LETTER TO THE EDITOR
(RESEARCH LETTER)

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Glaucoma Weeks and Glaucoma Screening/Prevention

Nedelje glaukoma i skrining/prevencija glaukoma

To the Editor:

Glaucoma is the second leading cause of blindness in the world and represents significant social and health problem [1]. Primary open angle glaucoma (POAG) is the most common type of the disease affecting more than 60 million people worldwide [2]. About 2% of population over 40 years of age has POAG, and this percentage increases to ~4% at the age of 80 years [3]. The first sign of visual loss can be detected when 35% of retinal ganglion cells have already been lost [4]. There is no available method that reliably predicts glaucoma before appearance of the disease and today it is not diagnosed at the percentage in which it is actually present in the population (about half of the individuals remain undetected until the terminal stages of the disease) [5,6]. Therefore, it is particularly important to prevent the disease, its progression and loss of vision.

According to this, 10 years ago we started the national public awareness campaign on glaucoma during the World Glaucoma Week which takes place each year in March within the period of five days. The World Glaucoma Week is a collaborative project between the World Glaucoma Association and the World Glaucoma Patient Association which contributes to the elimination of glaucoma blindness by alerting people to have regular eye checks. In Serbia, eye checks have been realized at the Clinic of Ophthalmology (its outpatient department) of the Clinical Centre Kragujevac in cooperation with the Association of the Glaucomatologists of Serbia. Within the Glaucoma Week, Glaucoma Weeks for preventing/screening glaucoma a free ophthalmic examinations are available to all interested persons. Examinations include slit-lamp examination, measurement of intraocular pressure (IOP) and evaluation of the cup/disk ratio of both eyes as well as a medical history taking. The diagnosis of glaucoma is confirmed by a glaucoma specialist based on the findings obtained. The POAG is defined with elevated IOP and/or glaucomatous disc changes, typical glaucomatous field defects, an open iridicorneal angle and with no secondary causes. Elevated IOP with no optic disc changes and no visual field defects with open iridocorneal angle is considered as ocular hypertension. The results are considered as positive if IOP is > 21 mm Hg and the cup/disk ratio > 5. During observations, family history of glaucoma is also marked for each person.

In the period observed (2008–2017) glaucoma screening program involved 1,392 persons, predominantly women (n = 907) and adults aged 50–84 years (n = 1,030) (Table 1). The results showed that the number of people screened every year was increasing, from 79 in 2008 to 270 in 2017 (3.5-fold increase). The highest increase was observed in 2017 for men and persons aged 15–49 years.

Table 1

Number of persons by gender and age screened for glaucoma during Glaucoma Weeks in previous 10 years (2008–2017)

Year	Total persons	Gender		Age (years)	
		female	male	15–49	50–84
2008	79	52	27	10	69
2009	96	64	32	16	80
2010	101	79	22	16	85
2011	108	87	21	17	91
2012	127	99	28	23	104
2013	131	99	32	22	109
2014	140	100	40	22	118
2015	151	101	50	40	111
2016	182	103	79	49	133
2017	277	123	154	147	130
Total	1,392	907	485	362	1,030

Detailed analysis of the results obtained in last 5 years (2013–2017) showed that IOP of screened persons was between 10 and 40 mmHg. The values of IOP < 21 mmHg and c/d ratio < 0.5 were found in 662 (75.14%) persons suggesting that they had no glaucoma. The IOP greater than 21 mm Hg was measured in 163 (18.5%) patients. The IOP greater than 24 mm Hg was found in 56 (6.36%) patients. The ratio c/d ≥ 0.5 was found in 219 (24.86%) patients, while in 351 (39.84%) patients the c/d ratio was ≥ 0.7 confirming the existence of POAG (Table 2). Thus, 163 were suspected of having glaucoma and 56 patients were diagnosed with glaucoma in accordance with measured IOP. IOP values in combination with c/d ratio excluded a total of 530 screening individuals on glaucoma. The remaining 351 patients were taught about the nature of the disease and how to live with it.

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Table 2
Prevalence of normal/elevated intraocular pressure (IOP) and enlarged cupping (performance) of screened persons (n = 881) in last 5 years (2013–2017)

Paramaters	Number (%) of persons
IOP < 21 mmHg; cupping < 0.5	662 (75.14)
IOP ≥ 21 mmHg	163 (18.5)
IOP ≥ 24 mmHg	56 (6.36)
C/D ≥ 0.5	530 (60.16)
C/D ≥ 0.7	351 (39.84)
IOP ≥ 21 mmHg; cupping ≥ 0.5	219 (24.86)

C/D – cup/disk ratio.

Positive family glaucoma disease was detected in 308 (35%) screened persons (in 30 and 279 persons who belonged to younger and older group, respectively).

Statistically significantly higher number of persons with elevated IOP had positive family history of glaucoma. There was also statistically significantly higher number of patients with pathological c/d ratio of positive family history of glaucoma in relation to number of persons with lower values of IOP and normal c/d ratio and positive family history of glaucoma ($p = 0.026$; $p = 0.08$, respectively). Myopia associated with glaucoma and positive and negative family history of glaucoma was detected in 15 and 23 persons in the younger age group, respectively, while in the older group there were 37 such persons with postive family history of glaucoma and 52 persons with negative family glaucoma.

Statistically significant number of persons was presented with elevated IOP, myopia and glaucoma as well as statistically significant number of patients with pathological c/d ratio, myopia and glaucoma in relation to a number of persons with lower values IOP/normal c/d ratio, myopia and glaucoma ($p = 0.012$; $p = 0.022$, respectively).

Number of newly registered patients in an initial stage of glaucoma in relation to number of newly discovered in the terminal stage of disease significantly increased, especially in last 5 years of the Glaucioma Week program in our contry. Today, in addition to reducing number of people suffering from progressive glaucoma, number of newly discovered and controlled glaucoma increased, without rapid progression or any progression of the disease. Our glaucoma program has greatly contributed to about one half of reduction in incidence of terminal glaucoma. We want to point out that the implementation of this screening program in our country was expected to show a positive trend resulting in early detection of the disease and consenquently providing timely treatment, reduction of glaucoma progression and, finally, reduction of loss of vision in our patients.

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REFERENCES

1. *Casson RJ, Chidlow G, Wood JP, Crowston JG, Goldberg I.* Definition of glaucoma: clinical and experimental concepts. Clin Exp Ophthalmol 2012; 40(4): 341–9.
2. *Nesher R. Israel Glaucoma Screening Group*. Prevalence of increased intraocular pressure and optic disk cupping: multicenter glaucoma screening in Israel during the 2009 and 2010 World Glaucoma Weeks. Isr Med Assoc J 2014; 16(8): 483–6.
3. *Quigley HA, Browman AT*. The number of people with glaucoma worldwide in 2010 and 2020. Br J Ophthalmol 2006; 90(3): 262–7.
4. *Kerrigan-Baumrind LA, Quigley HA, Pease ME, Kerrigan DF, Mitchell RS.* Number of ganglion cells in glaucoma eyes compared with threshold visual field tests in the same persons. Invest Ophthalmol Vis Sci 2000; 41(3): 741–8.
5. *Gaton D.* Screening for Glaucoma. Isr Med Assoc J 2014; 16(8): 509–10.
6. *Leske MC, Wu SY, Hennis A, Honkanen R, Nemesure B.* BESs Study Group. Risk factors for incident open-angle glaucoma: the Barbados Eye Studies. Ophthalmology 2008; 115(1): 85–93.

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