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ASSESSMENT OF BARRIERS TO THE UTILIZATION OF EYE CARE SERVICES AMONG STUDENTS OF MOUNTKENYA UNIVERSITY, KIGALI CAMPUS, RWANDA

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ABSTRACT

Lack of eye of eye care specialist coupled with shortage of modern facilities has been identified as main barriers to the utilization of eye care services in Rwanda. The objectives of this study were to evaluate the general knowledge about eye diseases and the main barriers leading to non utilization of eye care services among students at Mount Kenya University. The researcher also tried to assess the relationship between student's knowledge on eye diseases and utilization of eye care services. This study was conducted using cross sectional and quantitative methods. Questionnaires were used for data collection among 234 students selected in the school of Health sciences at Mount Kenya University. The data was analysed in the line with objective of the study using SPSS software. The study findings found that 52.1% of the study participants were female, 41.9% were aged between 23-27 years, 32.1% use RSSB as health insurance and 42.3% have eye diseases, 44% knew that difficulty to recognize a friend across the street is a sign of eye disease; 35.5% were not aware that this can be a sign of eye disease, while 20.5% did not know whether this can be the sign of eye disease or not. Knowing that difficulty to read a newspaper, magazine, notes and numbers on the telephone are signs of eye diseases had been scored positively by 48.7% among all respondents. This means that the students have moderate knowledge about eye diseases. The study findings also revealed that lack of money to pay for eye care services is a barrier to eye care services utilization, this is supported by 60.3% of the study participants. Finally, lack of educational program on eye care services is a big barrier to eye care services utilization, as it was reported by more than a half of respondents (60.3%). There is no statistical significant relationship between the two variables at 0.005 levels (2-tailed) as figure generated by Pearson chi-square was 0.673. Hence 45.2% is a moderate coefficient of determination. The implication is that by using coefficient of determination there is a moderate relationship between knowledge and eye care services utilization where the students with eye problem were most likely to visit eye care services for eye examination or to check-up the progress.

KEYWORDS

Affordability, Accessibility, Availability, Knowledge, Barriers and Utilization.

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INTRODUCTION

Accessing eye and health care services has been a major problem in most part of the world (WHO, 2009)[1]. Two hundred and eighty five million people are estimated to be visually impaired worldwide, 39 million are blind and 246 have low vision (WHO, 2011)[2]. About 90% of the world's visually impaired live in the developing countries (WHO, 2011)[2].

Globally, uncorrected refractive errors are the cause of visual impairment, cataracts remain the leading

cause of blindness in the middle and low income countries, while 80% of all visual impairments can be avoided or cured. When access is denied quality of life reduces and there will be an increase in diseases which may not be prevented, diagnosed, treated or managed. Some researchers have tried in one way or another to access the barriers to eye and health care services in the world; America, Europe, Middle East, Asia and Africa (WHO 2009)[1].

Assessment of the barriers to the use of eye care services is important for planning strategies to prevent blindness. This study will be focusing on students with little references on studies done on communities too. Poor utilization of eye care can be seen as lack of confidence by the populace for the eye care professionals, some reasons for not accessing eye care services multifaceted, and some may be more easily address than others. Millions of people today are going blind because they cannot access eye care services (WHO, 2010)[3].

From the earliest provision of health care there have those with access to eye care and those without access to it. Those who lived in the appropriate state or country had a job or access to social programs that include insurance, necessary knowledge, or had the financial means were able to access health care (Dandona *et al.*, 2000)[4].

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Studies in Gambia, West Africa recognized that the reasons for poor uptake of cataract surgery was more of cultural barriers, were males have more authority than females even up to economic power. Also in Gambia the same reasons was found for the poor utilization of trichiasis surgical services even when the female gender need it more. In Malawi, there is similar study on the reasons for uptake of cataract surgery but now is more of affordability of care where the rich get the health care and the poor does not. Also, in Tanzania studies on poor utilization of triachiasis surgical services were associated with availability and affordability. Indirect cost associated with accessing eye care services as a barrier to service use in Ethiopia. Availability and proximity were accounted for as hidden charges which stand also as a barrier to eye care (Khan, 2004)[5].

In Rwanda, about 0.5% of the populations are blind, that is, between 50,000 and 60,000 blind people. According to the ophthalmologist, most of the blindness cases are caused by cataract and glaucoma diseases. In the same study cataract was noted to be an important eye condition in Rwanda. A cataract is a clouding that develops in the crystalline lens of the eye or in its envelope, varying in degree from slight to complete opacity and obstructing the passage of light. Although vision can be restored in most people with cataracts, cataracts are still the most common cause of blindness in Rwanda (RBC, 2011)[6].

Research materials

The research was a self-administered questionnaire with close ended questions, it comprised of three parts. Part 1 related socio-demographic background, part 2 on student's general knowledge about eye diseases and part 3 on barriers to the utilization of eye care services.

Questionnaire was preferred because, it was reliable, relatively cheap and quick means of collecting data from a high population in a reasonable period. They also offer anonymity and increase accuracy in case of required sensitive information and target population.

Validity and reliability of the research materials

A pilot study was conducted at the University of Rwanda, school of medicine and health sciences, Kigali campus where 20 students were randomly selected to participate in a pilot study. The participants were given the questionnaire for completion and re tested after one week. The responses that were obtained during the pilot study were compared to establish reliability of responses. The questionnaire was approved after small modified based on the responses from the pilot study.

The design and sampling processing were carefully formulated to minimize the possibility of bias. Also, the study population was carefully defined, with the sample size that represented each department included in the study.

Administration of research materials

Prior collection of data, the researcher got authorization letter from the school of health sciences, Mount Kenya University. This was presented to the class representative from each selected class. Still in the field collecting data, the researcher edited the gathered data prior to coding them for their entry into statistical package for social scientist (SPSS) for data analysis.

Moreover, each participant was given a freedom to participate in the study and possibility to withdraw from the investigation at any time without giving any explanation. To assure the quality of data, properly designed data collection instruments and training of both data collectors was done. The collected data were reviewed and checked for completeness by the researcher each day. Collected data were kept in a securely locked cupboard during and after the study, and will be destroyed by shredding after the report has been published. Data captured in the computer were password protected and intended to be deleted after report publication.

Methodology

A cross sectional research design using quantitative methods were employed in this study to determine the barriers leading to utilization of eye care services among the students at Mount Kenya University, Kigali campus. This method was used because it allows the researcher to compare many different variables at the same time, a questionnaire was also used to collect and analyze data from the respondents.

The population is described in terms of population, inclusion criteria and sampling method. The target populations in this study were all students from the school of health sciences at Mount Kenya University; Kigali campus aged 18-35 years old. The university estimated around 647 students registered in day program, evening and weekend program for may August 2014 semester.

The present study was carried out at mount Kenya university, Kigali campus from the school of health sciences aged 18-35 years old were the main respondents; the school is located in kicukiro district one among three districts that make up Kigali city, Rwanda.

The sample size of 234 main respondents was selected according to Morgan table (Morgan *et al*, 1994)[7] because it is applicable for educational research. It shows that when the population comprises between 600 and 700 at 95% confidence with margin of error of 5.0%, the sample size should be 234, Roscoe (1975)[8] confirms that any sample size between 30 and 500 is enough to produce credible results. 234 respondents in the total population were randomly selected to participate in the study.

The field work (data collection) was done during the week and on weekends between 09:00 am and 8:00 pm. The class representatives from each class were used to know the timetable of the students. This enabled the researcher to know when the students were free to be invited to participate in the study. Proportional to size techniques have been used to select respondents from each department that make up the school of health sciences at Mount Kenya University. This was used because departments have different number of students. This was to ensure greater representatives in the sample from the target population; therefore this sampling method is as good as the random sampling method. Using Kothari (2004)[9], formula of calculating the sample size to proportions, the appropriate sample size is based on the number of students in each department was proved. After taking proportions from each department, males and females were grouped separately to ensure a representative sample. The lists of students for both groups were obtained from the course representative and simple random sampling method was used to earmark the participants. To put this context, students' names were written in pieces of papers, folded and thrown into a basket from which the researcher made repeated deep until the sample proportion from each department was completed. This was done separate for both the male and female group in each department.

$$Ni = n \times nj / N$$

Ni = sample size of cluster (for each department)

n = sample size of the study population (sample size calculated from all students)

nj = population of cluster (total number of students in department);
N = study population (total number of students up to school of health sciences)
Sample size calculations from each department makeup school of health sciences, MKU
Source: MKU registration office, (2014).

Methods for data analysis

Data was captured with the statistical package for social sciences (SPSS). Descriptive statistics was used to describe data and Pearson's chi-squared test of the SPSS was used to establish association between utilization of eye care services and general knowledge about eye diseases.

Descriptive statistical were used to give a clear picture of background variables like age, sex and other variables in well-structured questionnaire. The frequency distribution of both dependent and independent variables will be used. The association between variables was measured and tested using Pearson's chi square. A p value <0.005 was consider to be statistically significant in all cases.

Data was summarized and presented according to study variables where frequency, percentage and standard deviation, mean and confidence interval were used. Tables were used to present data.

Ethical consideration

The study was ethically cleared by Mount Kenya University and approving committee of the school of health sciences. Written consent after explanation about the study was obtained from the study participants. Students thoroughly read the consent form and signed on it. For confidentiality the name of the participants were not typed on the questionnaire.

RESEARCH FINDINGS AND DISCUSSION

Socio-demographic characteristics of respondent's

The respondents' demographic profile constituted sex, age group and type of health insurance used. These items were analyzed by using descriptive statistics which are frequency and percentage.

Identification of respondents

The table shows the frequency, percentage distribution of respondents' identification. The findings revealed that female respondents dominate the study with 52.1% while male respondent were 47.9%. Respondents who participated in the study belong to different age group where 41.9% were aged between 23 – 27 years old, 28.2% were in age bracket of 27 – 31 and only 7.7% belong to age bracket of 32 – 34. This means that the age of the students which affected the study was the views of youth university students between the ages 23 – 27 years.

The findings presented in the Table No.1 showed also the type of health insurance used by the students in case of health care need; among 241 students who participated in the study 32.1% use RSSB ex RMMA, community based health insurance were used by 23.9%, the results was surprising as 25.6% of students did not have any health insurance. Having eye diseases have been reported by 42.3% and 57.7% reported they did present any sign or symptoms of eye diseases.

A study conducted by Keeffe *et al.,* 2002[10] on, utilization of eye care services by urban and rural Australia found that the predisposing factors which are those that exist before an illness and describe the propensity of an individual to use health care services, and they include age, gender, beliefs (such as attitudes towards health services), knowledge about disease, and values. Individuals with eye problems or systemic conditions such as diabetes have a need for eye care services and would use them more frequently than those without perceived or diagnosed risk of eye problems. Therefore, they are likely to have higher utilization rate than those without perceived need. Enabling factors like health insurance, urban residence and living close to eye care service centers can also influence the utilization of eye care services.

Socio economic status has been found to influence the use of eye care services. Zhang *et al.,* (2008)[11] found that individual with optional vision insurance and those with higher income levels were more likely to use eye care services. Robin *et al.,* (2004)[12] reported that the odds of using eye care increased significantly with higher income of the subject.

Students' knowledge about eye diseases

The first objective of the study was to evaluate students' general knowledge about the eye diseases. Nine items on the questionnaire were subjected to the general knowledge related to the eye diseases, the questions were constructed in such a way that reflected the subjective and bring clear understanding about the eye diseases (Table No.2).

Source: primary data, (2014)

The findings about the students' knowledge were summarized in Table No.2; those results showed that 44% know that difficulty to recognize a friend across the street is a sign of eye disease, 35.5% were not aware that this sign can be the sign of eye disease while 20.5% didn't know whether this can be the sign of eye disease or not.

Knowing that difficulty to read a newspaper, or magazine, notes and numbers on the telephone as signs of having eye disease had been scored positively by 48.7% among all respondents, 32.5% got the negative score where they denial this kind of eye problems sign. Students had showed their level of knowledge about blurred vision as a sign of having eye diseases where 28.6% said that this makes objects to appear white, 36.3% answered that it makes the objects to appear faints while 35% said its makes objects to appear black.

The findings from this study is consistent with the study done by O'Connor *et al.,* (2008)[13] carried out in Melbourne, Australia where they found that low utilization of eye care services was due to lack of knowledge of available eye care services. Chandra shekar *et al.,* (2007)[14], in a study on utilization of eye care services among the rural population was lack of awareness of the existing free-of-cost services offered by non-governmental organizations and low-cost eye surgical services. In a study of knowledge, attitude and practices regarding cataract surgery in parts of India, Bhagwan *et al.,* (2006)[15], found that poor knowledge regarding eye diseases like cataract were reported and respondents were unaware of the possibilities to get their sight restored through operations.

Knowledge about red eye that lead to eye disease or which can be a sign which indicate that a person has eye problems, 39.4% revealed that a person with this sign may suffer from cataract as eye disease, 35.5% associated it with glaucoma while 25.5% link it with conjunctivitis.

Knowledge about double vision which is an eye disease, students reported what they know about this type of eye problems, where 35.5% said that a person with this sign may suffer from cataract, 38.4% said that a person with double vision may suffer from glaucoma while 26.1% associate double vision with refractive eye disease.

Knowledge about the sign of having astigmatism regarding this eye disease the students showed their general knowledge, where 52.1% reported that people with astigmatism have difficulty in clear vision, 33.8% said that a person with astigmatism see object which are far but can't see near while 14.1% said that a person with astigmatism can't see at all which is wrong.

Students' knowledge about the sign which indicate that a person can have hyperopia/long sight, the results from respondent's view revealed that 47.4% said that a person with hyperopia see the objects which are near but can see far, 28.2% said that people with long sight see far objects but can't see near objects, while 24.4% reported that people with long sight can't see any at all.

Respondents' knowledge according to the common sign which indicate that a person can have myopia/ short sight showed that 35% among all respondents said that a person with myopia see the far objects but can't see near objects, 32.5% reported that a person with myopia see near object but can't see far objects while 32.5% reported that with myopia a person can't see at all, and it requires eye glasses to clear.

According to a study conducted by Oduntan and Raliavhegwa[16], where they found that only 39% of the respondents in a rural community survey in South Africa had their eyes examined within five years or more despite the accessibility and affordable eye care services. Factors such as cost, lack of awareness, cultural beliefs and personal factors were identified as barriers to eye care utilization. The poor utilization was highlighted as a concern because the time interval between eye examinations was high enough for certain avoidable or ocular diseases to cause irreversible loss or blindness.

In support of the study findings still, He *et al.*, (2005)[17] found that parental education and an enhanced school based screening programme have been identified as necessary to address the unfilled need for refractive error correction among school age children in china. Kovai *et al.*, (2007)[18] study findings showed that the predominance of personal reasons like lack of knowledge among respondents demonstrated that greater awareness regarding the importance of seeking treatment for visual impairment is needed to facilitate uptake of eye care services.

Barrier to utilization of eye care services

Access to vision, eye and health care is a major problem in the Rwanda. Without access to care, students' health and quality of life are reduced and diseases are not prevented, diagnosed, treated or managed. Without access to vision care, students may not be able to effectively participate in their communities, drive safely, perform effectively on their jobs, read, learn in schools, access information needed for activities of daily living, avoid accidents and falls, and will not have adequate protection from eye injuries and accidents. Those problems may be associated with different barriers; the second objective of this study was to identify a possible barrier to utilization of eye care services among university students.

Poor practitioner to patient ratios, absence of eye care personnel, inadequate facilities, poor state funding and lack of educational programs have been considered as the hallmarks of eye care in Africa, with preventable and treatable conditions leading cause of blindness (Naidoo *et al.*, 2006)[19].

Source: primary data

The study findings revealed that lack of money to pay for eye care services is a barrier to eye care service utilization, where 60.3% agree money is still a major barrier to access the eye care services, 38.9% revealed that money is not a problem to access the services, 9% do not know whether to access eye care services are costly or not (Table No.3).

Khan *et al.*, (2004)[5] found that non-availability of low cost, good quality low vision services and lack of experts or training to support services have hindered provision of low vision care services in the developing countries. Similarly, Nedgwa *et al.*, (2005)[20] reported that lack of money was one of the main barriers to eye care use in Kenya; and in Gambia, the most frequently identified barrier to uptake of cataract surgery was cost (Johnson, 1998)[21].

Students' ignorance was reviewed as a barrier to eye care utilization, where most of the respondents at 61.1% agreed with the statement that ignorance might be a barrier to eye care access, and 38.9% did not agree.

Students' views on how some eye disease are not causing much discomfort to warrant medical attention at early stage where 61.5%, 37.6% find this as not a barrier to eye care utilization, while a very small number (0.9%) of respondents do not know whether it's a barrier or not.

The insurance scheme does not cover the eye treatment cost, this have been found as barrier in this study where 58.5% confirm this as a barrier to the access to eye care services, 39.7% revealed that is not a barrier while 1.9% did not know whether it's a barrier to access of eye care services.

Eye disease treatment cost is still high and this was identified as barrier to eye care utilization where majority of the respondents at 59.4% agreed on this barrier while only 1.3% was not aware about the barrier. Lack of trained personnel in eye care services is seen as barrier to eye care utilization where 54.3% positively accept this as a barrier, but 44.4% were not in support.

Lack of education program on eye care services is the barrier to eye care service utilization, as it was reported by more than half of respondents (60.3%), while 38.9% did not see it as a barrier to eye care services utilization.

Small number of clinics that provide eye care services in Rwanda is barrier to eye care services as revealed by the study respondents with 60.3% who positively agreed, while a very small number at 1.3% didn't see it as a barrier.

Poor materials used for eye disease consultation influence the utilization of eye care services and it is a barrier to access eye care services where 53% saw this as a barrier and 47% object to it. Small number of ophthalmologist around the city is seen as barrier

leading to lower utilization of eye care services among students where 59.4% agreed with this statement, 40.2% rejected this as barrier while 0.4% was not aware about this barrier.

The standard deviation for all eye care services barrier found in this study lie between 0.400 to 0.66 and this mean that there is no dispersion between respondents information.

The study findings demonstrate the strong consistence with other studies, lack of trained personnel and infrastructure has been identified as barrier to refractive error corrections in southern India (Dandona, 2000)[4]. Severe inadequate eye care services have been reported in the Jamaica (Buchanan, 2000)[22]. The total eye care provider / population were only 2.04/100,000 and only 1.32/100,000 when optometrists are excluded. Over 43% of the population had never had an eye examination. Obviously this will result in low utilization rate and high prevalence of eye and vision disorders. In Afghanistan, eye care services have been reported to be insufficient in quantity and quality. The ratio of ophthalmologist to population has been estimated at 1:200,000 and this inadequacy is compounded by poor distribution, there being 87% in the urban and 13% in the rural areas (Husainzada R, 2007)[23]. In Nigeria, non-availability of low vision devices in the country and lack of training in low vision were cited by ophthalmologist as major barriers to low vision care (Okoye, 2007)[24].

Relationships between students' knowledge on eye diseases and utilization of eye care services

Effort was made to ascertain the relationship between students' knowledge on eye diseases and utilization of eye care services, Table No.4. Presents that relationship where by using cross tabulation for students' knowledge and ever visited eye care services. The p-value and Pearson chi-square have been generated at different significant level of p-value less than 0.05.

Table No.4 shows the results of the extent to which the relationship exists among variables on the students' knowledge on eye diseases and whether the students have been visited eye care services and examined by any doctor or eye care provider. Calculation by using computing scores using Pearson chi square with statistical package SPSS indicate that there is no statistical significant relationship between the two variables at 0.05 levels (2-tailed) as generated Pearson chi square was 0.673. The coefficient of determination X2 is 0.673, which is 0.452 x 100 or 45.2%. Hence, 45.2% is a moderate coefficient of determination. The implication is that by using coefficient of determination there is a moderate relationship between knowledge and eye care services utilization.

There are many factors that may act as barriers to eye care utilization and health care managers and professionals must be conversant with these factors. Eye care must be made available, accessible and affordable. Subsequently, factors that may act as barriers to their use must be identified and addressed. While some people still lack basic knowledge about how to be healthy and what are healthy behaviours, most people lack access to health care because of the socioeconomic barriers that exist today (Kovai *et al.*, 2007)[18].

SUMMARY

This general objective of this study was to identify the main barriers to utilization of eye care services among students at Mount Kenya University School of health sciences. The present chapter presented the summary of the study where the main findings were presented according to the study objectives; conclusion and recommendation was establish according to the study findings.

This study was guided by general objective and three specific objectives which are to evaluate students' knowledge about the eye diseases, to identify the barriers to utilization of eye care services and lastly was to establish the relationship between students' knowledge on eye disease and utilization of eye care services among Mount Kenya University students.

Limited knowledge of eye diseases was a feature of all items related to students' knowledge about eye diseases and was observable in students who had and had not attended eye examinations, the only exceptions being those with direct experience of eye disease. Addressing this is important to encourage people to have eye examinations to prevent disease that could affect their eyes but this is unlikely to alter

behaviour significantly on its own. 42% among all study participants reported that they had eye disease and had visited eye care services for eye check-up or treatment.

Study findings showed that 44% knew that difficulty to recognize a friend across the street in a sign of eye disease, 35.5% were not aware that this can be a sign of eye disease while 20.5% did not know whether this can the sign of eye disease or not. Knowing that difficulty to read a newspaper, magazine, notes and numbers on the telephone as sign of having eye disease had been scored positively by 48.7% among all respondents. This means that the students have moderate knowledge about the eye diseases.

Barriers to eye care services utilization

Access to health care needs to be provided in the broadest sense and include prevention, eye and vision care and similar services, prior to this study main barriers have been identified and the students showed different perception about those barriers.

The study findings revealed that lack of money to pay for eye care services is a barrier to eye care services utilization, where 60.3% agreed money is still a major barrier to access the eye care services. Lack of education program on the eye care services is also a barrier to eye care services utilization, as it was reported by the respondents in the study by more than half of respondents 60.3%; 59.4% among all study participants revealed that a small number of ophthalmologist around the city is a barrier leading to lower utilization of eye care services among students.

Relationship between students' knowledge about eye diseases and utilization of eye care services

The study found that most students go for eye examination on the basis of symptom led demand, usually due to worsening sight. There is no statistical significant relationship between the two variables at 0.05 levels (2-tailed) as generated, Pearson chi-square was 0.673. Hence 45.2% is a moderate coefficient of determination. The implication is that by using coefficient of determination there is a moderate relationship between knowledge and eye care services utilization where the students with eye problem were most likely to visit eye care services for eye examination or check-up the progress

Table No.1: The type of health insurance used by the students in case of health care

S.No	Departments	Number of students	Sample size
1	Public health	287	104
2	Nursing	83	30
3	Medical laboratory sciences	187	68
4	Pharmacy	90	32
Total	---	647	234

Table No.2: Students' General Knowledge about the Eye Diseases

Variable	-	Frequency	Percentage (%)
sex	Male	112	47.9
	Female	122	52.1
Age group	18 – 22	52	22.2
	23 – 27	98	41.9
	27 – 31	66	28.2
	32 – 34	18	7.7
Type of health insurance used	None	60	25.6
	RAMA	75	32.1
	CBHI	56	23.9
	MMI	22	9.4
	SORAS	13	5.6
	BK	8	3.4
Having eye diseases	Yes	99	42.3
	No	135	57.7

Variable	-	frequency	Percentage
Knowing that the difficulty to recognize a friend across the street is a sign of eye disease	Yes	103	44
	No	83	35.5
	Don't know	48	20.5
Knowing that difficulty to read newspaper and numbers on the telephone is among the signs of having eye diseases	Yes	114	48.7
	No	76	32.5
	Don't know	44	18.8
Knowledge about blurred vision	It makes the object to appear white	67	28.6
	It makes object to appear faint	85	36.3
	It makes object to appear black	82	35
Knowledge about red eye that lead to eye disease	Conjunctivitis	60	25.6
	Cataract	92	39.4
	Glaucoma	82	35
Knowledge about double vision that can lead to eye diseases	Refractive	61	26.1
	Cataract	83	35.5
	Glaucoma	90	38.4
Knowledge about the sign of having Astigmatism	Difficulty in clear vision	122	52.1
	People see objects far but can't see near	79	33.8
	People can't see at all	33	14.1
Knowledge about the sign which indicate that a person can have hyperopia/long sight	People see objects near but can't see far	111	47.4
	People see objects far but can't see near	66	28.2
	People can't see at all	57	24.4
Knowledge about the common sign which indicate that a person can have myopia/short sight	People see objects far but can't see near object	82	35
	People see objects near but can't see far	76	32.5
	People can't see at all	76	32.5

Table No.3: Source: primary data

Variable		frequency	percentage	Std Deviation
Lack of money to pay for eye care services is seen as barrier to utilize eye care services?	Yes No Don't know	141 91 2	60.3 38.9 9	0.509
Students ignorance is it a barrier to utilization of eye care services?	Yes No	141 91	61.1 38.9	0.488
Some eye diseases are not causing much discomfort to warrant medical attention at early stage?	Yes No Don't know	144 88 2	61.5 37.6 0.9	0.506
Many of insurance scheme not cover the eye treatment cost?	Yes No Don't know	137 93 4	58.5 39.7 1.9	0.529
Eye disease treatment costs are still high and are this barrier to eye care utilization?	Yes No Don't know	139 92 3	59.4 39.3 1.3	0.519
Lack of trained personnel in eye care services is seen as barrier to eye care utilization?	Yes No Don't know	127 104 3	54.3 44.4 1.3	0.525
Lack of education program on eye care services is the barrier to eye care services utilization?	Yes No Don't know	141 91 2	60.3 38.9 0.9	0.509
Small number of clinics that provide eye care services in Rwanda is barrier to eye care services?	Yes No Don't know	141 90 3	60.3 38.5 1.3	0.518
Poor materials used for eye disease consultation influence the utilization of eye care services?	Yes No	124 110	53 47	0.500
Small number of ophthalmologist around the city is seen as barrier leading to lower utilization of eye care services?	Yes No Don't know	139 94 1	59.4 40.2 0.4	0.501

Table No.4: relationships between students' knowledge on eye diseases and utilization of eye care services

	Ever visited eye care services and examined by any doctor or eye care provider	
Students knowledge on eye diseases	Pearson chi-square	p-value
	9.347	0.673

CONCLUSION

It is clear from the study that the main barrier to utilization of eye care services among the students is the lack of money to pay for services. Normally in Rwanda not everyone can afford eye care services. The price for consultation is still high compared to other disease, for example in cases with need for glasses to correct eye defect, not everyone can get money to buy those eye glasses and most students use community based health insurance for health care services which does not cover eye care services consultation. Students also revealed that small number of eye care specialist around the city can lead to poor utilization of the service.

Recommendations

On the basis to the above conclusion and study objectives, the study suggests the following recommendation:

The study recommends that MoH with their partners in health sector to train more eye doctor specialist and reduce the price for eye care services.

The study recommends regular and focused training of eye care staff to match any change in new eye treatment and care.

MoH must provide an education program which can help to raise awareness and provide information on eye health to encourage students from the universities to attend for regular eye examinations.

The study recommends the university managers to have a permanent health care professional who can develop and provide key messages for students with or without eye diseases.

University is recommended to work in partnership with MoH to bring together different perspectives and thus provide a whole health system approach; and influencing partners to embed changes in service design and ways of working in the optometry industry that promote eye health and improve access to primary and secondary eye care.

Suggestions for further studies

A study which can access the risk factor to eye disease such as diabetes, family history about eye disease needs to be carried out in order to understand more about those factors.

A qualitative study about perceived barriers to care and attitude about vision and eye care: focus group with youth in rural area can bring a clearer picture on the eye disease in Rwanda.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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