glaucoma is predicted to increase. Visual loss associated with glaucoma is preventable if it is diagnosed early and properly treated. In the condition of glaucoma having an early, subtle clinical course, diagnosis in early phase and optimum treatment are often difficult. Therefore, glaucoma mostly remains either undiagnosed or undertreated [4].

There have been very few studies showing the association of late presenting glaucoma with social variables and poor awareness [5, 6]. Currently there is no feasible screening test and the only way to detect glaucoma early is to increase awareness among the population [7, 8]. Studies conducted in developing countries have highlighted the lack of this quality in public [9-11].

The prevalence can show variance among different ethnicities and different age groups. While anyone is at risk of developing glaucoma or being born with glaucoma, the population group older than 40 carries the highest risk. It is shown that overall 3,54% of people aged 40-80 years old are having glaucoma [12]. Despite these facts, US Preventive Services Task Force (USPSTF) did not reach the conclusion that wide screening among general population for glaucoma was evidently necessary [13] but this decision was regarded as debatable since it was planned only for primary care services, but not ophthalmology departments. However, American Academy of Ophtalmology guidelines stated that glaucoma screening may be beneficial among the high risk populations like African Americans or Hispanic communities [14].

Glaucoma is a prominent cause of blindness in Turkey. In a study done by Karahan et al. (2021), among 340 bilaterally blind patients, glaucoma was the cause in 9.6% [15]. Glaucoma

How to cite this article: Demiroz Sancaktar M, Hidiroglu S, Oraovcanin D, et al. Glaucoma awareness in Family Health Centers. Marmara Med J 2023: 36(1):46-51. doi: 10.5472/marumj.1244706

ISSN: 1309-9469

http://doi.org/10.5472/marumj.1244706
Marmara Med J 2023;36(1): 46-51

is a preventable cause of blindness, thus it should be prevented through increased awareness and screening, since late presentation leads to blindness [16].

The present study is focusing on this group of population, while questioning how much the respondents know about the disease and its deceptive course; it is also designed to check on their health-seeking behaviour in the ophthalmologic field.

2. PATIENTS and METHODS

The study was designed as a descriptive study. The study was approved by a public university ethics committee (approval number; 09.2019.418) and adhered to the principles of the Helsinki declaration. This descriptive study, using a questionnaire comprised of 3 parts and 20 questions, was conducted at the individuals applying to two Family Health Centers in a county of Istanbul, between May 20, 2019 and June 30, 2019. Patients and their intimates were informed about the study, and those volunteered to participate in the study were enrolled in the study after their verbal approvals were obtained.

The questionnaire was designed using some questions taken from the studies of Rewri et al., (2014) [7], Gyawali et al., [17] and Çelebi et al., (2018) [18].

The questionnaire was formed and translated to Turkish [7, 17, 18]. The researchers live in Istanbul, Turkey. Since they knew the culture of that region well and had done awareness studies in that community before, they searched the literature and added questions suitable for the public. As public health experts working in the region, we shaped the questions according to the culture of that region. The study was conducted in Pendik, Istanbul by 2 study coordinators and 4 trained interviewers for data gathering. The data gathering team was divided into two groups, each group going to a different family health center (2 centers in total). This translated version was applied to 260 patients or their attendant(s) aged 40 years and older, coming to the forementioned health centers. Data were gathered during face-to-face interviews.

The questionnaire, which was applied through face to face interview method, had three sections: The first section pertaining to information about the patient's demographic characteristics (age, gender, occupation) and any screening undertaken by the participants as well as their attitudes towards the screening of newborns and school aged children. This information was used to assess the practice pattern, defined as activity undertaken to protect oneself from the disease. Section two, pertained to the patient's awareness and knowledge about glaucoma, through 25 questions (nine questions evaluating their awareness and sixteen assessing their knowledge). Each question had three options (yes, no, I do not know), and according to the respondent's answer, interviewer was to tick (√) the response of their choice. Questions asked to assess knowledge required information and understanding of the subject gained through some source or learning, unlike the questions assessing awareness, which merely required information, without the need of understanding. They included questions regarding the symptoms of glaucoma, its treatment options, nature of the disease, type of visual impairments in glaucoma and risk factors for glaucoma. The third section had six questions dealing with the source of information about glaucoma and the participants' glaucoma status and treatment modality. Reading assistance to the illiterate participants, as well as explanations, were provided to the participants by the researchers when necessary; taking maximum care not to influence their response. An evaluation which encompasses several comparisons between the demographic variables, answers to the questionnaire and scale were carried out to understand the behavioral tendencies of the public in this matter.

Statistical Analysis

The chi-square test was used to evaluate associations between knowledge/awareness of glaucoma and the individual characteristics of the study subjects, including age, gender, glaucoma status and presence of a diagnosed glaucoma patient in their surroundings as well as their occupation. P values <0.05 were considered statistically significant.

3. RESULTS

A total of 260 enrolled participants from the two family health centers undertook the survey. Responses from all were analyzed. Table I shows the demographic characteristics of participants. The mean age (SD) was 51.81 (9.839) (age range 40-89) years. Females constituted the majority (%63.5) of the participants. In addition, 20 (%7.7) of the participants were healthcare workers.

Table I. *Characteristics of the study population*

		n	%
Age	**Mean ± Standard deviation**	51.81 ± 9.839	
	40-59	208	80
	≥60	52	20
Gender	**Female**	165	63.5
	Male	95	36.5
Occupation*	**Health worker**	20	7.7
2 missing	**Non health worker**	238	91.5
**These data contain some missing data.*			

Table II illustrates participant's awareness and knowledge about glaucoma. 18 participants had been previously diagnosed with glaucoma, 44 had a family member that was diagnosed glaucoma and 74 knew someone that was diagnosed with glaucoma. A total of 44 (16.9%) participants have heard the word "glaucoma" before. The questionnaire continued by mentioning eye pressure with those who did not hear the word glaucoma. While 179 (68.8%) of the participants said that glaucoma was treatable, 47 (18.1%) believed that eyes with glaucoma could not be operated. A total of 107 (41.2%) participants understood the risk of familial predisposition to glaucoma and 78 (30%) of respondents knew about the asymptomatic course glaucoma. Awareness about the irreversible nature of vision loss in glaucoma was noted in 152 (58.5%) responses. Furthermore, 29 (11.2%) of the respondents believed that glaucoma resulted from

http://doi.org/10.5472/marumj.1244706
Marmara Med J 2023;36(1): 46-51

mature cataracts. Interestingly, 167 (68.7%) participants think that routine ophthalmological visits should be done at least once per year, however, 222 (86.9%) have seen an ophthalmologist less than 10 times during their lifetime, 21 (8.1%) have never consulted an ophthalmologist during their lifetime.

Source of information about glaucoma was also queried during the survey. When the source of information was questioned, 72 (27.7%) respondents received their glaucoma information from the media (newpapers, television, radio, internet), 53 (20.4%) received information from visiting hospitals, medical personnel or other health care resources. The largest source of information was "word of mouth" from family or friends, 98 (37.7%) respondents and 37 (14.2%) did not specify any source of information.

Table II. *Glaucoma awareness and knowledge (n=260)*

		n	%
Have you ever heard of the word glaucoma before?*	**Yes**	44	16.9
	No	215	82.7
If left untreated is the result in blindness reversible?	**Yes**	152	58.5
	No	7	2.7
	I do not know	101	38.8
Is glaucoma treatable?*	**Yes**	179	68.8
	No	18	6.9
	I do not know	60	23.1
Is blindness preventable?*	**Yes**	118	45.4
	No	26	10
	I do not know	116	46.6
Have you ever been to the ophthalmolo gist?*	**Yes**	227	87.3
	No	30	11.5
Why did you go to the ophthalmologist?*	**Near/far sightedness**	131	50.4
	Burning/redness/foreign body	34	13.1
	Blurred vision	20	7.7
	Other	49	18.8
Where did you get your glaucoma information?*	**Television/Radio/ Newspaper/Internet**	72	27.7
	Hospital/Family Doctor	53	20.4
	Family/Relative/Friend	98	37.7

**These data contain some missing data.*

Table III illustrates comparison between demographic variables with whether the participants had ever heard the word glaucoma. There was a statistically significant difference between glaucomatous and non-glaucomatous participants with regards to having heard of glaucoma before and knowing that it is an asymptomatic disease (p= 0.005, p=0.000 relatively). However, there was no statistically significant difference when preventable blindness was queried. Additionally, there was a statistically significant difference between people that knew of glaucomatous individuals and people that did not when asked if they have heard the term glaucoma before (p<0.05). The knowledge about the existence of glaucoma increases with age. Over 60 years of age, significantly more participants knew about the word (p<0.05). When asked if it was an asymptomatic disease and if the resulting blindness was preventable, the results were statistically insignificant (p>0.05). In addition, there was no statistical significance found between individuals with family members that have glaucoma and those that do not when asked about glaucoma being asymptomatic, the preventability of blindness and whether or not they have heard of glaucoma before (p>0.05), as shown in tables III, IV and V. There was no statistically significant difference found between genders with regards to glaucoma knowledge and awareness (p>0.05). There was no statistically significant difference found between health care workers and non-health care workers with regards to glaucoma knowledge and awareness (p>0.05).

Table III. *Associations between individual characteristics and hearing the word 'glaucoma' before*

		Have you ever heard the word 'glaucoma' before?				p Value*
		Yes		No		
		n	%	n	%	
Gender	**Female**	33	20.1	131	79.9	0.078
	Male	11	11.6	84	88.4	
Age	**40-59**	29	14.0	178	86.0	0.011
	≥ 60	15	28.8	37	71.2	
Glaucomatous	**Yes**	8	44.4	10	55.6	0.001
	No	34	14.4	202	85.6	
Healthcare worker	**Yes**	7	35.0	13	65.0	0.023
	No	36	15.2	201	84.8	
Know someone with glaucoma	**Yes**	20	27.0	54	73.0	0.009
	No	24	13.3	156	86.7	
Having a relative with glaucoma	**Yes**	11	25.0	33	75.0	0.127
	No	33	15.5	180	84.5	

** p<0.05 statistically significant. Categorical variables are reported n (%).*

Table IV. *Associations between individual characteristics and knowledge about symptom status in glaucoma*

		Is glaucoma asymptomatic?						P Value*
		Yes		No		I do not know		
		n	%	n	%	n	%	
Gender	**Female**	51	31.1	53	32.3	60	36.6	
	Male	27	28.4	36	37.9	32	33.7	
Age	**40-59**	61	29.5	70	33.8	76	36.7	0.724
	≥ 60	17	32.7	19	36.5	16	30.8	
Glaucomatous	**Yes**	13	72.2	2	11.1	3	16.7	
	No	63	26.7	86	36.4	87	36.9	
Healthcare worker	**Yes**	5	25.0	10	50.0	5	25.0	0.316
	No	73	30.8	79	33.3	85	35.9	
Know someone with glaucoma	**Yes**	26	35.1	25	33.8	23	31.1	0.424
	No	49	27.2	64	35.6	67	37.2	
Having a relative with glaucoma	**Yes**	17	38.6	9	20.5	18	40.9	0.097
	No	60	28.2	79	37.1	74	34.7	

** p<0.05 statistically significant. Categorical variables are reported n (%).*

http://doi.org/10.5472/marumj.1244706
Marmara Med J 2023;36(1): 46-51

Table V. *Associations between individual characteristics and knowledge about blindness in glaucoma*

		Is the blindness preventable in glaucoma?						P Value*
		Yes		No		I do not know		
		n	%	n	%	n	%	
Gender	**Female**	68	41.2	17	10.3	80	48.5	0.078
	Male	50	52.6	9	9.5	36	37.9	
Age	**40-59**	91	43.8	18	8.7	99	47.6	0.102
	≥ 60	27	51.9	8	15.4	17	32.7	
Glaucomatous	**Yes**	11	61.1	2	11.1	5	27.8	
	No	106	44.7	24	10.1	107	45.1	
Healthcare worker	**Yes**	9	45.0	2	10.0	9	45.0	0.999
	No	108	45.4	24	10.1	106	44.5	
Know someone with glaucoma	**Yes**	38	51.4	11	14.9	25	33.8	0.045
	No	76	42.0	15	8.3	90	49.7	
Having a relative with glaucoma	**Yes**	25	56.8	4	9.1	15	34.1	0.212
	No	91	42.5	22	10.3	101	47.2	

** p <0.05 statistically significant. Categorical variables are reported n (%).*

4. DISCUSSION

The study assesses the awareness and knowledge about glaucoma among people visiting their family physicians at the two family health centers in question. The intent of this study was to evaluate how much the participants knew about the disease and its subtle clinical course while also checking on their health-seeking behavior in the ophthalmologic field. Low levels of awareness and knowledge of glaucoma highlight the need for public education regarding this disease. The focus in this study was not on to evaluate the anatomical, physiological and technical aspect of the term "glaucoma". In fact, the word glaucoma was only used in the third question to ask the participants if they have ever heard about it but only 16.9% responded as yes. The responders who depicted that they have not heard about glaucoma, were not stopped from continuing the survey. For this reason, the local term "göz tansiyonu (eye tension in English)" was used in the rest of the survey. Since 80% of the population was found to be between 40 and 59 years old and only 20% was over 60 years old, the awareness and knowledge of this two age groups were not statistically suitable to compare. Even though this seems as a limitation of our study in terms of age comparison, in a study similar to this one which was conducted in India, there was no relationship found between age and glaucoma awareness [7]. Also, our study did not find any statistically significant difference between genders in glaucoma knowledge or awareness. This finding was consistent with the results of a study done in Acıbadem Hospital, in Istanbul [2].

In a study conducted with 502 participants in Switzerland on glaucoma awareness, it was found that 383 (76%) did not know the term "glaucoma" at all, and only 123 (24.7%) could define "glaucoma" as an eye disease [19]. In another glaucoma awareness study conducted with 340 people participating in ophthalmic examination social assistance services in Ethiopia, only 8 people had information about glaucoma [11]. In other studies previously published studies on glaucoma knowledge, it is estimated that 29% [12] to 59% [20]. In this aspect, our study population showed comparable but far from adequate knowledge and awareness about this disease. In general, less than one third (30%) of the responders knew about the asymptomatic course of glaucoma which is thrice the value (10%) found in a research done in China [3]. Lack of awareness could often lead to under-diagnosis and late presentation, as noted in several previous studies [4, 5] and therefore, adversely affected the eye care–seeking behavior [5]. Awareness about the irreversible nature of the vision loss was more than expected as 58.5% of the participants knew about it. In contrast, as a result of a research in Southwestern Ethiopia only 12.5% of the responders knew that blindness due to glaucoma was irreversible [6]. Knowledge about these two aspects of the disease, the subtle clinical course and the irreversible but preventable vision loss, was thought to be the main determinant of people's attitude and concern about glaucoma. In this study the awareness of the participants about the disease was evaluated with twelve questions (two from the first part, nine from the second part and one from the third part of the questionnaire) and knowledge regarding the condition was assessed through the remaining 16 questions in the second part. While comparing certain groups in the study three main questions were selected which were asking the participants if they have ever heard about glaucoma, if the disease has an asymptomatic nature and if the blindness caused by it can be prevented. The main groups of people whose responses were analyzed further and included in a comparison were the glaucomatous or non-glaucomatous participants, the ones who had a positive or negative family history of the diseases, the ones who knew or did not know of someone with glaucoma, females or males and health care workers or others. There was a statistically significant difference between glaucomatous and non-glaucomatous participants with regards to having heard of glaucoma before and knowing that it is an asymptomatic disease which was hypothesized. However, there was no significant difference when preventable blindness was asked to these two groups. So, even though people were diagnosed with the disease, they did not know about the possibility of an effective screening. And it was found that the awareness among people who had a close acquaintance with glaucoma was higher but these people did not know better about the asymptomatic nature and preventable effects of the disease. Interestingly, responders with a positive family history did not show a higher level of awareness of glaucoma. This could be due to the fact that even though people have not heard the term glaucoma they knew about it as "göz tansiyonu". Even if there were discrepancies regarding the terminology, it was found that all participants from different comparison groups did not know if glaucoma was an asymptomatic disease and if the resulting blindness was preventable. Finally, there was no statistically significant difference between health workers and people from other professions regarding the main points touched above.

Through the questions in the first part of the survey attendants" attitude towards screening and their behavior were assessed and it was found out that 68.7% of them had the idea that routine ophthalmological visits should be at least once a year. In contrast, 86.9% of them had seen an ophthalmologist less than 10 times in their lives. Respondents' largest source of information was found to be "word of mouth" from family and friends which was the same case for many other studies [7-10]. This information points out to two facts, first the potential benefit that could be accrued from using glaucoma patients as a source of awareness to society and second the need for health care workers, health-related agencies and media to be more involved with the burning issue. World glaucoma day is March 12th. There could be workshops during that period or posters and pamphlets being handed out at various health care centers around the country as well as small advertisements on the radio or television to help spread awareness to the population most at risk.

There are studies that show that low blood pressure glaucoma is more common in patients with migraine [21-23]. Primary care physicians can be educated about glaucoma and risk factors, and patients with family history of glaucoma and migraine can be referred to early diagnosis. It is also crucial for family physician to ask patients over the age of 40 whether they had their eye pressure measured before. Because the population over the age of 40 will consider the family physician's recommendation as they feel close to them. One of the strong features of our study is that it was conducted in primary care since the prevalence of glaucoma increases over the age of 40 and the average age of the population applying to primary care is high. This can be seen as missed opportunities from a public health perspective. By placing tonometer devices in primary health care centers, eye pressure can be scanned for the population coming there.

When asked if the glaucoma was treatable, approximately 68% of our study population gave the answer "yes" to the question. In a study made by Manhas et al. (2019) the answer "yes" was nearly 30% and 53% of the population gave the answer "I do not know" (sample size=230). The percentage of the population who was aware of a disease called glaucoma, the percentages were 16,9% in our population and 26.1% in Indian population. In the evaluation of the speculation of this information, even though the awareness of the disease in the public were more in Indian study, knowledge of whether it is a treatable illness showed more than two fold increase in our population. When it is asked "is blindness preventable with the treatment of glaucoma", 45% of our study population said "yes", yet this percentage was 20% in the Indian population [24]. Lastly, when it is asked "if left untreated is the result in blindness reversible?" the answer "yes" hold a remarkable percentage of 59% in our population. This brings up the question: Is the global intercommunication causing partial and/or misinformation about these prevalent disorders? We think that simplified but fact checked scientific information should be given to public to prevent misinformation, because in this state, only knowing what is glaucoma is not enough to prevent its consequences, but knowing its irreversible complications is needed to avoid a potential underestimation among public.

There are some limitations that should be taken into consideration. The descriptive nature of the study is a limitation. Interviewer bias could not be completely eliminated as an individual's expression, and style of explanation may affect the response of the participant. The initial intent was to have the participants fill out the questionnaires on their own while providing assistance when needed, however there was a lack of willingness to participate which resulted in them having to be interviewed. Since presbyopia starts over the age of 40 and therefore the participants may not be able to see close by without glasses, they may have been reluctant to answer the questionnaire themselves. The participants of the survey were individuals who were visiting the family health centers instead of a more random sample of the population and as a result of this, there may have been a higher prevalence of illnesses that affect the eye. This may lead to a difference in behaviour, knowledge and beliefs when it comes to glaucoma and visits to the ophthalmologist and may be seen as selection bias. Finally, as we mentioned, it is both an advantage and a disadvantage that the study is conducted in a primary health care center. Since, our study was conducted with people who came to the health institution at that time, it does not reflect the whole society. But we can comment that even among people who are conscious enough to apply to a health institution, if the awareness is this low, it will be much lower in the general society.

Compliance with Ethical Standards

Ethical Approval: This study was approved by the Marmara University, School of Medicine Clinical Research Ethics Committee (approval number; 09.2019.418). The study adhered to the principles of the Helsinki declaration.

Financial Support: This manuscript did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. Authors contributing to this study claim they did not get any funding or help from any other organization.

Conflict of Interest: The authors have stated explicitly that there are no conflicts of interest in connection with this article.

Authors' contributions: MSD: Writing and editing, SH: Study coordinator, editing, DO, MA, ACS and SK: Data gathering, AS: Aanalysis and editing, MK, Study coordinator, editing. All authors approved the final manuscript.

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