

A systematic literature review for evaluation of knowledge, attitude, and self-care practice regarding common eye diseases in the healthy general population

Abdulrahman Alamri¹, Atheer Saud Nasser Alshahrani¹,
Saud Qasem A Alshabab¹, Shatha Mohammed Alshehri¹,
Raghad Yahya Saeed Alasiri¹, Shuruq Zafer A Alshehri¹, Hamad Khalid Faya¹,
Mohammed Saeed M Almousa¹, Mohammad Abdulrahman Hassan Ogran¹,
Bandar Mohammed Mushabbab Asiri¹, Abdallah Alsayed Hammour²,
Waad Saber Alharthi¹

¹Department of Ophthalmology, King Khalid University, Abha, Saudi Arabia, ²Department of Ophthalmology, Faculty of Medicine, Al-Azhar University, Cairo, Egypt

ABSTRACT

Background and purpose: Increasing people's knowledge and then changing their attitude and practice with the aim of taking care of their eye health are very important. Considering the importance of the mentioned topic, the main goal of this study was to evaluate the knowledge, attitude, and practice about eye diseases in the general population of the world in the form of a systematic literature review. **Materials and Methods:** This study was a systematic literature review study, and to do it, a systematic search was conducted in internationally available databases including Web of Science, ScienceDirect, Scopus, PubMed, and Google Scholar in the time range of 1998 to 2023. Finally, considering the inclusion and exclusion criteria of the study, the results of 18 articles were extracted. **Results:** The findings showed that in general, people's level of knowledge about glaucoma was lower compared to other eye diseases, and the level of knowledge of men and women about eye diseases was different. In addition, the results showed that there was significant relationship between age and knowledge of various eye diseases. The results of all evaluated studies showed that people with higher education have more knowledge about eye diseases. **Conclusion:** Based on this, it can be concluded that as glaucoma is one of the most important causes of blindness worldwide, it is necessary to plan to increase the level of public knowledge to recognize the symptoms and complications of this disease. In addition to that, it is necessary to increase people's advertisement by ophthalmology centers and eye specialists about the use of glasses and also to encourage people to visit the eye physician regularly.

Keywords: Attitude, eye diseases, general population, knowledge, practice

Introduction

According to global reports, 191 million people in the world have moderate to severe visual impairment (MSVI), and of these, approximately 32.4 million people are completely blind. According to global estimates, visual impairments are more common in women (60%) than men (40%).^[1] Uncontrolled refractive errors

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Address for correspondence: Dr. Abdulrahman Alamri,
Department of Ophthalmology, King Khalid University,
Abha - 61421, Saudi Arabia.
E-mail: Profalamri@hotmail.com

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are the most important reason for visual impairment (VI) and are followed by cataracts, diabetic retinopathy (DR), glaucoma, and age-related macular degradation (ARMD).^[2] The results of a study in Iran showed that almost of 44 people with blindness problems, 32 people had cataracts, 10 people had DR, and more than two people had glaucoma.^[3] In addition, the findings of other studies from Iran show poor eye examination because only 22% of diabetic patients had an eye examination and only two of five non-diabetic people with eye disease had appropriate eye examinations.^[4,5] The results of a study in Pakistan showed that the prevalence of blindness was 2.7%, with the highest rate in Punjab and Balochistan and the lowest rate in the North-West Frontier Province (known as Khyber Pakhtunkhwa). In addition, based on the results of the aforementioned study, the prevalence of stunting in rural areas of Pakistan was reported to be higher than its urban areas.^[6] It was also reported in another report that the most important causes of blindness in Pakistan are related to cataract (51.5%), corneal opacity (11.8%), and glaucoma (7.1%).^[7]

Based on the results of past studies, the knowledge level of the Hong Kong Chinese population about ARMD is reported to be low, and this value is reported to be 9.2%.^[8] In addition, the Iranian population's level of knowledge about glaucoma is relatively low, and this amount is reported as 46.6%.^[9] The results of research conducted in developed countries also show that the level of knowledge of the general population about the main causes of blindness is also low.^[10,11] In addition to the importance of informing people about the causes of eye diseases, promoting their general health is important in terms of other aspects.^[12] For example, it has been reported that hypertension and diabetes have an effect on the development and progression of DR, and the control of those diseases reduces the number of DR cases.^[13] The results of past research show that the results of knowledge, attitude, and practice (KAP) studies are important for the prevention and management of communicable and non-communicable diseases in society.^[14,15]

Reducing the burden of eye diseases is possible with proper implementation and strengthening of public health policies with special focus on VI risk factors.^[16] In this regard, the factors related to public health programs to reduce the burden of eye diseases include increasing people's knowledge of eye diseases,^[17,18] which leads to stronger prevention,^[19] more appropriate eye care,^[20] and finally leads to the follow-up of eye treatment.^[21]

Socioeconomic factors, such as education and poverty, can influence avoidable vision loss in elderly population patients worldwide.^[22] Researchers in the field of ophthalmology reported that increasing the level of knowledge of common eye diseases can be very effective in promoting preventive eye care. Based on this, eye health education can encourage people to refer to a (qualified) eye care specialist in the early stages of eye disease. This action can prevent the further complications of eye disease and help the visual improvement of the patient. The findings

of KAP studies on eye health and eye diseases are effective for designing eye care programs.^[23]

Various studies have been conducted in different countries of the world to evaluate the KAP of the general population about common eye diseases.^[5,16,23-38] The results of some past studies are similar to each other, and the findings of some others are contradictory; so, it is necessary to summarize the findings of different studies and present them in the form of a comprehensive study to determine the overall state of KAP of the people of the world regarding eye health. According to our search, there is no such review study so far; so, the main purpose of this study was to evaluate the KAP about eye disease in the general population of the world in the form of a systematic literature review.

Materials and Methods

The aim of this study was to evaluate the knowledge, attitude, and performance about eye diseases in the general population of the world in the form of a systematic literature review. For this purpose, a systematic search was conducted in internationally available databases including Web of Science, ScienceDirect, Scopus, PubMed, and Google Scholar in the time range of 1998 to 2023. A systematic review was conducted using MeSH terms "knowledge," "attitude," "practice," "awareness," "self-care," "eye diseases," "visual disorders" and "eye health," "blindness," "patients," "glaucoma," "cataract," and "KAP study." For other databases, the same MeSH terms were used similarly. To ensure the completeness of the search, the references of the found studies were checked (Reference Checking) to minimize the possibility of not including the studies. Citations from studies were also checked (Citation Tracing). Based on Figure 1, the text search, especially the articles, was conducted based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guide. In addition, informal reports, articles in letter to editor format, as well as unpublished articles, and content posted on websites were removed from the list of downloaded files. Finally, the results of 18 published articles were analyzed for this review.

Results

For this review study, the findings of 18 original research studies were extracted, the summary of which is presented in Table 1. The studies were related to the countries of Pakistan, Iran, India, Canada, Germany, Togo, Australia, Nigeria, Bangladesh, Hong Kong, Singapore, Switzerland, Saudi Arabia, Nepal, and New Zealand, which covers almost all continents of the world [Table 1]. The minimum and maximum sample sizes of the previous studies were 379 and 6497 samples, respectively, and for this study, a total of 42749 samples were considered. The oldest and most recent past studies evaluated are related to 1998 and 2020, respectively. In addition, for this study, only the findings related to adults of the general and healthy population were considered [Table 1].

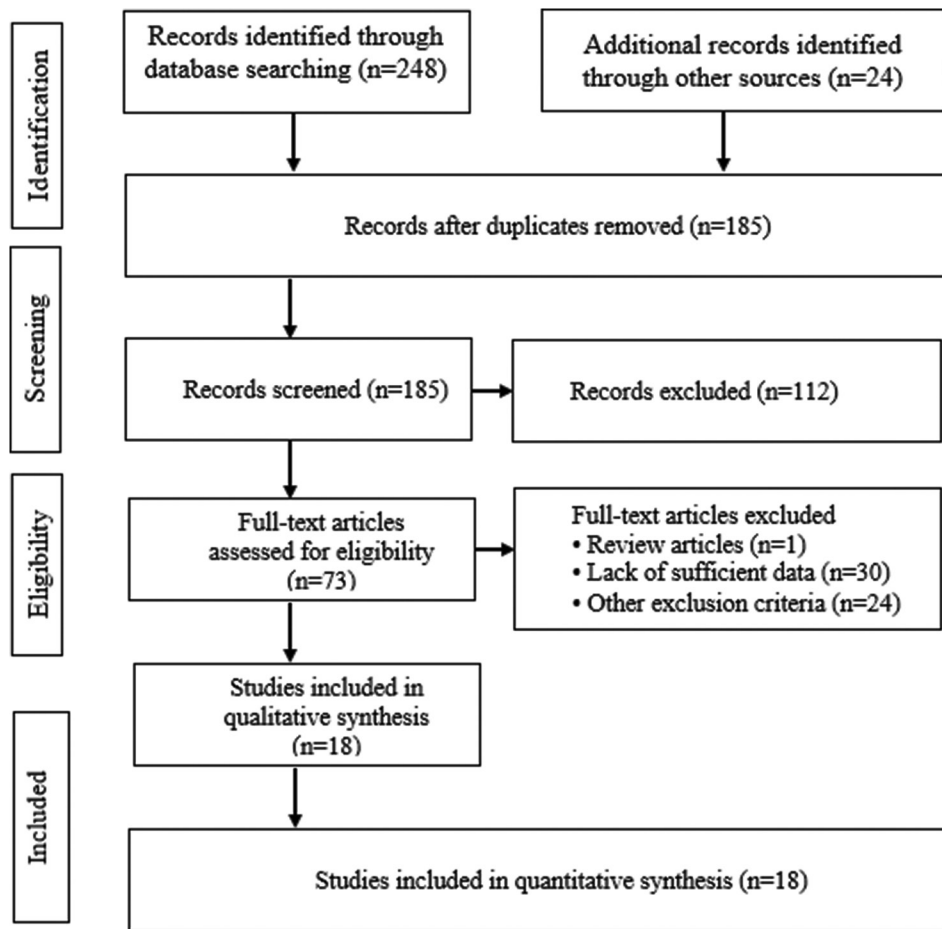


Figure 1: Flow diagram of study identification according to PRISMA

Discussion

According to the authors of this review, this study is the first review in the field of awareness, attitude, and performance (KAP) of the healthy general population regarding eye diseases in the world. As eye diseases, glaucoma, and DR are the most important causes of blindness all over the world, therefore, people's KAP survey about the above diseases is considered one of the most important health assessments in the field of vision health.^[28] The results of most past studies showed that people's knowledge about glaucoma was lower compared to other eye diseases. In the study by Ziaei *et al.* (2012) in Iran, it was reported that the level of knowledge of the respondents about glaucoma, and DR was 46.6%, 82.9%, and 86.2%, respectively.^[28] The findings of the study by Dandona *et al.* (2001) in India showed that people's knowledge about glaucoma was significantly lower compared to other eye diseases.^[39] The results of the study by Pallerla *et al.* (2020) also showed that the respondents' knowledge of cataract, glaucoma, refractive error, squint, DR, and ARMD was 81.5%, 47.8%, 74.3%, 89%, and 36.7%, respectively.^[23] Islam *et al.* (2015) in Bangladesh reported that most of the respondents were aware of cataracts (90%), trachoma (86%), and pterygium (84%), but only 4% had heard of DR, 7% of glaucoma, and 8% of ARMD.^[27] The findings of the study by

Balo *et al.* (2004) in Togo found that glaucoma was recognized by only 29% of respondents, 25% of whom were aware of glaucoma blindness.^[29] The research of Lau *et al.* (2002) in Hong Kong showed that only 22.9% of respondents were able to correctly describe the symptoms of cataract, and this rate was 10.2% and 1% for glaucoma and ARMD, respectively.^[30] The findings reported by Mansouri *et al.* (2006) in Switzerland showed that only 24.7% of respondents were able to describe glaucoma as an eye disease.^[32] Sathyamangalam *et al.* (2009) in India reported that overall, only 13.5% of respondents were aware of glaucoma.^[34] In addition, the study by Krishnaiah *et al.* (2005) in India showed that public awareness of glaucoma was very poor.^[38] Considering the low level of people's knowledge about glaucoma, this problem can be considered one of the problems of the health system in the world that must be planned to solve it.

In this review study, based on the results of previous studies, it was shown that the level of knowledge of men and women about eye diseases was different. Ziaei *et al.* (2012) reported in Iran that compared to men, women have more knowledge about glaucoma, cataract, and DR.^[28] The findings of the study by Landers *et al.* (2002) also showed that women have more knowledge about eye diseases than men.^[40] While based on the results of Krishnaiah *et al.* (2005) in India^[38] and Thapa

Table 1: Descriptive results of previous studies

Authors (year)	Location study	Age of studied people (year)	Sample size	Patient/ healthy	Key results
Zhao <i>et al.</i> (2019) ^[16]	Pakistan	39.9±11.4	2019	Healthy	<ul style="list-style-type: none"> • 68.1% of the study participants were aware that they can prevent blindness with preventive measures. • 31.4% of respondents also had low knowledge of ARMD. • Male gender and higher education had significant relationship with the level of knowledge. • 82% of the respondents had positive attitude toward health-seeking behavior and people with high income were 1.82 times more prone to health. • 21.5% of the participants have visited an ophthalmologist at least once a year, and this frequency of visiting was significantly higher among younger people, women, and people with higher education and socioeconomic level. • Participants' knowledge about prevention of blindness and refractive error was adequate. • Respondents' knowledge about blindness leading to eye diseases (such as ARMD) was inadequate.
Pallerla <i>et al.</i> (2020) ^[23]	India	≥16	867	Healthy	<ul style="list-style-type: none"> • Respondents' knowledge of cataract, glaucoma, refractive error, squint, DR, and ARMD was 81.5%, 47.8%, 74.3%, 89%, and 36.7%, respectively. • 41.8% of people reported that they used glasses for distance, near, or both. • 37.8% were examined by an ophthalmologist. • 57.5% of people were aware of the nearest eye care center within five kilometers of their residence. • Electronic media was the main source of information about eye health.
Livingston <i>et al.</i> (1998) ^[24]	Australia	≥40	3184	Healthy	<ul style="list-style-type: none"> • Some variables, including gender (women), age (young people), higher levels of education (secondary education, business, or higher education), recent visit to an ophthalmologist (within the last 2 years), and speaking English at home, had strong and significant associations with knowledge level. • Young respondents believed that prevention of blindness and treatment of blindness have a higher priority than other diseases. • People who took more care of their eyes included people with previous diagnosis of age-related eye disease, older people, women, people who had correct information about common eye diseases, and those who spoke English at home. • No interaction was found between knowledge and positive attitude toward self-care practices.
Pfeiffer <i>et al.</i> (2002) ^[25]	German	NR	2742	Healthy	<ul style="list-style-type: none"> • The findings showed that 51% of the respondents had active knowledge of the term "glaucoma" and 75% of them had passive knowledge about this term. • Glaucoma is associated with increased intraocular pressure (up to 28%), visual field loss (up to 14%), corneal disease (up to 14%), and lens disease (up to 10%). • Only 4.8% of the respondents had good knowledge of the basic definition of "glaucoma." • 29% of the respondents believed that a person can feel the increase of intraocular pressure. • The respondents believed that it is necessary to reduce the amount of reading and smoking to prevent vision loss. • Respondents stated that they get the necessary information about glaucoma mostly from friends (44%) and less from doctors (13%).
Nwosu (2002) ^[26]	Nigeria	≥20	954	Healthy	<ul style="list-style-type: none"> • 94.6% of the respondents believe that you should not go to the hospital to get treatment and preventive medicine for eye disease/blindness. • 87% of the respondents have accepted glasses as a preventive and helpful method for vision. • 59.7% of the respondents stated that they will undergo eye surgery if necessary. • 18.4% of people were afraid of eye surgery and 8.6% considered this type of treatment useless.
Islam <i>et al.</i> (2015) ^[27]	Bangladesh	≥30	3104	Healthy	<ul style="list-style-type: none"> • Most respondents were aware of cataracts (90%), trachoma (86%), and pterygium (84%), but only 4% had heard of DR, 7% of glaucoma, and 8% of ARMD. • 58% of the respondents did not know that vision loss can be prevented by different methods or drugs. • Factors affecting the low level of knowledge of the respondents include increasing age, lack of formal education, and lower socioeconomic status. • 51% of the participants were aware of at least six of the nine items related to the "knowledge" category of common eye diseases.

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Table 1: Contd...

Authors (year)	Location study	Age of studied people (year)	Sample size	Patient/ healthy	Key results
Fotouhi <i>et al.</i> (2006) ^[5]	Iran	1-60	6497	Healthy	<ul style="list-style-type: none"> • Among these participants, 34.7% had never seen an ophthalmologist or optometrist and 43.2% had never seen an eye care provider in the past 5 years. • Multivariate logistic regression showed that men, younger participants, and less educated people were more likely to neglect eye care, while visually impaired people were less likely to forget about it.
Ziaei <i>et al.</i> (2012) ^[28]	Iran	56.2±9.0	1084	Healthy	<ul style="list-style-type: none"> • 60.2% believed that vision loss has a high effect on daily performance. The respondents' awareness of glaucoma, cataract, and DR diseases was 46.6%, 82.9%, and 86.2%, respectively. The level of knowledge about the three aforementioned diseases was 19.2%, 57.3%, and 72%, respectively. • Regarding the symptoms of DR and glaucoma, 19% and 7.1% of people believed that these diseases can start without any symptoms. • 22.6%, 77.2%, and 41.6% of the respondents, respectively, considered glaucoma, cataract, and DR to be treatable. • Only 32.5% of people considered glaucoma as the cause of blindness. • The respondents' most important sources of information about eye diseases were their friends and relatives, while public media and ophthalmologists had a limited role in this field.
Balo <i>et al.</i> (2004) ^[29]	Togo	20 to 65	767	Healthy	<ul style="list-style-type: none"> • The level of knowledge about eye diseases was equal to 84%. • The most known eye diseases from the point of view of the respondents included myopia, cataracts, presbyopia, and glaucoma. • Glaucoma was recognized by 29% of respondents, 25% of whom were aware of glaucoma blindness. • 61.5% of respondents stated that glaucoma is a serious condition. • 4.4% of people admitted to using traditional healing medicines to treat eye diseases. 56.1% of local doctors were not confident in treating glaucoma.
Lau <i>et al.</i> (2002) ^[30]	Hong Kong	≥40	2538	Healthy	<ul style="list-style-type: none"> • Knowledge of cataracts was particularly high, as more than 90% of respondents had heard of it. • Only 22.9% of respondents were able to correctly describe cataract symptoms, compared to 10.2% and 1% for glaucoma and ARMD, respectively. • More than 40% of people did not know that surgery is an appropriate treatment for cataracts.
Lan <i>et al.</i> (2012) ^[31]	Singapore	56.8±18.0	2309	Healthy	<ul style="list-style-type: none"> • About 75% of respondents believed that dry eye was not severe enough to endanger their general health. • Most of the respondents thought that traditional Chinese medicine (TCM) is effective in treating dry eye. • Most of the institutionalized TCM doctors surveyed in Singapore believe that TCM is effective in treating dry eye.
Mansouri <i>et al.</i> (2006) ^[32]	Switzerland	35-70	500	Healthy	<ul style="list-style-type: none"> • 76% of the respondents had no correct knowledge of the term "glaucoma." Only 24.7% of respondents could describe glaucoma as an eye disease. • Knowledge of glaucoma was independent of age, gender, educational status, and household income. • 74% of men, 67% of women, and overall, 71% of all respondents used glasses. • 75% and 57% of the respondents, respectively, considered surgery and drug therapy to be effective for the treatment of glaucoma.
Al-Lahim <i>et al.</i> (2018) ^[33]	Saudi Arabia	≥18	379	Healthy	<ul style="list-style-type: none"> • The most sources of information for acquiring knowledge about eye diseases included the Internet (46.7%), relatives (38.5%), and mass media (35.4%). • The level of knowledge of the respondents ranged from 66.3% for cataracts to 36.3% for refractive errors. • Only variables of education level and occupation had a significant relationship with knowledge of refractive errors. • 75% of people stated that they visit an ophthalmologist only when they are not satisfied with their eyesight, while only 10% of them visit an ophthalmologist regularly. • About 9% of the respondents do nothing to treat their eye problems, and about 7.4% of them depended on home treatment.

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Authors (year)	Location study	Age of studied people (year)	Sample size	Patient/ healthy	Key results
Sathyamangalam et al. (2009) ^[34]	India	≥40	3850	Healthy	<ul style="list-style-type: none"> Overall, 13.5% of the respondents were aware of glaucoma. The results showed that the age-/gender-adjusted rate was equal to 13.3%. In general, 8.7% of the respondents knew about glaucoma. Among the people who had knowledge, the level of good, appropriate, and poor knowledge was equal to 0.5%, 4%, and 4.2%, respectively. In addition, 0.5% of the respondents had good knowledge about glaucoma, 4% had fair knowledge, and 4.2% had poor knowledge. Determining factors of knowledge about glaucoma included education level, female gender, age, religion, and family history of glaucoma.
Noertjojo et al. (2006) ^[35]	Canada	Adults	882	Healthy	<ul style="list-style-type: none"> Overall, 69.2% of respondents were familiar with cataract as a cause of vision loss, 41.2% with glaucoma, and 20.2% with macular degeneration. 97.5% of respondents considered cataracts treatable, 91.5% for glaucoma, and 77.0% for macular degeneration. The variables of male gender and young age were the most important factors in people's low knowledge about eye diseases.
Mishra et al. (2019) ^[36]	Nepal	≥20	4993	Healthy	<ul style="list-style-type: none"> 78% of the respondents had prior knowledge about eye diseases (from 68% to 95%). Respondents reported that radio and television were the most suitable methods for providing necessary education about eye health. For the treatment of eye diseases, about 2% of people still depended on drug retailers, 0.6% on self-medication, and 0.1% on traditional healers.
Ahn et al. (2011) ^[37]	New Zealand	Adults	507	Healthy	<ul style="list-style-type: none"> Respondents' general knowledge about the importance of eye health was high, although knowledge about specific diseases such as macular degeneration was low.
Krishnaiah et al. (2005) ^[38]	India	>15	5573	Healthy	<ul style="list-style-type: none"> Respondents' knowledge of glaucoma was very poor (18 people; 0.32%), and women had significantly less knowledge ($P=0.007$). Respondents' awareness of glaucoma was also lower among illiterate people ($P>0.0001$) and socially backward population ($P>0.0001$). Most respondents who were aware of glaucoma ($n=10$; 55.6%) did not know whether vision loss due to glaucoma was permanent or reversible. The main source of getting knowledge about glaucoma included television, magazines, other media, and relatives or acquaintances with this disease

et al. (2011) in Nepal,^[41] women had less knowledge about eye diseases. In other studies, conducted in Switzerland,^[32] Germany,^[25] America,^[42] and Australia,^[17] no significant difference was observed between men and women in terms of knowledge about eye disease. The reason for the difference in the results of past studies can be due to various reasons, including the level of knowledge of healthcare organizations and different media about eye diseases, the difference in the level of literacy of men and women, as well as the difference in the level of interest of men and women to acquire knowledge about eye diseases in different parts of the world.

In most of the studies except Mansouri et al. (2006),^[32] a significant relationship was observed between age and knowledge of different eye diseases. In addition, the results of all evaluated studies showed that people with higher education have more knowledge about eye diseases compared to less educated and illiterate people. The possible reason for this is that with the increase in people's education level, their knowledge about health-related issues will automatically increase.

Based on the results of most of the past studies, it was found that the most sources of information for people about eye diseases include family and friends, and mass and individual media are in the second order of information. Due to the fact that people's friends or family may not have enough knowledge about eye

diseases, therefore, gaining knowledge about these types of people may cause disturbances in the control of eye diseases as well as maintaining eye health. The next point in this regard is that as the media, especially radio and television, are available to most people, it is very necessary to provide useful information about eye health and inform people about eye diseases through the media.^[28]

Although glaucoma is one of the most important causes of blindness worldwide, the study conducted by Ziaei et al. (2012) in Iran^[28] reported that only 32.5% of people considered glaucoma to be the cause of blindness and the study by Thapa et al. (2011) also obtained such a similar finding, in which the mentioned value was reported as 26.5%,^[41] while the study by Altangerel et al. (2009) reported that 74% of respondents considered glaucoma to be the cause of blindness.^[43] Considering that glaucoma is one of the important causes of blindness, it is very necessary to increase people's knowledge about this disease. The results of this review study showed that the information and attitude of the people of the world about glaucoma are significantly less than their level of knowledge regarding the two diseases of cataract and DR, and as glaucoma is one of the most important causes of blindness worldwide, therefore, planning to increase the level of public knowledge to recognize the symptoms and complications of this disease is necessary.^[28]

In most of the studies conducted in the past, in the dimension of performance evaluation, two items were evaluated specifically and with more focus, which included the use of glasses and visiting an ophthalmologist. The percentage of people who use glasses was at an acceptable level, while in terms of the item “regular and periodical visits to an ophthalmologist,” a good situation was not observed. Pallerla *et al.* (2020)^[23] reported that 41.8% of people stated that they used glasses for distance, near, or both. The results of Nwosu (2002)^[26] showed that 87% of the respondents accepted glasses as a preventive method and helping vision. Based on the findings of Mansouri *et al.* (2006),^[32] 74% of men, 67% of women, and overall, 71% of all respondents used glasses. The findings of Zhao *et al.* (2019)^[16] showed that 21.5% of the respondents have visited an ophthalmologist at least once a year and this frequency of visiting was significantly higher among younger people, women, and people with higher education and socioeconomic level. Fotouhi *et al.* (2006)^[5] stated that 34.7% of the studied people had never visited an ophthalmologist or optometrist and 43.2% had never visited an eye care provider in the past 5 years. In another similar study by Al-Lahim *et al.* (2018),^[33] it was shown that 75% of people stated that they consult an ophthalmologist only when they are not satisfied with the vision of their eyes, while only 10% of them regularly refer to ophthalmology centers. According to the obtained results, it is necessary to increase people’s knowledge about the use of glasses, of course, with the recommendation and prescription of an ophthalmologist, as well as encouraging people to visit an ophthalmologist regularly and removing obstacles to increase this number of visits by responsible organizations.

Conclusion

The results of most of the past studies showed that people’s knowledge about glaucoma was less compared to other eye diseases, and in general, the knowledge of men and women about eye diseases was different. Therefore, it can be concluded that as glaucoma is one of the most important causes of blindness worldwide, it is necessary to plan to increase the level of public knowledge to recognize the symptoms and complications of this disease. The results of all evaluated studies showed that people with higher education have more knowledge about eye diseases compared to less educated and illiterate people. Based on the results, it can be said that the most sources of information for people about eye diseases include family and friends, and mass and individual media are the second place to get information; Therefore, the planning of public media such as radio and television to increase people’s knowledge about eye diseases seems to be extremely necessary. Based on the findings, people’s practice of using glasses is almost appropriate, but the situation of regular visits to the eye doctor is inappropriate. Therefore, it is necessary to increase people’s knowledge about the use of glasses, encourage people to visit an ophthalmologist regularly, and remove the obstacles to increase referrals to ophthalmology centers.

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Conflicts of interest

There are no conflicts of interest.

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