ECRONICON OPEN ACCESS

EC OPHTHALMOLOGY
Research Article

Poor Eye Care Service Utilization among Adults in Gondar City, Northwest Ethiopia

Nebiyat Feleke Adimassu*, Natnael Lakachew Asefa, Dereje Hailu Anibesei and Gizachew Tilahun Belete

Department of Optometry, University of Gondar, Gondar, Ethiopia

***Corresponding Author**: Nebiyat Feleke Adimassu, Department of Optometry, University of Gondar, Gondar, Ethiopia.

Received: April 17, 2018; **Published:** August 24, 2018

Abstract

Background: The number of blind people increases every year by 2 million and is expected to double by the year 2002. Increasing public awareness and encouraging utilization of eye care services are important tools to reduce blindness. The aim of this study was to assess eye care service utilization and associated factors among adult residents in Gondar city.

Methods: Community based cross sectional study was done in Gondar city with sample size of 794. Interviewer administered, pre tested and structured questionnaire was used to collect data. All participants had Interview regarding demographic and socioeconomic status variables, past medical and eye history, and their previous eye care visits.

Result: A total of 794 study subjects participated with 93.96% response rate. Median age was 30 with inter quartile range of 21 years. Proportion of eye care service utilization was 32% (95% CI: 28.8% - 35.1%). Age > 60 (AOR = 2.3, 95% CI: 1.52 - 7.16), family monthly income > 3000 Ethiopian birr, (AOR = 2.41, 95% CI: 1.37 - 4.25), those had awareness (AOR = 1.64, 95% CI: 1.09 - 2.46), eye problem in the past (AOR = 10.63, 95% CI: 7.09 - 15.91) were more likely to utilize eye care service.

Conclusion and Recommendation: The proportion of eye care service utilization was 32%. Age, family monthly income, awareness and eye problem in the past were independently significantly associated variables with eye care service utilization. Barriers that lead to low utilization of eye care service should be more explored.

Keywords: *Eye Care Service; Gondar; Ethiopia; Utilization*

Introduction

In the 2020 global initiative for the elimination of avoidable blindness, increasing public awareness and encouraging the use of eye healthcare services are important strategies to integrate comprehensive eye health services [1]. There are different recommendations on periodic eye care center visit for comprehensive examination. Experts recommend that comprehensive eye exam every two to four years for asymptomatic and risk free adults. For old ages and adults at high risk it is better to check every one to two years. Individuals with eye problems should visit eye care centers at the time of facing the problem [2].

The estimated number of people visually impaired in the world is 285 million. Thirty nine million blind and 246 million low vision [3]. In Sub-Saharan Africa, the most recent estimate of the burden of visual impairment, calculated in 2010, indicated that 4.8 million people are blind**.** An extremely high proportion, estimated at 2/3 of these causes of vision impairment, could have been prevented or treated [4]. In Ethiopia national prevalence of blindness is 1.6% (1.1% for urban and 1.6% for rural populations) and that of low vision is 3.7% (2.6% for urban and 3.8% for rural populations). The large proportion of low vision (91.2%) and blindness (87.4%) are due to avoidable (either preventable or treatable) causes [5].

Due to delay for the timely service utilization the number of blind increases every year by 2 million and is expected to double by the year 2020 [6]. There is loss of 9.31 - 12. 52 billion $ due to blindness and loss of 6.98 - 9.37 billion $ due to preventable blindness in low and middle income countries [7].

Eye care center visit is the main indicator of eye care service utilization. The proportion of eye care center visit among adults in different developed countries ranges from 36%-71% [8-14]. In low and middle income countries it varies from 16.7% - 67% [15-23].

Despite the high frequency of the problems of eye health and its impact on quality of life, population based studies on eye care service utilization in Ethiopia was limited. Thus, this research aims to investigate the prevalence of eye care services utilization and associated factors.

More than 80% of the global blindness is due to avoidable eye diseases [6]. Due to delay for the timely service utilization the number of blind increases every year by 2 million and is expected to double by the year 2020 [6]. There is economic loss of 9.31 billion - 12. 52 billion $ due to blindness and economic loss of 6.98 billion - 9.37 billion $ due to preventable blindness in low and middle income countries [7].

In Ethiopia the large proportion of low vision (91.2%) and blindness (87.4%) are due to avoidable (either preventable or treatable) causes [5].

Health service utilization has been studied widely but researches are limited on eye care service utilization in developing countries specifically in Ethiopia. Hence it will serve as a base line for policy makers and organizations who are interested on eye health care.

Purpose of the Study

The purpose of this study was to assess eye care service utilization and associated factors among adult residents in Gondar city 2016.

Materials and Methods

Settings

A community based cross-sectional study design was used in Gondar city, Northwest of Ethiopia from April 15/2016 to April 30/2016. A data obtained from Gondar city administration statistical office indicates that Gondar city is located in North Gondar zone which is situated 748 km from the capital city, Addis Ababa. It has an altitude of 2,200m above sea level with *weina dega* (Subtropical zone weather condition), covers an area of 51,565 Km^2 and population of about 207,044. It has 10 sub-cities and 21 kebeles(the smallest administrative units in Ethiopia) hosting approximately 53, 725 households and approximately 112, 800 adult population [24]. There is one tertiary eye care center which provides different specialty eye care services and training of eye care professionals such as Optometrists and Ophthalmologists. There are two private eye care specialty clinics in the city as an alternative.

All adults age > 18 years old living in Gondar city greater than 6 months and mentally competent were considered eligible for the study.

Sample size determination and sampling technique

Multistage sampling technique which is two stages was used. Four kebeles selected randomly using lottery method from the total 21 kebeles of Gondar city which was 20% to insure representativeness. In this selected kebeles there was 25,851 total population and 9,608 households. Systematic random sampling with proportional allocation was used to select the participating households with sampling fraction (K) of 12. One adult individual was selected randomly from one house hold when there were more than one adult present to obtain a final sample of 845

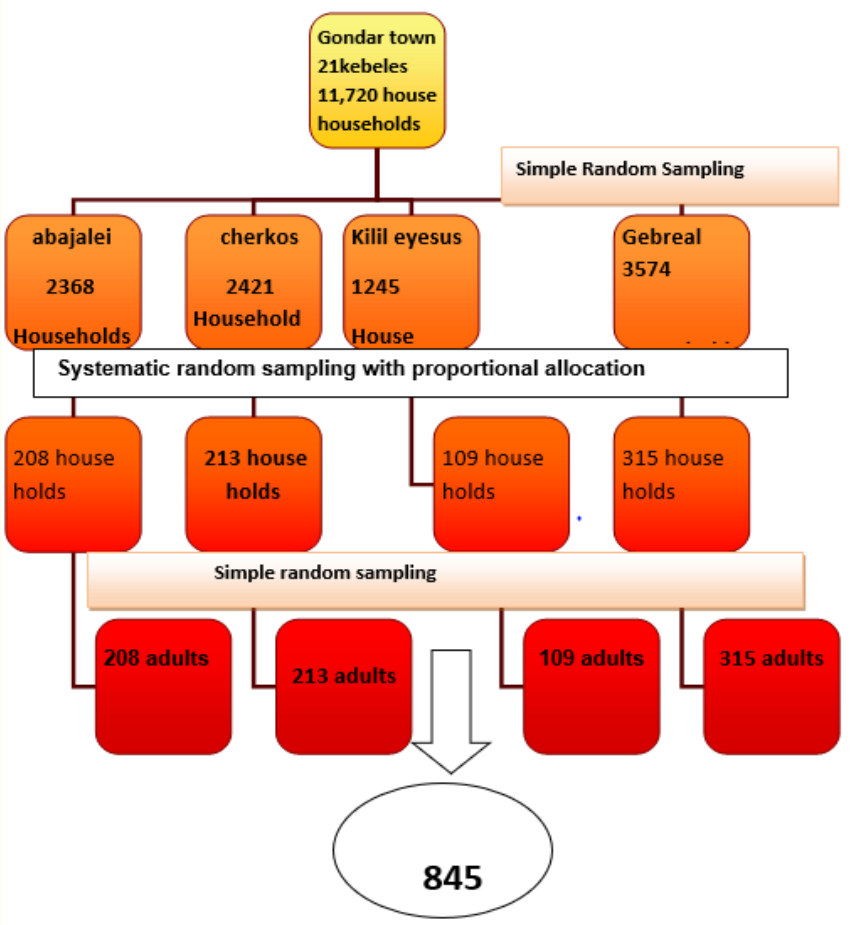

Figure 1: *Schematic representation of sampling procedure for eye care service utilization among adults in Gondar city, North West Ethiopia 2016.*

Operational definitions

Awareness: Participants who had been heard information regarding eye health considered as they had awareness and did not heard considered as they had not awareness

Eye care service utilization: Visiting eye care providing center for eye problem at least once in the last 1 to 2 years for high risk adults, in the last 2 to 4 years for asymptomatic and risk free adults.

Eye care providing center: Governmental or nongovernmental health institutions which have necessary ophthalmic equipment and ophthalmic personnel (ophthalmologist, cataract surgeon, ophthalmic officer, optometrist, ophthalmic nurse, optician). There might be either both ophthalmologist and optometrist or one of them.

High risk adults: If someone is > 60 years or has self-reported systemic illness (either Hypertension or diabetes mellitus).

Data collection procedures, tools and personnel

Interviewer administered semi structured questionnaire was used. English version questionnaire was translated to local language Amharic and pretested for common understanding then translated back to English. Six optometrists participated in data collection. Data collectors deployed to selected kebeles and entered independently to households with interval of 12. They interviewed randomly selected adult individual when ambiguity faced the supervisor (MSc optometrist) consulted them.

Data quality control

English version semi structured questionnaire translated to local language which is Amharic and pre tested to assure the appropriateness and common understanding then translated back to English.

Training on how to collect the data using appropriate pretested structured questionnaire was given for data collectors who were BSc optometrists. Unclear issues on data collection were solved by supervisor which was MSc. holder in clinical optometry. Every day during the data collection 5% of the data was cross checked for completeness by principal investigator.

Data management and analysis

Data was coded, entered and cleaned using EpiData version 3.1 then exported to SPSS version 20 for processing and analysis. Principal investigator analyzed using SPSS version 20. Multi-collinearity among independent variables was checked using variance inflation factor and tolerance. Descriptive statistics such as proportion, frequency, ratios, summary statistics (mean, standard deviation and range) was calculated. Bivariable and multivariable logistic regression was done to determine the associated factors. All variables were entered to multivariable logistic regression for analysis and those variables with p-value < 0.05 were considered as independently significant.

Ethical considerations

Ethical clearance was obtained from University of Gondar College of medicine and health science school of medicine ethical review committee.

The aim of the study was properly explained verbally for the house hold head and study subjects. The procedure proceeded when full agreement obtained.

All the information obtained was kept confidential by coding and locking the data. Hence no personal identifiers were used.

Subjects with eye problem referred to university of Gondar tertiary eye care center for free examination. Finally important information regarding eye care service utilization was given.

Results

Socio-demographic characteristics of the sample

A total of 794 participants age 18 years and above were interviewed with response rate of 93.96%. Among the respondents majority (62.8%) were females with median age of 30 and inter quartile range of 21 years. The highest frequency religion was Orthodox Christians which accounts for 79.5% followed by Muslim 19.6% and Protestant 2.9%. Of the total respondents 21.8% were house wives. Nearly one third of participants (32.2%) attained higher education. Only 11.6% had health insurance. Thirty three percent had family size of 4 - 6 (Table 1). Regarding income most of participants 38.3% earn < 1,000 Ethiopian birr (Figure 2).

Variables	Frequency	Percentage
Age in year		
18 - 24	204	25.7
25 - 59	508	64.0
> 60	82	10.3
Educational status		
Unable to read and write	115	14.5
Read and write only	71	8.9
Grade 1 - 8	106	13.4
Grade 9 - 12	246	31.0
College and above	256	32.1
Occupation		
Governmental	142	17.9
Nongovernmental	107	13.5
Merchant	164	20.7
Retired	31	3.9
Daily laborer	74	9.3
Student	103	13.0
House wife	173	21.8
Family size		
< 3	255	32.1
3 - 4	162	20.4
4 - 6	263	33.1
> 6	114	14.4

Table 1: *Socio-demographic characteristics of Gondar residents above 18 years old northwest Ethiopia April 2016 (n = 794).*

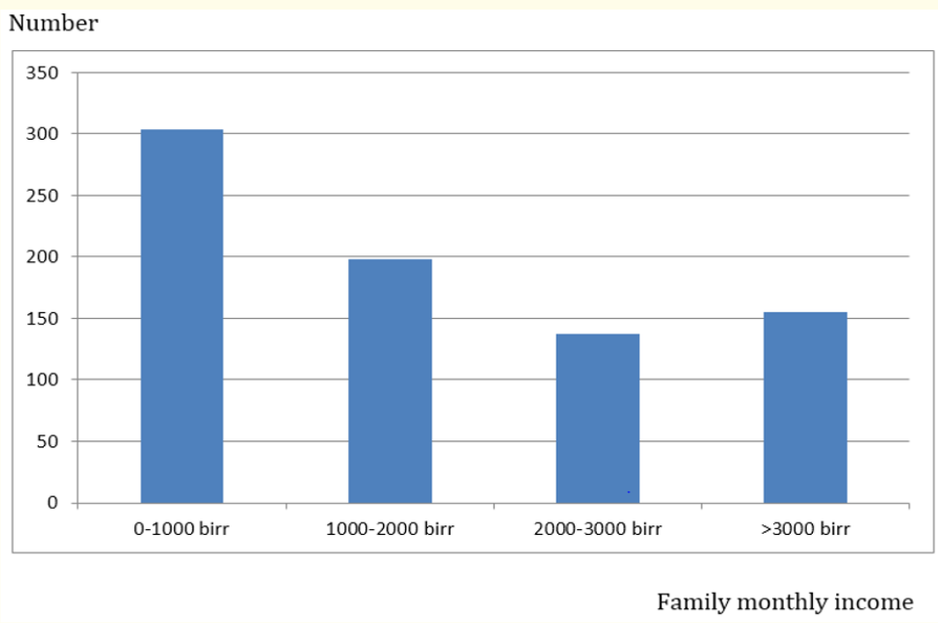

Figure 2: *Shows family monthly income of Gondar city 2016 (n = 794).*

Eye care service utilization

Of the total respondents, 253 (32%) utilized the service (95% CI: 28.8% - 35.1%) (Figure 3).

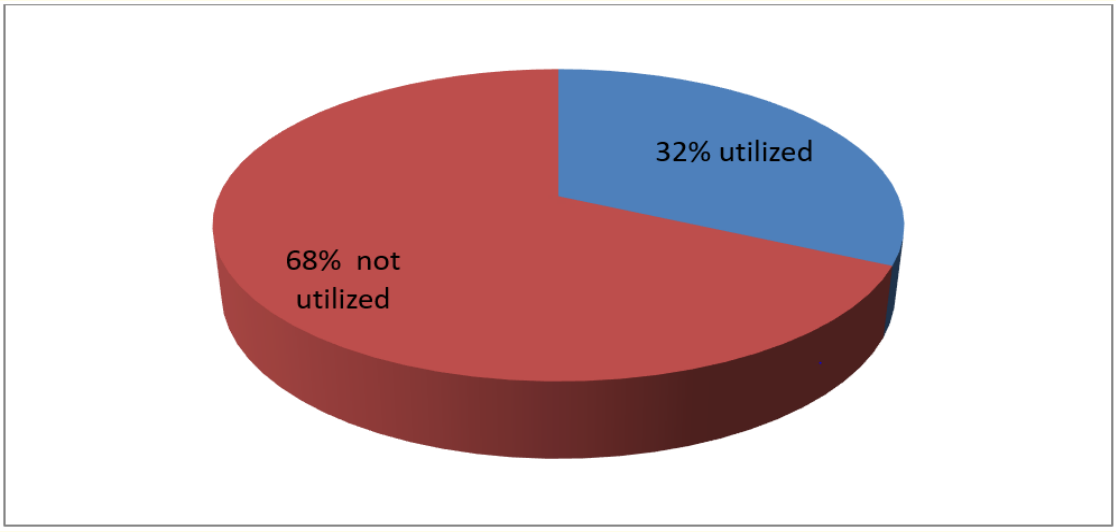

Figure 3: *Pie chart showing utilization of eye care service utilization among adults living in Gondar south west Ethiopia 2016.*

Among those who had eye problem in the past blur vision was most frequent complaint of the participants which account 19.9% (Table 2).

Eye problem in the past	Frequency	Percentage
Blur vision	158	19.9
Redness and discharge	67	8.4
Itching	55	6.9
Pain	20	2.5
Tearing	23	2.9
Trauma	15	1.9
Total	338	100

Table 2: *Shows types of past eye problem among adult residents in Gondar city North West Ethiopia 2016 (n = 338).*

The majorities place of choice for eye checkup when they face problem were eye care center (54.8%) and general hospital or health center (28.3%) (Table 3).

Place of Choice	Frequency	Percent
Eye Care Center	435	54.8
General Hospital	225	28.3
Home Remedies	41	5.2
Pharmacy	34	4.3
Holy Water	32	4.0
Nowhere	23	2.9
Traditional	4	0.5
Total	794	100.0

Table 3: *Shows place of choice for eye check-up among Gondar resident adults 2016 (n = 794).*

Among those who did not visit eye care center, 70.1% respond that they did not go to eye care center because they have no eye problem. Eighteen percent did not go to eye care center even if they had eye problem because they considered their problem was minor (Figure 4).

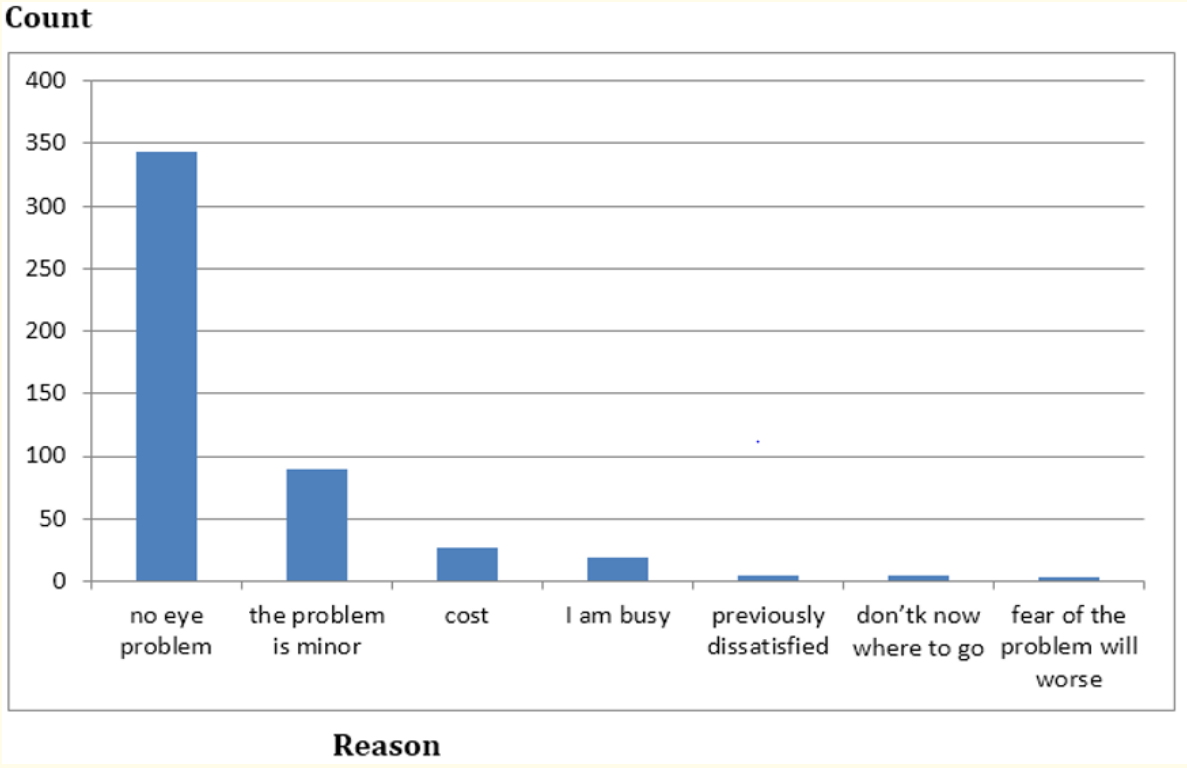

Figure 4: *Bar chart showing reason for not eye check-up among adults living in Gondar south west Ethiopia 2016 (n = 491).*

Associated factors

In multivariable logistic regression with enter method age, family monthly income, awareness and history of eye problem in the past were significantly associated with eye care service utilization.

Older participants were more likely to utilize eye care service than younger. Participants older than 60 years had 3.3 times more likely to utilize the service (AOR = 3.3, 95% CI: 1.53 - 7.16) compared to those aged 18-24 years. Those who had high family monthly income 2.41 times more likely to utilize eye care service than low family income (AOR = 2.41, 95% CI: 1.37 - 4.25). With regard to awareness, respondents with awareness of eye health had 1.64 times chance more likely to utilize than those with no awareness (AOR = 1.64, 95% CI: 1.09 - 2.46). History of eye problem in the past was positively associated with eye care service utilization (AOR = 10.63, 95% CI: 7.09 - 15.91) (Table 4).

Variables	Utilization			
	Yes	no	COR 95% CI	AOR 95% CI
Age in years				
18 - 24	45	159	1	1
25 - 59	164	344	1.68 (1.15 - 2.46)	1.37 (0.85 - 2.20)
> 60	44	38	4.09 (2.37 - 7.06)	3.31 (1.53 - 7.16)*
Sex				
Male	102	193	1.21 (0.89 - 1.65)	
Female	151	348	1	
Religion				
Orthodox	209	422	1	
Muslim	34	106	0.65 (0.42 - 0.98)	
Protestant	10	13	1.55 (0.67 - 3.60)	
Level of Education				
Unable to read and write	39	76	1	
Able to read and write	24	47	0.77 (0.49 - 1.22)	
Primary school	24	82	0.77 (0.44 - 1.33)	
Secondary school	64	182	0.44 (0.26 - 0.74)	
Higher education	102	154	0.53 (0.36 - 0.77)	
Family size				
< 3	60	195	0.53 (0.33 - 0.85)	
3 - 4	54	108	0.86 (0.52 - 1.41)	
4 - 6	97	166	1.00 (0.63 - 1.58)	
> 6	42	72	1	
Occupation				
Governmental	46	96	0.95 (0.59 - 1.52)	
Nongovernmental	32	75	0.84 (0.50 - 1.42)	
Merchant	44	120	0.72 (0.45 - 1.16)	
Retired	14	17	1.63 (0.75 - 3.54)	
Daily laborer	31	43	1.43 (0.81 - 2.50)	
Student	28	75	0.74 (0.43 - 1.26)	
House wife	58	115	1	
Family monthly Income (ETB)				
< 1000	80	234	1	1
1000 - 2000	64	134	1.33 (0.90 - 1.98)	1.49 (0.90 - 2.46)
2000 - 3000	39	98	1.11 (0.71 - 1.74)	1.05 (0.59 - 1.87)
> 3000	70	85	2.30 (1.53 - 3.41)	2.41 (1.37 - 4.25)*
Health insurance				
Yes	42	50	1.95 (1.25 - 3.03)	
No	211	491	1	
Awareness				
Yes	184	306	2.04 (1.48 - 2.83)	1.64 (1.09 - 2.46)*
No	69	235	1	1
Systemic illness				
Yes	61	103	1.35 (0.94 - 1.93)	
No	192	438	1	
History of eye Problem				
Yes	196	140	9.84 (6.92 - 14.00	10.63 (7.09 - 15.91)**
No	57	401	1	1
Family eye Problem				
Yes	62	108	1.30 (0.91 - 1.85)	
No	191	433	1	

Table 4: *Factors associated with eye care service utilization among Gondar city adult residents 2016 (n = 794).*

*1.00= reference; No * = p value insignificant; * = P value < 0.05; ** = p value < 0.001*

Discussion

Eye care center visit for consulting eye problem is the main criteria for eye care service utilization. Since some studies were done on a certain segmented age groups of population, this study was discussed in accordance to the context of other countries studies for the uniformity of the discussion group.

Overall the proportion of eye care service utilization in this study was found as 32% (95% CI: 28.8 - 35.1) which is higher than Kenya Nairobi 2006 (16.7%) [21] but lower than other studies with similar age group and urban population of Latinos 2010 study (36%) [11], India hydra bad city 2000 (41%) [17], Brazil 2009 (46%) [18], Tehran (56.8%) [16] and Canada 2011 (40%) [10].

The reason for high over all proportion as compared to Kenya could be due to low economic status of target population of Kenya. The study done in Kenya Nairobi was on slum dwellers.

The main reason for the low proportion of eye care service utilization in this study as compared to others could be the operational definition for eye care service utilization. This study used the standard for high-risk and risk free to develop eye problem. While most studies defined utilization as eye care center visit for the last 5yrs and some said for the last 2 yrs without specifying for the high-risk and risk free group. This increases the chance of enumerating the high-risk group as utilized the service while not utilized according to the standard.

Presence of better eye care service facility and better economic status of other countries relative to our city (Gondar) might be other possible justification for low eye care service utilization.

Respondents aged 60yrs and above utilized 53.65% which higher than Latino 2010 study (32%) [11], in line with Ghana 2013 (51.2%) [19] and lower than study done in America Maryland 1999 (64%) [9]. Those whose age > 40 year utilized the service 39.62%. It is low as compared with those cross-sectional studies from Los Angeles 2005 (62%) [12], Iran 2014 (52.7%) [15], USA 2012 (48% - 69%) [8] and Australia 1999 (61.9%) [13].

The main reasons for not utilizing eye care service was considering the problem as minor and not facing eye problems which was similarly mentioned in Kenya and India. In the other hands cost and lack of time were the main barriers in Ghana and Brazil.

In this study age was positively associated with utilization. Participants older than 60 years had 3.3 times more likely to utilize the service (AOR = 3.3, 95% CI: 1.52 - 7.16) compared to those aged 18 - 24 years. It is in agreement with Brazil [18], Victoria 2004 [14], 2014 Iran [15], Tehran 2006 [16], and America Mary land [9]. This could be due to high possibility of developing ocular problems as age increases this in turn increases eye care center visit.

Monthly family income had significant association with the outcome (AOR = 2.41, 95% CI: 1.37 - 4.25). Those who had monthly income > 3000 ETB utilized 2.41 times in reference to those who had < 1000 ETB which was in agreement with cross-sectional studies of Iran 2014 [15], Brazil 2009 [18], Canada 2011 [10] and America 2012 [8]. This is due to high economic level allows the participant to afford health service expenses.

Other studies recommended that awareness should be increased for better utilization of the service. But they did not assess the association with eye care service utilization. In this study 61.7% had awareness on eye health. Awareness had positive association in this study (AOR = 1.64, 95% CI: 1.09 - 2.46).

History of eye problem in the past was positively associated with eye care service utilization (AOR = 10.63, 95% CI: 7.09 - 15.91). Those who had eye problem in the past 10.63 times utilized the service as compared to no eye problem in the past. Studies from Brazil [18], Tehran 2006 [16], America Maryland 1999 [9] and Australia 1999 [13] supported this result. Presence of eye problem in the past was the most strongly associated need factor this is due to the fact they know they had problem this in turn triggers them to utilize more.

Conclusion

Proportion of utilization of eye care service was 32%. The main reasons for not utilizing were they feel they don't have problem and considering the problem is minor. Age, family monthly income, awareness and history of eye problem in the past were independently significantly associated variables with eye care service utilization.

Acknowledgements

First of all I would like to thank my advisors Mr. Natnael Lakachew and Mr. Dereje Hailu for their unreserved and prestigious help when I conduct this thesis.

University of Gondar for budget allocation and department of optometry for facilitating to conduct this research deserve deep acknowledge.

My deepest gratitude goes to my data collectors and my friends who contributed a lot at field work.

Last but not least acknowledgement goes to study participants for their willingness to participate in the study.

Disclosure

The authors have no conflict of interest in this work.

Bibliography

1. World health organization. "Global Initiative for the Elimination of Avoidable Blindness: action plan 2006-2011" (2007).
2. Frequency of Ocular Examinations – (2015).
3. Mariotti S. "Global data on visual impairments 2010". World Health Organization (2012).
4. Naidoo K., *et al*. "Prevalence and causes of vision loss in sub-Saharan Africa: 1990–2010". *British Journal of Ophthalmology* 98.5 (2014): 612-618.
5. Berhane Y., *et al*. "Prevalence and causes of blindness and low vision in Ethiopia". *Ethiopian Journal of Health Development* 21.3 (2008): 204-210.
6. Jmj R. "Leading causes of blindness worldwide". *Bulletin De La Societe Belge D'Ophtalmologie* 283 (2002): 19-25.
7. Smith A and Smith J. "The economic burden of global blindness: a price too high!" *The British Journal of Ophthalmology* 80.4 (1996): 276-277.
8. Chou C., *et al*. "Disparities in eye care utilization among the United States adults with visual impairment: findings from the behavioral risk factor surveillance system 2006-2009". *American Journal of Ophthalmology* 154.6 (2012): S45-S52.
9. Orr P., *et al*. "Eye care utilization by older Americans: the SEE project". *Ophthalmology* 106.5 (1999): 904-909.
10. Jin Y and Trope G. "Eye care utilization in Canada: disparity in the publicly funded health care system". *Canadian Journal of Ophthalmology* 46.2 (2011): 133-138.
11. Morales L., *et al*. "Self-reported use of eye care among Latinos: the Los Angeles Latino Eye Study". *Ophthalmology* 117.2 (2010): 207-215.
12. Baker RS., *et al*. "Access to vision care in an urban low-income multiethnic population". *Ophthalmic Epidemiology* 12.1 (2005): 1-12.

13. Wang J., *et al*. "Use of eye care services by older Australians: the Blue Mountains Eye Study". *Australian and New Zealand Journal of Ophthalmology* 27.5 (1999): 294-300.

14. Bylsma G., *et al*. "Utilization of eye care services by Victorians likely to benefit from eye care". *Clinical and Experimental Ophthalmology* 32.6 (2004): 573-577.

15. Emamian M., *et al*. "Economic inequality in eye care utilization and its determinants: a Blinder-Oaxaca decomposition". *International Journal of Health Policy and Management* 3.6 (2014): 307-313.

16. Fotouhi A., *et al*. "Eye care utilization patterns in Tehran population: a population based cross-sectional study". *BMC Ophthalmology* 6 (2006): 4.

17. Dandona R., *et al*. "Utilisation of eyecare services in an urban population in southern India: the Andhra Pradesh eye disease study". *British Journal of Ophthalmology* 84.1 (2000): 22-27.

18. Castagno V., *et al*. "[Shortage of ocular health care in the public system: a population-based study]". *Cadernos de Saúde Pública* 25.10 (2009): 2260-2272.

19. Ocansey S., *et al*. "Utilization of eye care services among Ghanaian elderly population: Evidence from a peri-urban community". *Ophthalmology Research: An International Journal* 1.2 (2013): 89-101.

20. Kimani K., *et al*. "Barriers to utilization of eye care services in Kibera and Dagoreti, Kenya". *Journal of Ophthalmology of Eastern, Central and Southern Africa* 14.2 (2013).

21. Ndegwa L., *et al*. "Barriers to utilisation of eye care services in Kibera slums of Nairobi". *East African Medical Journal* 82.10 (2006): 506-508.

22. Zhang X., *et al*. "Measuring access to eye care: a public health perspective". *Ophthalmic Epidemiology* 15.6 (2008): 418-425.

23. McClure L., *et al*. "Factors Associated With Ocular Health Care Utilization Among Hispanics/Latinos: Results From an Ancillary Study to the Hispanic Community Health Study/Study of Latinos (HCHS/SOL)". *JAMA Ophthalmology* 134.3 (2016): 320-329.

24. Addis Ababa population census commission. Summary and statistical report of the 2007 population and housing census. Population size by age and sex (2008).

Volume 9 Issue 9 September 2018