Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2016; 4(5D):1685-1690 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2016.v04i05.047

Original Research Article

Prevalence of Visual Impairments and its related factors Among People Referred to the Eye Clinic of Ardabil Hospital in 2013

AfshinFathi[1],FirouzAmani[1],EsmaeilFarzaneh[1],GhasemFattahzadeh-ardalani[1],HabibOjaghi[1], BehnamMolaei[2], Maryam Goudarzian[3]*

[1]Faculty of Medicine, Ardabil University of Medical Science,Ardabil,Iran.
[2]Faculty of Nursing, Ardabil University of Medical Science,Ardabil,Iran.
[3]Iranian Research Center on Healthy Aging, Sabzevar University of Medical Sciences, Sabzevar, Iran.

***Corresponding author**
Maryam Goudarzian
Email: mary_ac_ir@yahoo.com

Abstract: Visual impairment is one of the health problems that its irreversible effects can be prevented through early diagnosis and appropriate treatment. The aim of this study was to investigate the prevalence of visual impairments and related factors among people referred to the eye clinic of Ardabil Hospital in 2013. In this cross-sectional, descriptive study, 129 people among those referred to the eye clinic of Alavi Hospital were selected by random sampling method. The data were collected using an author-made questionnaire consisting of three parts of demographic information, visual impairment, and underlying factors which its reliability obtained by Cronbach's alpha coefficient (0.82). Data were analyzed using statistical methods in SPSS.19. Of all people, 62 participants (48.02%) were male and 67 participants (51.9%) were female. Normal vision of the right eye, left eye, and both eyes was observed in 26.9%, 32.5%, and 40.4% of participants. Among those surveyed, 75 patients (58.1%) were suffering from some sort of visual impairments. The highest and lowest frequencies of visual impairments were related to cataract (52%) and color blindness (8%), respectively. Blurred vision, with a frequency of 52%, was one of the major causes of visual impairment among the people referred to the studied eye clinic. The impact of working activities and reading on visual impairment was 45.6% and 39.5%, respectively. Increased level of awareness and accessibility to eye care services can reduce the burden of visual impairments. Therefore, development of infrastructures, education, and promotion of education, screening, and routine and ongoing visual checkups are recommended for reducing the prevalence and complications of visual impairments and also creating self-confidence and providing social and recreational programs to the blind.
Keywords: Visual impairment; Ophthalmologic examinations; Ardabil; Cataract.

INTRODUCTION:

Sight is one of the most precious human senses that its loss is a dangerous condition that requires immediate attention. If these conditions remain untreated and last for a long time, they will seriously affect the patient's life, especially in the cases that both eyes are involved [1]. The blind cannot run their everyday life affairs and communicate with others alone and need the help of others. In other words, visual impairment causes educational and communication problems in children without rehabilitation and difficulty in work and communication in older people [2].

Visual impairment causes difficulties in personal, economic, and social life of afflicted people [3]. Demographic studies have shown that with the best corrected visual acuity (BCVA) of 20.60 or less, 85% of people aged 65 and older cannot easily read common newspapers. People with a BCVA of less than 20.100, have difficulty in face recognition. If the BCVA is 20.200, more than 50% of people in motion and more than 66% of people in doing simple everyday tasks such as dialing the phone or correct use of electricity plugs and sockets have difficulties [3].

For cognitive, political, and cultural reasons and barriers, accurate and real measurement of prevalence of eye diseases is impossible. Studies on eye diseases have shown that significant differences may exist between different races and geographical areas around the world in terms of the prevalence of eye diseases and visual impairments [4]. Despite the differences in survey methods, all researchers agree on

the prevalence of blindness, considering the factor of age (especially above 50), is higher in rural areas and among women. This may be due to the social and economic vulnerability of this these walks of life and their difficulties in getting access to health services [5].

Generally, 12.5% of people around the world are absolutely blind and the rest are suffering from different degrees of low vision. However, considering the population growth and increasing life expectancy, this figure is expected to increase [2]. The International Agency for Prevention of Blindness has estimated that number of people with visual impairment reaches a figure of 75 million by 2020 [4]. In addition, the World Health Organization report suggests that the prevalence of blindness and low vision in different populations is 0.3% to 5.6% [6]. Also, according to a report published in 2004, more than 3.6 million Americans were suffering from visual impairment or blindness and millions of them were afflicted with eye diseases and refractive errors. This has imposed a financial burden of $ 35.4 billion ($ 16.2 billion for direct medical costs, $ 11.1 billion for direct costs, and $ 8 billion for productivity losses cost) on American society [7]. According to another study, about 90% of blind and visually impaired people live in developing countries [8]. In Iran, there are no accurate statistics of the number of the blind and the visually impaired people. However, clinical observations in medical and health centers indicate the existence of a significant number of visually impaired people [2]. Generally, about 80% of complete blindness cases are preventable or curable [4].

According to the World Health Organization, cataract, with a frequency of 47.8%, has been introduced as the leading cause of blindness among people aged 40 or older around the world [9]. In another report, glaucoma (12.3%), macular degeneration (8.7%), corneal opacity {5.1%), diabetic retinopathy (4.8%), infancy blindness (3.9%) and trachoma (3.6%) have been introduced as the major causes of blindness [5, 10].

Over the past 50 years, the pattern of blindness and visual impairment has changed for several reasons such as improved standards of living and personal hygiene, raising awareness, increased life expectancy, and advances in treatment methods [8]. Therefore, the high prevalence of visual impairments in developing countries is not due to the inability of ophthalmologists in diagnosis them, but the major problem is the inability of national health care systems to provide the appropriate methods of prevention and treatment [8].

Given that visual impairment is one of the health problems [8] and since most causes of blindness or impaired vision are curable and their irreversible effects can be prevented through early diagnosis and appropriate treatment [3], the present research aims to study the prevalence and underlying factors of visual impairments and its related factors among people referred to the eye clinic of Ardabil Hospital in 2013.

METHODS:

A cross-sectional, descriptive study was carried out from September 23, 2013 to January 2014. The statistical population included all referred people to the eye clinic of Alavi Hospital in Ardabil which from them, 129 cases were selected by random sampling method. The required data and information were collected using an author-made questionnaire consisting of three parts of demographic information (age, gender, education level, occupation, marital status, education level of parents, occupation of parents, income, family size, and place of residence), visual impairment (type of disease, symptoms, the affected eye, and the last measure), and underlying factors. Content validity of the questionnaire was confirmed after eliciting and applying the views and comments of experts and faculty members. In addition, Cronbach's alpha coefficient was used to determine the reliability of this questionnaire. After handing out the questionnaire among 20 university students and professors, the Cronbach's alpha coefficient was obtained to be equal to 0.82. After obtaining the informed consent of participants for participation in the study and considering other ethical issues, the comments of the research sample were collected by asking them to fill out the questionnaire. Data were analyzed using statistical methods in SPSS.19.

RESULTS:

The mean age of participants was 33. Most participants (65 people, 50.3%) were in the age group of 20-50. In addition, 62 participants (48%) were male and 67 participants (51.9%) were female. Other demographic information of the participants has been presented in Table 1.

Normal vision of the right eye, left eye, and both eyes was observed in 26.9%, 32.5%, and 40.4% of participants. Among those surveyed, 75 patients (58.1%) were suffering from some sort of visual impairments. The highest and the lowest frequencies of visual impairments were related to cataract (52%) and color blindness (8%), respectively. Frequency distribution of eye diseases by the disease type and age groups has been shown in Table 2. In addition, cataract was the most prevalent type of visual impairment in urban (21%) and rural (20%) populations. Blurred vision, with a frequency of 52%, was one of the major causes of visual impairment among the people referred to the studied eye clinic (Table 3). The impact of working activities and reading on visual impairment was 45.6% and 39.5%, respectively (Table 4). The greatest impact of visual impairment was observed on

driving at nights (Table 5). LASIK operation, wearing glasses, contact lenses, and surgery were mentioned as treatments for vision rehabilitation in 4%, 40%, 5.3%, and 50.6% of participants, respectively.

Table 1: Demographic information of the participants

Demographic characteristics	Items	Number (percentage)
Age	< 8	12(9.3%)
	8-20	22(17.1%)
	20-50	65(50.3%)
	>50	30(23.2%)
Gender	Male	62(48.1%)
	Female	67(51.9%)
Level of education	High school diploma or lower	82(65.6%)
	Associate's Degree	21(16.8%)
	Bachelor	20(16%)
	Master or higher	2(1.6%)
Occupation	Unemployed	33(25.9%)
	Clerk	28(22.1%)
	Worker	9(7.1%)
	Self-employed	31(24.4%)
	Housewife	26(20.4%)
Marital status	Married	77(59.6%)
	Single	52(40.3%)
Place of residence	Urban	93(72.6%)
	Rural	35(27.3%)

Table 2: frequency distribution of the studied population by Visual impairment and age group

Age groups Visual impairment	<8	8-20	20-50	> 50	Total
Cataract	1(25%)	1(9.09%)	14(40%)	23(92%)	39(52%)
Color blindness	0(0%)	3(27.2%)	2(5.7%)	1(4%)	6(8%)
Diseases of the retina	0(0%)	4(36.3%)	9(25.7%)	0(0%)	13(17.3%)
Corneal disease	3(75%)	3(27.2%)	10(28.5%)	1(4%)	17(22.6%)
Others	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Total	4(5.3%)	11(14.6%)	35(46.6%)	25(33.3%)	75(100%)

Table 3: Frequency distribution of the studied population by Visual impairment and symptoms

Symptoms Visual impairment	Blurred vision	Dizziness	Rhinorrhea	Lack of visibility at night	Total
Cataract	23(58.9%)	1(7.6%)	14(73.6%)	1(25%)	39(52%)
Color blindness	1(2.5%)	2(15.3%)	1(5.2%)	2(50%)	6(8%)
Diseases of the retina	5(38.4%)	6(46.1%)	2(15.3%)	0(0%)	13(17.3%)
Corneal disease	10(58.8%)	4(23.5)	2(11.7%)	1(5.8%)	17(24%)
Others	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Total	39(52%)	13(17.3%)	19(25.3%)	4(5.3%)	75(100%)

Table 4: Frequency distribution of environmental and underlying factors influencing visual impairment

Environmental and underlying factors	Items	%
Hours of reading per day	I do not read	59.5
	1-2 hours	28.5
	2-4 hours	10.7
	More than 4 hours	1.1
The use of mobile phone and computer	I do not use	41.6
	1-2 hours	30.9
	2-4 hours	25
	More than 4 hours	2.3
Impact of reading on visual impairment	Yes	39.5
	No	60.4
Strike or accident	Yes	18.7
	No	81.2
Amount of working activities per day	Less than 8 hours	56.6
	8 hours	25.3
	More than 8 hours	18.1
Impact of working activities on visual impairment	Yes	45.6
	No	54.3
Family history of eye disorders	Yes	43.9
	No	56.1

Table 5: Frequency distribution of the impact of visual impairment on the level of individual activities

Level of individual activities	Items	%
The impact of visual impairment on the level of vision loss	No impact	2.6
	Low	23.6
	Moderate	50
	High	23.6
The impact of visual impairment on daily activities	No impact	2.6
	Low	21.1
	Moderate	46
	High	30.2
Being able to drive during the night	Yes	36.4
	No	63.5

DISCUSSION:

Visual impairment and blindness indicate the health, economic, and social problems of countries and especially developing countries. Hence, it is very essential and important to survey the rate of visual impairments and the effective causes in different countries and cultures. Therefore, the present research aimed to study the prevalence and underlying factors of visual impairments among people referred to the eye clinic of Alavi Hospital of Ardebil in 2013. Among the 129 participants in this study, the overall prevalence of visual impairment was 58.1%. The highest frequency of visual impairments was related to cataract (52%) and international studies indicate that cataract is considered one of the main reasons for poor vision which agree with our study results [11]. However, the pattern and causes of visual impairment in developed countries are different from developing countries. Generally, according to previous studies, the 10-year incidence of cataract has been observed in about 72% of the population aged over 49 in Australia and 54% of the population aged 43-86 in the US [12, 13]. In addition, according to the results of other studies, cataract has been introduced as the leading cause of visual impairment by Ojaghi*et al.;* (19.3%) [8], Sharifi*et al.;* (20.8%) [3], Fallah*et al.;* (2.2%) [14], Fotoohi*et al.;* (36%) [15].Which there are consistent with the results of the present study. According to a study conducted by Masoumi*et al.;* [4], cataract has been identified as the most important visual impairment in urban and rural areas with a percentage of 43.9% and 66.1%, respectively. This is also consistent with the findings of the present study.

According to the present study, corneal diseases, with a frequency percentage of 24%, were identified as the second most common cause of visual impairment. The findings of Ziaee*et al.;* [16], the one-

year incidence of keratoconus, as one of the most common corneal diseases, is 22.3% to 24.9% per 100000 in Yazd Province and prevalence of its clinical cases is 1.4% to 1.55%. Based on the results of the present study, color blindness has the lowest frequency (8%) among the visual impairments which is not consistent with the results of Masoumi*et al.;* [8] and Bourne *et al.;* [17]. Corneal disease and uveitis in the study conducted by Masoumi*et al.;* [8] and trachoma in the study of Bourne *et al.;* [17] were introduced as the rarest causes of visual impairment. Generally, various causes and prevalence rates have been reported for visual impairments and it is difficult to compare the findings from different societies and culture, because each of the previous studies have focused on a certain age group and this restricts their generalizability. Additionally, visual impairment is influenced by several underlying factors such as time and economic-social status.

Based on the findings of this study, the frequency of visual impairment in higher ages was more than lower ages. This is consistent with the results of Masoumi*et al.;* [8] and Saw *et al.;* [18]. Also, according to a study conducted in Singapore, the frequency of blindness is closely associated with age [18].

The present study also showed that the greatest impact of visual impairment on the level of individual activities is related to difficulty in driving at nights (63.5%). The results of a study conducted by Fallah*et al.;* indicated that in 403 cases of driving accidents, 23 drivers (8.2%) had one of the visual impairments [14]. In general, good vision is necessary for driving and the relationship between good vision and accident rate has been studied and approved in different countries.

According to the various study findings, visual impairment affects the level of vision and daily activities of people. The results of a study conducted by Hansel *et al.;* also introduced visual impairment as an effective factor in reducing a person's quality of life in social, mobility, and leisure aspects [19]. Eftekhar*et al.;* showed that the visually impaired and blind people significantly suffer from reduced quality of life in mobility, compared with ordinary people [20]. Generally, the effect of visual impairment on dimensions of personal life and especially in terms of mobility is not something unexpected and people with visual impairments have difficulty in doing some visual activities, routing, mobility, and dealing with obstacles [21]. This consistent with the findings of the present study

The results showed that surgery is the primary treatment method for vision rehabilitation. Since the most common causes of visual impairment were found in this study to be associated with cataract and corneal disease, it is obvious that surgery accounts for the highest frequency. Masoumi also introduced the lensectomy-vitrectomy surgery as an effective way to restore vision in patients with congenital cataract [22], which is consistent with the findings of the present study.

One of the limitations of the present research was studying the prevalence of ocular diseases in a small sample. Therefore, the results of this study cannot be compared with the findings of above-mentioned ones that most of them have reported the prevalence of these diseases in large populations.

CONCLUSION

The prevalence of visual impairments is influenced by age, gender, region, and underlying and environmental factors. Also, the type and severity of visual impairments is an effective factor in providing services and rehabilitation programs for persons with visual impairments. In addition, the factor of individuality, considering the visual limitations of a person, should be taken into account in providing services to these people.

Given the irreversible complications of ocular diseases, early treatment of these diseases is of great importance. Hence, increasing the awareness and accessibility to ophthalmologic care and services can reduce the burden of visual impairments. Therefore, development of infrastructures, education, and promotion of education, screening, and routine and ongoing visual checkups are recommended for reducing the prevalence and complications of visual impairments and also creating self-confidence and providing social and recreational programs to the blind. Finally, assessment of the prevalence and causes of visual impairment for planning, setting the priorities, and allocation of resources to eye care and services, proposing rehabilitation programs, and organizing the resources and facilities in a wider range and larger sample volumes seems to be necessary in this regard.

Conflict of interest:
None-declared

REFERENCES:

1. Faryabi J; Frequency of severe visual disturbance associated with midfacial fractures. Journal of Dentistry. 2005;18(2):87-92.
2. Sadeghpour N; understanding the rehabilitation visual process: naretive review. rehabilitation 2005;7(3):62-5.
3. SharifiN, Idenlo NS; To determine the prevalence of ocular diseases in patients referred to the clinic. Ophthalmology Clinic of Imam Khomeini Urmia. Urmia Medical Journal. 2009;20(2):137-43.

4. Masumi R, Masumiganjgah A, Ojaghi H, Banazadeh E; Prevalence of visual impairment in adult's patient over 40 years old in alavi hospital during 2005-6. Journal of Ardabil University of Medical Sciences. 2012;12(2):166-72.
5. Dandona R, Dandona L; Socioeconomic status and blindness. British journal of ophthalmology. 2001;8.8-1484:(12)5
6. Daneshmandi H, Majalan AS, Babakhani M; The comparison of head and neck alignment in children with visual and hearing impairments and its relation with anthropometrical dimensions. Physical Treatments-Specific Physical Therapy Journal. 20.76-69:(2)4;14
7. Rein DB, Zhang P, Wirth KE, Lee PP, Hoerger TJ, McCall N,*et al.;* The economic burden of major adult visual disorders in the United States. Archives of ophthalmology. 2006;124(12):1754-60.
8. Ojaghi H, Masoumi R, Chegini A; Level of visual disorders in clients referred to medical exemption commission of Alavi hospital in Ardabil. Journal Mil Med. 2011;12(4):235-40.
9. Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, Pokharel GP, *et al.;*Global data on visual impairment inthe year 2002. Bulletin of the world health organization. 2004;82(11):844-51.
10. West S, Sommer A; Prevention of blindness and priorities for the future. Bulletin of the world Health Organization. 2001;79(3):244-8.
11. Victor D, Ocampo V, Foster C; Cataract, Senile. Available in E-medicine. 2009.
12. Group EDPR; Causes and prevalence of visual impairment among adults in the United States. Archives of ophthalmology. 2004;122(4):477.
13. Kanthan GL, Wang JJ, Rochtchina E, Tan AG, Lee A, Chia E-M, *et al.;* Ten-year incidence of age-related cataract and cataract surgery in an older Australian population: the Blue Mountains Eye Study. Ophthalmology. 2008;115(5):808-14. e1.
14. Fallah Karkan M, Behboudi H, Taeefe N, Soltani Moghaddam R, Khoshbakht Pishkhani M; Visual Disorders in Drivers Causing Accidents. Journal of Guilan University of Medical Sciences. 2013;22(85):48-53.
15. Fotouhi A, Hashemi H, Mohammad K, Jalali K; The prevalence and causes of visual impairment in Tehran: the Tehran Eye Study. British journal of ophthalmology. 2004;88(6):740-5.
16. Ziaiee H, Jafarinasab M, Javadi M, Katibe M, Poursalman H, Karimian F, *et al.;* Epidemiologic Study of keratoconus in Yazd. bina. 2010;16(1):9-18.
17. Bourne RR, Stevens GA, White RA, Smith JL, Flaxman SR, Price H ,*et al.;* Causes of vision loss worldwide, 1990–2010: a systematic analysis. The Lancet Global Health. 2013;1(6):e339-e49.
18. Saw S-M, Foster PJ, Gazzard G, Seah S; Causes of blindness, low vision, and questionnaire-assessed poor visual function in Singaporean Chinese adults: The Tanjong Pagar Survey. Ophthalmology. 2004;111(6):1161-8.
19. Hassell J, Lamoureux E, Keeffe J; Impact of age related macular degeneration on quality of life. British Journal of Ophthalmology. 2006;90(5):593-6.
20. Eftekhar H, Nojoomi M, Koohpayeh-Zadeh J; A comparison of the quality of life among blind students and their sighted counterparts. Iranian Journal of Psychiatry and Clinical Psychology. 2002;7(4):49-55.
21. Sarabandi A, Kamali M, Mobaraki H; The relationship betweenimpairedvisualfunctionandquality of life of the blind. Journal of Research in Rehabilitation Sciences. 2013;1(1):1015-23.
22. Masoumi R; Three-Year Evaluation of Post Operative Results in Congenital Cataract by Lensectomy Vitrectomy in Alavi Hospital. Journalof Ardabil University of Medical Sciences. 2004;4(4):58-62.