

Eye Health Care Utilization and Associated Factors among Adults in Jimma Town, Ethiopia. Community-based cross-sectional study

Getabalew Endazenaw Bekele, Addis Tadesse Tedla, Sagni Jelkeba Seto, Jemmal Mohammed Molla Molla

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Abstract

Background: Eye health care utilization is the use or consumption of health care services, procedures, or pharmaceutical drugs for maintaining one's health and wellbeing, preventing and treating an eye health problem, or getting information about one's eye health state and prognosis

Objective: To determine prevalence and associated factors of utilization of eye care services among adults who are 40 and above living in Jimma town from June to July 2022

Methods: A community-based cross-sectional study was conducted among Jimma town residents aged 40 and above, involving 460 systematically selected households. Data were collected using interview-administered structured questionnaires, entered in Epi-data 3.1, and analyzed with SPSS 25. Descriptive analysis assessed eye care service utilization, while bivariate and multivariate logistic regression identified associated factors. Associations were considered statistically significant at $p < 0.05$ with a 95% confidence level.

Results: The prevalence of eye care service utilization in Jimma town was 136(29.6%) with 95% CI of 25.8%-34.2%. Older age (55–64 years), higher education, health insurance (AOR = 1.78, 95% CI: 1.19–2.68), diabetes mellitus (AOR = 2.25, 95% CI: 1.03–4.91), and mobility-limiting diseases (AOR = 4.25, 95% CI: 2.98–7.27) significantly increased eye care service utilization. Very strong associations were found with history of eye disease (AOR = 17.1, 95% CI: 9.08–32.2), eye disease affecting movement (AOR = 7.42, 95% CI: 3.46–15.9), family history of eye disease (AOR = 6.58, 95% CI: 3.60–12.0), and knowledge about eye checkups (AOR = 14.47, 95% CI: 8.70–24.1).

Conclusions: Eye care service utilization in Jimma town was relatively low with utilization strongly influenced by sociodemographic factors, health conditions, and awareness of eye disease. Strengthening community-based awareness programs on the importance and timing of eye checkups substantially improve eye care service utilization.

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Eye Health Care Utilization and Associated Factors among Adults in Jimma Town, Ethiopia. Community based cross-sectional study

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Abstract

Background: Eye health care utilization is the use or consumption of health care services, procedures, or pharmaceutical drugs for maintaining one's health and wellbeing, preventing and treating an eye health problem, or getting information about one's eye health state and prognosis

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Conclusion: Eye care service utilization in Jimma town was relatively low with utilization strongly influenced by sociodemographic factors, health conditions, and awareness of eye disease. Strengthening community-based awareness programs on the importance and timing of eye checkups substantially improve eye care service utilization.

Key words: eye care, service utilization, Jimma town, prevalence

Introduction

Eye health care utilization is the use or consumption of health care services, procedures, or pharmaceutical drugs for maintaining one's health and wellbeing, preventing and treating eye health problems, or getting information about one's eye health state and prognosis. It can be defined in many ways depending on context as the number of outpatient visits in a given period of time, hospital admission, length of patient stay, hospital readmission, emergency visiting, prescription drug utilization, and cost associated with the use of the service (1). Routine eye examinations have been recommended by American academy of ophthalmology based on age and risk factors. For instance, an asymptomatic patient who didn't have risk factors as follows; age less than 40 every 5 to 10 years, 40-54 age every 2-4 years, 55 -64 age every 1-3 years, and for >65 age every 1-2 years. The rationale behind this routine examination is to prevent treatment and avoidable causes of blindness (2).

Ocular morbidity is a spectrum of eye disorders encountered by the community which includes both visual impairing and non-visual impairing conditions(3). From the 2004 global burden of disease report of WHO, it is found that eye disease is estimated to cause 61.4 million DALYs accounting for 4.0% of total DALYs. Although all countries that are included in this report have the burden, the largest number is found in low and middle countries. Refractive error is the major contributor to burden followed by cataract, macular degeneration, glaucoma, trachoma, and vitamin A deficiency(4). When we see the burden of ocular disease in terms of blindness in 2020 WHO has estimated that 49.1 million individuals worldwide will be blind, 221.4 million will have moderate VI and 33.6 have severe VI Even though there was a reduction in age-standardized prevalence of blindness and VI, the aged population of the world is rising resulting increase in the number of people affected (5). According to WHO, Over 90% of all blind people reside in developing countries and more than two thirds of blindness is preventable. In Ethiopia, blindness affects 1.6% of the population whereas 3.7% of the population has a low vision(6). Visual impairment not only results in human suffering but also has a huge socio-economic impact. It is estimated blindness cost countries a lot of money especially developing countries in terms of lost productivity, education, and rehabilitation service which creates a burden on the economy that is already in a dire situation. Although blinding conditions are public health problems conditions like allergic conjunctivitis,

presbyopia, and dry eye syndrome, can cause an adverse impact on daily activity which result in stress and frequent visits to the health center(7). Adequate awareness and appropriate utilization of eye health care are important for tackling the burden of ocular morbidity. Worldwide eye service utilization varies widely it ranges from 18%-82.5% (8). In developing nation in spite of sharing the huge burden of blindness eye health care utilization is very low different factors has affected the utilization including financial challenge, lack of awareness, availability of the service, accessibility of service and negative attitude towards it are some of the reasons which are mentioned in many studies(9).

In 2002-2003, Claudi Vela and her colleagues used a random, multi-stage, stratified, cluster sampling method to ask people about the last time they had their eyes examined in 70 countries. There were 35,839 participants aged 60 and up from 52 nations. Only 18% of older persons (95 percent CI 17, 19) received an eye test in the previous year. In the previous year, 10%, 24%, 22%, and 37% of people in the low, lower-middle, higher-middle, and high-income countries had their eyes examined. Older age, female gender, higher education, urban location, greater affluence, worse self-reported health, diabetes, and wearing spectacles or contact lenses were all linked to getting an eye exam in the previous year ($p < 0.05$)(10). In the USA from 2005 to 2008 3 databases that are related to vision were analyzed using multivariate logistic regression. This meta-analysis involved individuals who are above 40 years old. The results showed that annual eye health care use was between 46 to 51% in patients without DM and for those with DM it was between 64 to 72%. Having Health insurance, eye disease and higher income levels were linked with eye care use in both groups. Being male associated with low use of the service in DM and some age groups. Individuals with DM and some age groups having more education, married, heavy drinking, and limited ability to read the small print use eye service more(11). It has been found that 57% of 28,728 adults have used eye health services. People with ocular morbidity are more likely to use than their counterparts. Being male, people with less bachelor's degree, location, and less income were less likely to use the service(12). In Scotland there was a study done in order to see the effect of the free eye examination policy and they found out that 32.1% of respondents had an eye test in 2005, rising to 37.7% in 2006. This represents an increase of 5.6 percentage points in utilization in the year immediately after the policy was introduced, which is statistically significant (13). From March 2015 to April 2016 in Australia cross-sectional nationwide population-based study was conducted. The researchers used cluster sampling in 30 selected geographical areas 1738 Indigenous and 3098 non-Indigenous Australians had participated and 67.0% of Indigenous Australians and 82.5% of non-Indigenous Australians underwent an eye examination within the previous two years. Indigenous status care in their lifetime.

Ages 7 -11 are more likely to have eye examination than those aged 5- 6 (odds ratio, 3.83; 95% confidence interval, and 2.37-6.19). Eye health care utilization in young children is positively affected by high monthly income and by both national and private health insurance (14). Women and older population with the best-corrected visual acuity of less than 20 / 40 in the worse-seeing eye and residing in urban area have high probability of eye examination in their life course. Having low education in older population associated with low utilization of the service (15). In 2017 there is research published on the prevalence and determinants of self-reported eye care use among Chinese Americans. The study was a population-based cross-sectional study and a total of 4582 Chinese aged 50 and above who reside in California. In the study, it is found that only 36% of participants use the eye care service and in the past 12 months, 21% of participants have accessed dilated examination and 48 percent of respondents said they had ever undergone a dilated eye examination. Better probabilities of reporting use of eye care were linked to advanced age, female gender, preference for English, higher education, health and vision insurance, a regular location for health care, current driving, more comorbidities, and lower vision-specific quality of life scores (16). From March 2009 to April 2010 cross-sectional study was done in Keamari, Karachi, located in Pakistan. Even though there is a high prevalence of visual impairment and blindness in the area, only 45.3% (95% confidence interval, CI, 41.4-49.2%) of participants reported having had an eye examination in the past; 12.1% (95% CI 9.5 14.6%) and 30.9% (95% CI 27.3-34.5%) had seen an eye doctor within the last year or prior 5 years, respectively (17). In Teheran, 34.7 % had never visited an ophthalmologist or optometrist (95% [CI]: 32.4 to 36.9) and 43.2% had not seen an eye care provider in the last 5 years. Out of associated factors being men (OR = 1.30), younger participants (each year increase in age: OR = 0.98) and the less educated (each year increase in education: OR = 0.93) were more likely, and the visually impaired were less likely (OR = 0.41) to have neglected eye care(18). In Abuja Nigeria, 74.5% of them were aware of the importance of eye examination but only 38% of respondents used the service, and the rest used traditional means of treatment. When compared to females with males, males accessed eye service more (55.9% Vs 44.1%). Barriers include no felt need, this accounted for 153(61.7%), and others were the high cost of services, lack of money, non-availability of eye care services, long waiting time, and reluctance to go for eye care services(19). The other study was undertaken in 2012 at Yamoransa, a peri-urban community in Ghana and the result showed us that one third 61(35.8%) had never had an eye examination in their lifetime yet 75% of them had health insurance(20). In Ethiopia, there is a limited study done on the area and therefore, this research finding contribute information gap on eye care service utilization.

Methods and materials

Study area and period: the study was conducted in Jimma town which is the largest city in the southwestern Oromia Region, Ethiopia. It is found 352 Kilometers southwest of Addis Ababa. Jimma town is Located at a latitude and longitude of 7°40'N 36°50'E and an elevation of 1,780 m. According to CSA, the town has a population of 224,565. Eye health care service is given at Jimma medical center which is a tertiary center. Outside the medical center, the service is given by 3 private hospitals and two clinics.

Study design: community based cross-sectional study design was conducted to assess the magnitude and associated factors of eye care service utilization.

Source Population: All residents aged 40 and above living in Jimma town, who reside in the town for at least 6 months.

Study population: All adults aged 40 and above living in selected kebeles and Villages in Jimma who lived at least for 6 months.

Inclusion and exclusion criteria: All adults aged 40 and above and who lived in selected kebele and village at least for 6 months were included whereas who were mentally ill were excluded from the study.

Sample size determination: the required sample size was determined by single population proportion formula by considering the following assumptions. The proportion of eye care utilization was taken from a study done in Hawass which was 23.8 %(8), the confidence level 95% and margin of error 5%, by considering the multistage sampling technique multiplied by 1.5 design effects and adding 10% the final sample was 460.

Sampling technique and procedure: Multistage sampling technique was used to select the study participants. First stage the four kebeles were selected randomly from 17 kebeles, secondly 4 villages was selected from each selected kebeles randomly. Then equal sample size was allocated to each selected village and the study participant was selected every other household. When there was more than one person above the age of 40 years one person was selected by lottery method.

Study variable: utilization of eye care service was outcome variables and age, gender, marital status, educational level, occupation, monthly income, health related believe, decision making, health insurance coverage, substance use, history of eye disease, family history of eye disease, medical checkup were among independent variables.

Data collection tool and procedures: data collection tool was developed by reviewing different literature. The questionnaire was first prepared in English and then translated into the local language (Amharic and Afan Oromo) in order to communicate with the participants of the study. The data was collected by trained data collectors through face-

to-face interview.

Data quality assurance: The questionnaire was pre-tested on 23 adult people before the actual data collection and necessary correction was taken. One day training was given to data collectors and supervisors. The collected data was checked its completeness every day by the supervisors.

Data analysis: Data was entered and analyzed using SPSS version 25. Before analysis, data was cleaned and assessed for missing data. Descriptive analysis was undertaken and the result was presented by text, tables, and graphs. Bivariate analyses was performed to assess the association of each independent variable with the outcome variable and to identify candidate variables for multivariable analysis. Candidate variables with a p-value less than 0.25 in the bivariate analysis were entered into a multivariable logistic regression model to identify predictors of the outcome variable with by adjusted odds ratio (AOR) with 95% confidence interval (CI). P-value less than or equal to 0.05 at 95% CI as a cut of point was used to declare the statistically significant association of independent variables with the outcome variable.

Ethical consideration: Ethical clearance for the study was obtained from the Ethical Review Board of Jimma University Institute of Health. Support letter was taken from review board to respective kebeles where data is collected. Participants were informed in detail about the research and reassured that confidentiality of information was maintained and verbal consent was obtained from each participant. Participants were briefed that participation in this study was voluntary. They were informed that information gathered for the study was used for academic purposes and it was also be an input for policy-making purposes.

Result

Socio-demographic characteristics of study participant

The majority of respondents were between 40–54 years of age (64.3%), followed by 22.2% in the 55–64 years category, while only 13.5% were aged 65 years and above. Slightly more than half were male (52.2%) and almost half were Orthodox Christians (48.7%), with Muslims (32.6%) and Protestants (16.1%) forming the next largest groups. Most participants were married (67.0%), while 13.3% were widowed. In terms of occupation, 32% worked in government institutions, 27% in non-governmental sectors, and 15.2% were merchants, while smaller proportions were housewives (12.2%), retired (9.3%), or unemployed (2.6%). Educational attainment showed that nearly 40% had college-level education or above, while 33.7% had secondary education and only 4.8% could not

read or write. Monthly family income distribution indicated that about half (49.3%) earned between 900–5000 ETB, followed by 36.5% earning 5001–10000 ETB, with very few (1.3%) earning more than 25,000 ETB per month (Table 1).

Table 1. Socio-demographic characteristics of study participants in Jimma town July, 2022

Demographic characteristics	Frequency	Percent
Age in years		
40-54	296	64.3
55-64	102	22.2
≥65	62	13.5
Sex		
Male	240	52.2
Female	220	47.8
Religion		
Orthodox	224	48.7
Muslim	150	32.6
Protestant	74	16.1
Others	12	2.6
Marital status		
Single	47	10.2
Married	308	67.0
Divorced	44	9.6
Widowed	61	13.3
Occupation		
Governmental	147	32
Non-governmental	124	27
Merchant	70	15.2
Daily laborer	8	1.7
Housewife	56	12.2
Retired	43	9.3
No job	12	2.6
Educational status		
Can't read and write	22	4.8
Can read and write	30	6.5
Primary education	71	15.4
Secondary education	155	33.7
College and above	182	39.6
Monthly income		
900-5000	227	49.3
5001-10000	168	36.5
10001-25000	59	12.8
≥25001	6	1.3

Medical and medical-related characteristics of study participants

More than half of respondents (51.7%) reported having health insurance. A large majority (88%) did not use substances such as alcohol, khat, or tobacco. Regarding systemic illnesses, 20.7% had diabetes mellitus, and 35.9% had hypertension, while 9.1% in both cases did not know their status. About 14.6% reported having diseases that limited their daily activity. A history of eye disease was reported by 53.5% of participants, but only 7.8% indicated that eye disease interfered with their daily functioning. Family history of eye disease was present in 33.7% of respondents, whereas 21.1% were unsure. Awareness about eye health was low: only 41.5% had ever heard about the importance of eye checkups, and just 22.8% knew when to visit an eye care center (Table 2).

Table 2. Medical and medical-related characteristics of study participants in Jimma town July, 2022

Variable	Frequency	Percent
Health insurance enrollment		
Yes	238	51.7
No	222	48.3
Substance use		
Yes	55	12
No	405	88
Diabetes mellitus		
Yes	95	20.7
No	323	70.2
I don't know	42	9.1
Hypertension		
Yes	165	35.9
No	253	55
I don't know	42	9.1
Disease that affect daily activity		
Yes	67	14.6
No	393	85.4
History of eye disease		
Yes	246	53.5
No	214	46.5
Eye disease that affect your daily activity		
Yes	36	7.8
No	424	92.2
Family history of eye disease		
Yes	155	33.7
No	208	45.2
I don't know	97	21.1
Heard importance of eye check		
Yes	191	41.5

No	269	58.5
Do you know when to go eye health care center		
Yes	105	22.8
No	355	77.2

The predominant reason, cited by nearly two-thirds of respondents (about 65%), was the perception of not having any eye problem. Financial constraints accounted for about 13% of the reasons, followed by lack of information about available services (6%). A smaller proportion of participants mentioned long waiting times at hospitals (10%) as a barrier. Other reasons, such as not knowing where the services were located, reliance on religious places, lack of an escort, and non-coverage of prescribed medication, were reported by less than 5% of respondents (Fig. 1).

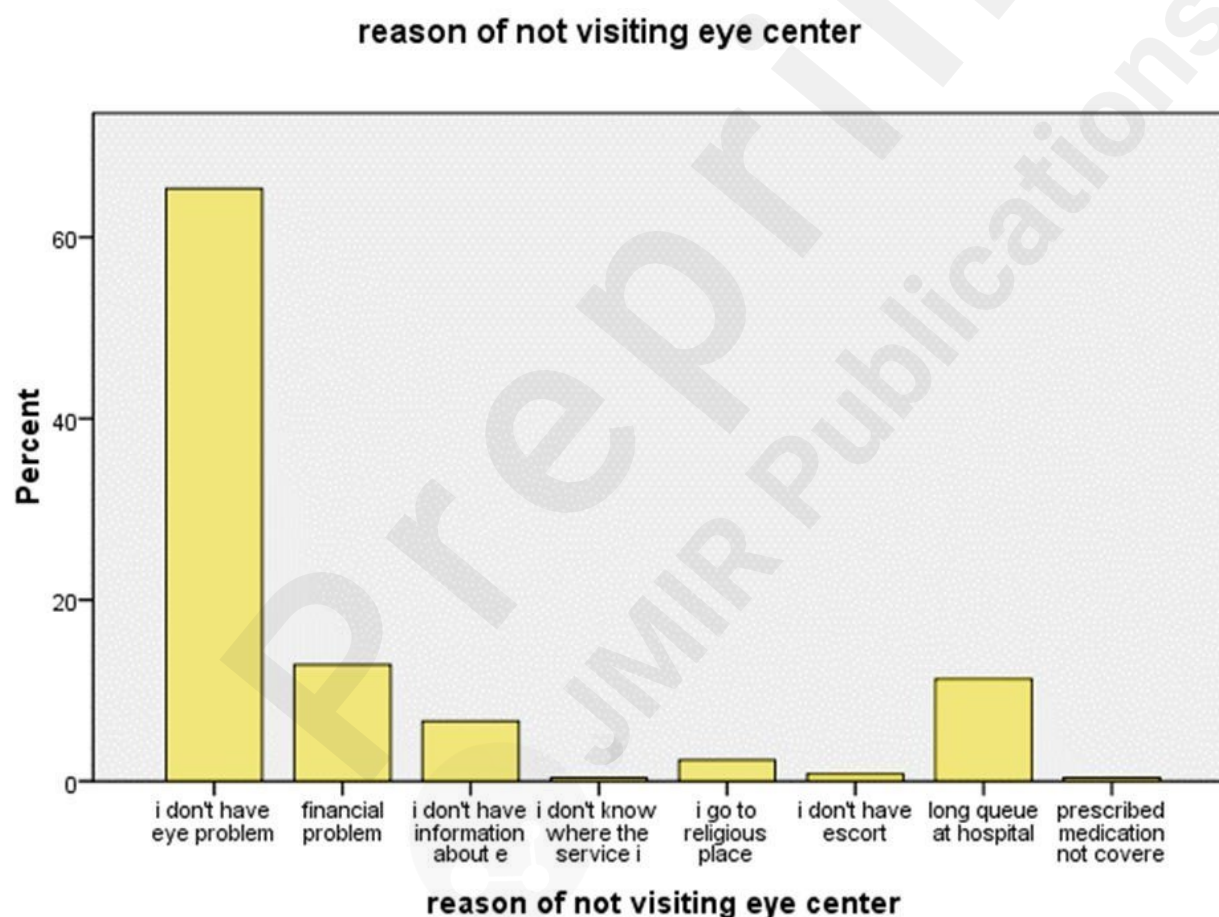


Figure 1-the reasons of the study participants for not visiting eye care center in Jimma town **July, 2022**

Magnitude of eye care service utilization

Among the total participants only 136 (29.6%) were utilized eye care services in Jimma town, with 95% CI of 25.8% to 34.2%, whereas 324(70.4%) of them were not used eye care services.

Eye care service utilization status

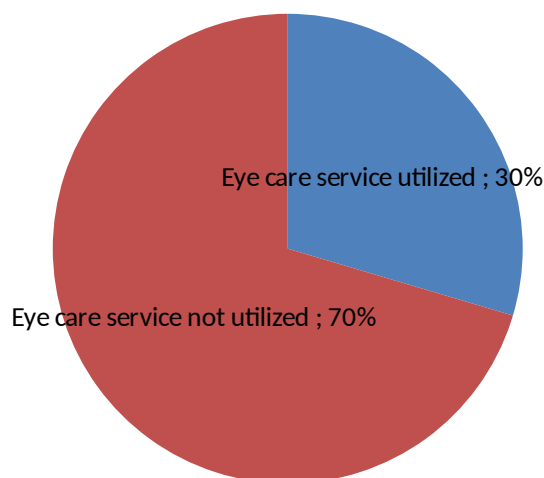


Figure 2 Eye care service utilization status in the community in Jimma Town **July, 2022**

Factors associated with eye care service utilization

Age was significantly associated with utilization, with participants aged 55–64 more likely to utilize services than younger counterparts. Educational level also showed an effect, with higher education being positively related to utilization. Having health insurance (AOR=1.78, 95% CI: 1.19–2.68), history of diabetes mellitus (AOR=2.25, 95% CI: 1.03–4.91), and diseases limiting mobility (AOR=4.25, 95% CI: 2.98–7.27) increased the likelihood of service use. A striking association was observed among those with a history of eye disease (AOR=17.1, 95% CI: 9.08–32.2), eye disease that interfered with movement (AOR=7.42, 95% CI: 3.46–15.9), and family history of eye disease (AOR=6.58, 95% CI: 3.60–12.0). Knowledge and awareness variables were also strong predictors: participants who had heard about the importance of eye checkups (AOR=14.47, 95% CI: 8.70–24.1) and those who knew the appropriate time for eye checkups (AOR=12.88, 95% CI: 7.74–21.5) were much more likely to utilize eye care services compared to their counterparts (Table 3)

Table 3. Factors associated with eye care service utilization in among adult population in Jimma Town **July, 2022**

Variable	Utilization of eye care service		COR at 95% CI	AOR at 95% CI
	Not utilized	Utilized		
Age (in years)				
40-54	237	59	1	1
55-64	58	44	0.219(0.123-0.389)	2.482(1.279-4.815)
≥65	29	33	0.667(0.354-1.257)	2.069(0.958-4.4751)
Family monthly income				
900-5000	155	72	1	1
5001-10000	129	39	0.651(0.413-1.025)	0.714 (0.380-1.345)
10001-25000	38	21	1.190(0.652-2.172)	2.459(1.087-5.562)
≥25001	2	4	4.309(0.721-24.050)	13.878(1.168-164.918)

History of eye disease				
Yes	122	124	17.109(9.078-32.244)	6.507(3.078-13.756)
No	202	12	1	1
Family history of eye disease				
Yes	62	93	6.583(3.597-12.049)	2.006(0.906-4.443)
No	183	25	0.6(0.310-1.161)	0.727(0.317-1.669)
I don't know	79	18	1	1
Heard importance of eye checkup				
Yes	70	112	14.473(8.703-24.067)	3.727(1.878-7.393)
No	254	24	1	1
Do you know when one should go for checkup				
Yes	29	76	12.885(7.738-21.456)	2.742(1.377-5.460)
No	295	60	1	1

Discussion

In this research the proportion of eye health care utilization was found to be 29.6% (95% CI 25-34%). This finding indicated that eye care service utilization in Jimma town is relatively low which need some intervention. When we compared this result from previously done studies like in Canada (57%) (12), America (36%) (16), Scotland (37.7%) (13) & Australia (67%-82.5%) (14) was low. Similarly, eye health care utilization found to be 32.2%(20), 38%(19), 45.3%(17), 62.7%(21) in Yamoransa- Ghana, Abuja Nigeria, Karachi- Pakistan and Limpopo Province, South Africa respectively which is higher than the finding of the current study. This might be due to socio economic disparity between these countries and ours which led to better accessibility and affordability and awareness about eye health care of eye health care service in those countries.

However the results found in current study were higher than the study done in world wise basis (18%) (10), in Southwestern Nigeria (19%) (22) and the study done in Hawassa Ethiopia (23.8%) (8). This might due to different sample, population and study place. The study done in Nigeria involves rural community which contributes to low usage since living in urban might contribute to accessibility to information.

In this study having knowing or having heard about the importance of regular checkup as well as knowing when to go to eye health center for regular checkup were positively associated with eye health care utilization which was consistent with the study done in Hawassa(8).

Being old age is another variable which was found to be positively associated with eye health care utilization which goes along with the study done in America (16), South Korea (15), Australia and Tehran (14, 18), Abuja Nigeria (19) and Hawassa (8). Another important factor which increase likelihood of eye health care utilization was having history of eye disease this was shown in studies undertaken in Hawassa (8), Pakistan (17), South Korea (15), Australia (14), and United States of

America (11) as well as in current study. When one experienced a discomfort resulting from eye disease it is highly likely for a person to visit eye health care facility. Having eye disease is a driving factor to visit eye health care center.

Economic status of a participant was another important factor thus those with high family monthly income had high likely to use eye health care service. This positive association also seen in studies done in Hawassa (8), USA and Canada(11, 12, 16), and study involving many countries from each continent (10). This might be when we are financially stable the probability of paying for our medical expenses is high which in turn increase our likelihood to visit eye health care center for our eye health care. The last but not the least important factor associated with eye health care utilization in this study is family history of eye disease. This might be due to when one have a family member who has eye disease might have an information about eye disease and also high likely to visit the eye health care center.

Conclusion

Eye care service utilization in Jimma town was relatively low at 29.6% (95% CI: 25.8%–34.2%). In this study having history of eye disease, family history of eye disease, being old age, having information on importance of the eye disease and on when to visit eye health care center were associated with better utilization of eye health care. Overall increasing community awareness on regular checkup for eye is cornerstone to increase eye health care utilization and it is one way to prevent avoidable blindness.

Declaration

Ethics approval and consent to participate

This research was conducted in full compliance with ethical standards and received approval from the Ethical Review Board of Jimma University Institute of Health. Informed consent was obtained from all study participants involved in the study, ensuring that the participants were fully informed about the nature of the research and their participation.

Consent for publication

Not applicable

Data availability

The datasets generated and analyzed during the current study are available from the first author upon reasonable request.

Competing interests

The authors declare that there are no financial or nonfinancial conflicts of interest.

Funding

The authors declare that this research financed was not anybody.

Authors' contributions

AT (principal investigator), SJ and JM; led the conceptualization, data collection, investigation data analysis and writing. GE performed the conceptualization, data analysis, writing and manuscript preparation.

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