



Utilization of Eye Care Services among Ghanaian Elderly Population: Evidence from a Peri-Urban Community

Stephen Ocansey^{1,3*}, Akwasi Kumi-Kyereme², Kofi Awusabo-Asare²,
Alex Azuka Ilechie³, Samuel Bert Boadi-Kusi³,
and Carl Halladay Abraham³

¹Department of Vision and Hearing Sciences, Faculty of Science and Technology, Anglia Ruskin University, United Kingdom.

²Department of Population and Health, Faculty of Social Sciences, University of Cape Coast, Ghana.

³Department of Optometry, Faculty of Physical Sciences, University of Cape Coast, Ghana.

Authors' contributions

This work was carried out in collaboration between all authors. Authors SO, AKK and KAA designed the study. Authors AKK and SO performed the statistical analysis. Authors SO, AAI and SBBK wrote the protocol. Author SO wrote the first draft of the manuscript. Authors KAA, AKK and AAI managed the analyses of the study. Authors CHA and SBBK managed the literature searches. All authors read and approved the final manuscript.

Research Article

Received 26th June 2013
Accepted 16th September 2013
Published 27th September 2013

ABSTRACT

Introduction: Despite being more affected by visual impairment and blindness than any other population age group, the elderly are least likely to seek help when faced with eye problems. Eye care utilization among the aged is influenced by a number of predisposing, enabling and need factors.

Aim: To assess the eye care needs and utilization of eye care services among Ghanaian elderly population.

Methods: A cross sectional survey of 170 elderly persons (52.0% of those eligible) aged 60+ years in a peri-urban community in the Central Region of Ghana was conducted. They were purposively sampled and interviewed using a semi-structured questionnaire to collect information regarding demographics, eye care use, barriers and eye care seeking

*Corresponding author: E-mail: Stephen.ocansey@anglia.ac.uk;

behavior. They also underwent ophthalmic examination.

Results: The mean age of the respondents was 70 years with 58.2% of them being females. About one third 61(35.8%) had never had an eye examination in their lifetime. Among 137 (80.5%) individuals identified with eye problems that needed care at the time of the examination, 76.9% self-reported eye problems before examination but only 51.2% had utilized eye services in the previous five years. Nearly three out of four (75%) were registered with the national health insurance scheme (NHIS). Conditions identified were cataract in 117 (29.2%) eyes, uncorrected refractive error 75(18.8%), pterygium/pingui culi 55(13.8%), presbyopia 40(10.0 %), and retinal disorders in 23(5.8%) eyes. By proportion, more males (59%) than females (45.5%), increasing age and those with higher level of education utilized eye care. The study showed that sex, education but not age were statistically related to the utilization of eye care services ($P = 0.05$).

Conclusion: A large proportion of the elderly who require eye care are currently not utilizing eye care services. The barriers that lead to the low utilization of eye care services among the elderly should to be explored to reduce the burden of visual impairment.

Keywords: Utilization; elderly; population; eyecare; Ghana.

1. INTRODUCTION

Population ageing is a global phenomenon associated with a range of health care challenges [1]. Ageing results in a number of health conditions including eye diseases and visual impairments that increases the number of elderly persons needing care [2-3]. Age-related eye diseases and resultant visual impairments cause functional impairment among the elderly undermining independence and quality of life [4-5]. Interventions aimed at the timely recognition and treatment of such age-related eye disorders can prevent disability from these conditions.

Ophthalmic and optometric best practices recommends that older adults visit an eye care professional regularly to have a comprehensive eye examination but some elderly persons are not able to utilize eye care services due to some factors seen as barriers [4-6]. Healthcare utilization is influenced by a number of interactive factors, namely predisposing, enabling and need factors [7]. Predisposing factors subsist before the occurrence of disease and reflect the tendency of a person to use health care services. Enabling factors influence an individual's capacity to utilize healthcare services while need factors describe the use of healthcare in the presence of eye disease or a perceived health state. Barriers to the utilization of eye care among the elderly result in delays in treatment, which cause dissatisfaction and may lead to worsening clinical and patient outcomes [8-10].

To some extent, utilization of eye care services reflects the effective coverage of eye health services and is a marker of existing eye health system performance [4,6,11]. In Ghana, payment for health care is either by cash (cash and carry) or by National Health Insurance Scheme (NHIS). Under the NHIS, operated under the authority of the Government of Ghana, patients who pay an annual renewable subscription fee and elderly persons (70 years and above) receive free selected medical services covered by the scheme, including some ophthalmic services [12]. Payment for health care at private health institutions is by cash and only few people can afford private health care. Records indicate that as many as twice rich people are signed up to the NHIS than the poor and vulnerable persons. Government puts the coverage rate for the NHIS at about 70% of the population but the actual coverage rate

could be as low as 18%, and 29% of the poor compared to 64% of the rich are registered with the health insurance [12]. Ophthalmic services in Ghana are provided mainly by ophthalmologists, optometrists and ophthalmic nurses with some general practitioners offering some ambulatory care. There are about 50 Ophthalmologist, 200 Optometrist and 300 ophthalmic nurses in Ghana, serving the over 24 million population [13]. Most rural and peri-urban communities are underserved as majority of ophthalmologists and optometrists practice in larger towns and cities only.

The elderly who live in rural and distant areas of developing countries have limited access to eye care and worse eye care outcomes relative to urban and more modernized towns [6,9,14-15]. The World Health Organization estimates that though the number of people visually impaired from infectious diseases has greatly reduced in developing countries within the last 20 years, the lack of access to cataract surgeries in developing countries poses a major challenge to eradicating needless and avoidable blindness by the year 2020 [16]. Notwithstanding the fact that the elderly are more affected by visual impairment and blindness than any other population group, they are least likely to seek care when faced with deterioration of their vision due to the presence of comorbid conditions [5,15]. It is estimated that only one in three older people with cataract actually receives surgery in least developed countries [3,17]. In addition to eye problems, older people usually have other age-related health problems, such as hearing impairment, arthritis, cardiovascular disorders, and diabetes [1]. The disabilities caused by such disorders could make some older people reluctant to visit health facilities. The study assesses the need for and the pattern of eye care service utilization among the elderly at a peri-urban community and has implications for health planning considering the emerging aging population in Ghana.

2. MATERIALS AND METHODS

The study was a community based cross-sectional survey conducted in 2012 at Yamoransa, a peri-urban community in the Mfantseman West District of the Central Region of Ghana. The district has a district hospital which provides primary eye care. The Central Region however, has three major eye clinics which provide full scope eye care services [13]. The total population of the town was 5,413 comprising 45.8% males and 54.2% females in 2010¹⁷. Using the United Nations age criteria and also the age criteria used to define who an elderly person is in the last population census in Ghana in 2000, respondents aged 60 years and above were sampled to take part in the study. A total of 308 persons (5.7% of 5413) aged 60 years and above [18] were initially enumerated to take part in the study but 170 (55.2%) respondents were purposively sampled and were involved in the study. The minimum sample size (n) was determined using the formula $n = \frac{(Z)^2 P(1-P)}{d^2}$. Where, Z = 1.96 for 95% confidence level, P= proportion of population (50%) in percentage expressed as decimals and d= confidence interval (± 5) expressed as decimals. After having corrected for the finite population size with the expression $n_s = \frac{n}{[1 + (n-1)/pop]}$, where n_s = new sample size and pop = population, a minimum sample size of 110 was calculated but 170 were sampled using the age inclusion criteria. The district bears demographic characteristics similar to that of the rest of Central Region and other peri-urban communities in Ghana making it ideal for the study [18]. Semi-structured questionnaires were administered by three trained social workers and five Optometrists to collect information on respondents' demographic background, current and previous use of eye care services in the previous five years, barriers to uptake of eye care services, satisfaction with previous eye care and eye care seeking behaviour. The questions were interpreted in the local dialect (Fanti) to allow for those who could not speak and understand English.

Five experienced Doctors of Optometry also screened respondents for abnormal ocular conditions and visual impairments. Ophthalmic examinations performed included detailed ocular history, presented visual acuity (PVA) measured with or without glasses according to what the patient was wearing at the time of the examination with a tumbling “E” at six meters, external eye examination using a magnifying loupe under penlight, dilated internal eye examination using direct ophthalmoscopy to evaluate retinal status, including vessels, macula and optic disc features and hand-held applanation tonometry to measure intraocular pressure (IOP) when indicated. Pinhole examination was performed to identify those who had refractive errors and would benefit from refraction. Ocular conditions identified were verified on subsample at the regional hospital where referrals were sent for treatment by consultant Ophthalmologist. All the team members also had previously been involved in community eye screening and so were conversant with their roles. Each questionnaire and eye examination took about 45 minutes to complete. All elderly persons that met the age criteria for the study had an equal chance of participating in the research. National Health Insurance (NHIS) and voter identification cards were used to verify participants’ ages.

The research was done according to the Helsinki Declaration on Research regarding Human Subjects. This study was reviewed and approved by the Department of Population and Health, University of Cape Coast on behalf of the Institutional Review Board of University of Cape Coast (UCCIRB). Participants were made to sign informed consent forms attached to the questionnaires after the processes had been explained to them. Confidentiality was assured at all times.

Visual impairment was determined using PVA (with or without spectacles) less than 6/18 to 6/60 in the better eye and blindness using visual acuity of less than 3/60 in the better eye based on the guidelines drafted by the World Health Organization (ICD-10) [19]. Likewise, respondents self reported vision was graded according the visual acuity criteria 6/4- 6/5 (Excellent, 6/6-6/18 (Good), 6/24-6/60 (Poor), 3/60 or worse (Very poor), no perception of light (completely blind) [20]. Criteria for identification of abnormal ocular conditions have been described in other studies [11]. Data obtained was analyzed using the Statistical Product for Service Solutions (SPSS v 16) application to carry out descriptive statistics and chi-square to test the hypothesis that utilization of care services has an independent relationship on selected socio-demographic variables. Independent variables included age, sex, and education level while dependent variable utilization was defined as the ability to see an eye care professional or a qualified health professional when in need of eye care service or had an episode of eye condition that requires treatment in a 5-year period. Statistical significance was defined at an alpha level of 0.05. We categorized people requiring eye care/treatment in our study population as people with PVA worse than 6/18 in the better eye and/or identified ocular pathology/disease after examination.

3. RESULTS

Out of a total of 170 elderly persons who were interviewed, 41.8% were males and 58.2% were females (Table 1). The distribution shows that half of the respondents (50.6%) were aged between 60-69 years (young old), 31.8% were aged between 70-79 years (older old) and those aged 80+ (oldest old) accounted for 17.1%. The mean age of the respondents was 70 years (SD = +/-8.7, Range = 60 - 101). The data showed that respondents who had had primary education were 58.3% for both sexes (78.8% among females and 31% among males) and 31.7% had had middle or secondary education. Over half of males, (66.2%) had had more than primary education compared to only 20.2% females. Only 8.2% had had post-secondary education.

Using their PVA, 25(14.7%) exhibited unilateral visual impairment, 113(66.5%) bilateral impairment, 39(22.9%) unilateral blindness, and 10(5.9%) had bilateral blindness. Regarding visual acuity in the better eye, it was indicated that 58.7% had visual impairment and 5.9% were found to be blind in at least one eye. Respondents were asked to grade their perception about how well they could see and this is matched to the PVA in Table 2 to show discrepancies in respondents self perception of their vision and measured vision. Overall, only 6.5% said the eye sight was excellent, whilst a third of them (34.1%) said the health was fair and about the same number (32.3%) graded the vision as worse poor or worse.

Of the 340 eyes of the 170 participants examined, 400 conditions were observed (Table 3). Cataract was the most occurring condition, affecting 117 (29.2%) eyes, followed by uncorrected refractive error in 75 (18.8%), pterygium/pinguiculi in 55 (13.8%), presbyopia among those who could read in 40 (10.0 %), and retinal disorders in 23(5.8%) eyes. Among 137 (80.5%) individuals who were identified as either having impairment or a condition that required seeing an eye care provider, 76.9% affirmed that they had an eye problem before ophthalmic examination whilst 4.2% perceived that they did not have any condition or the condition was minor, or normal, and that it did not warrant seeing an eye care provider. There was no statistically significant difference between respondents who perceived they had eye problems and those identified as requiring treatment after eye examination (p , 0.127) (Table 4).

Among those who had ever had their eyes checked, 36.7% visited eye clinics when they had a problem with their eyes and 27.5% visited a general hospital or health centre to consult general physician or general health for eye care services. The rest resorted to self-medication, herbalist treatment (traditional healer) or pharmacy or chemical shops to treat their eye problems. Others depended on 'friends' or 'family relations' advice (Fig. 1). One person who was reportedly aged 101 had never had an eye examination, indicating the lack of regular eye check up among the study population.

The study also sought to find out the reasons or barriers to the up-take of regular eye care services among the respondents. Table 5 shows first and second reasons for not seeking eye care service when they had eye problems. The most reported obstacle to the uptake of eye care services was lack of money (35.4%), followed by those who 'did not think it was important' (22%), 'advised by others to do something else' (13.4%) and time constraints (12.2%).

Among the respondents, (61) 35.8% had never had an eye examination in their lifetime. Within the previous five years however, many of them (51.2%) had visited an eye care professional compared to those who had not (48.8%). By proportion, more males (59%) than females (45.5%) increasing age and increase in level of education was associated with the use of eye care service. The characteristics of eye care utilization in the 5-year period are shown in Table 6. Self-perceived eye problem, sex and education showed statistical significance at an alpha level of 0.05.

Table 1. Background characteristics of respondents in percentages

Education	Male				Female				Grand Total
	60-69*	70-79	80+	Total	60-69	70-79	80+	Total	
No education	5.0	-	-	2.8	2.1	-	-	1.0	1.8
Primary	12.5	35.3	78.6	31.0	63.0	89.2	100	78.8	58.3
Middle Sch./JSS	17.5	11.8	-	12.7	8.7	2.7	-	5.1	8.2
Secondary/Tech/Vocational	45.0	47.1	14.3	39.4	21.7	2.7	-	11.1	23.5
Post secondary	20.0	5.9	7.3	14.1	4.3	5.4	-	4.0	8.2
Total	100	100	100	100	100	100	100	100	100
Total number	40	17	14	71	46	37	16	99	170

*Age group

Table 2. Matching PVA against self-evaluation by respondents

Self-Evaluation	Presenting better eye VA								Total
	>=6/6	6/9	6/12	6/18	6/24	6/36	6/60	<=3/60	
Excellent	3(17.6)	3(10.0)	2(15.4)	0(0.0)	0(0.0)	2(5.0)	1(4.3)	00(0.0)	11(6.5)
Good	3(17.6)	10(33.3)	4(30.8)	9(37.5)	7(53.8)	10(25.0)	3(13.0)	00(0.0)	46(27.1)
Fair	6(35.3)	11(36.7)	4(30.8)	8(33.3)	4(30.8)	18(45.0)	7(30.4)	00(0.0)	58(34.1)
Poor	3(17.6)	5(16.7)	2(15.4)	6(24.0)	2(15.4)	6(15.0)	9(39.1)	00(0.0)	33(19.4)
Very poor	2(11.8)	1(3.3)	1(7.7)	1(4.2)	0(0.0)	4(10.0)	3(13.0)	2(20.0)	14(8.2)
Completely blind	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	8(80.0)	8(4.7)
Total	100	100	100	100	100	100	100	100	100
Total number	17	30	13	24	13	40	23	10	170

Percentages are in parenthesis

Table 3. Prevalence of Ocular conditions among respondents

Condition	Frequency	Percentage
No abnormalities	2	0.5
Refractive error	75	18.8
Cornea opacity/scar	7	1.8
Cataract	117	29.2
Suspected glaucoma	16	4.0
Chronic/Acute conjunctivitis	34	8.5
Pseudophakia	18	4.5
Pterygium/ Pingueculae	55	13.8
Strabismus/Squint	1	0.2
Trauma	3	0.8
Presbyopia**	40	10.0
Retinal disorders (RT)*	23	5.8
Blind eye***	9	2.2
Total	400****	100.0

*RT = Hypertensive retinopathy (2.5%), chorio-retinal degeneration (1.0%), Macular scar (0.5%) and Diabetic retinopathy (0.2%). **Presbyopia = Among those with reading ability (those with near impairment were 33.5%). ***Blindness due to loss of eye.
****Multiple diagnosis among 170 persons.

Table 4. Association between self evaluation and identified eye problems

Personal evaluation	Eye examination			Total	Number
	Eye problem	No eye problem			
Eye problem	76.9	16.6		93.5	158
No eye problem	4.2	2.3		6.5	12
Total	81.1	18.9		100	
Total number	137	32			170

$$X^2 = 2.328; df = 1; p\text{-value} = 0.127$$

Overall 75% were registered under the national health insurance scheme (NHIS). Though the scheme is free for persons 70 years and above, (49.4% of study population), just over 42% of this age group had registered with the scheme and therefore could access eye care services under it.

The study also sought to find out how the lack of utilization to eye care services due to the varied reasons, in the face of manifest or perceived eye problems and visual impairment affected the general disposition and patients satisfaction with eye care services and programmes available to them in the community. Overall, about 85% percent indicated that they had spent some time in the past worrying about their eyesight. They included 20 (42.3%) who had spent 'little' or 'sometime' worrying about the eye sight, 12.4% who spent 'all the time' worrying' about their eyes and 30% who spent 'most of the time' worrying about the eye sight. Only 15.3% spent 'no time' worrying about their eyesight.

Respondents, who had ever had an examination during their lifetime, were asked to grade the impression of eye care services available to the elderly in the community. About 12.4% of them were 'very satisfied' with care that they had received and about 3 fold that number

(43.2%) were satisfied. Another 18.1% were dissatisfied, 4.5% were very dissatisfied and 15.3% were partly satisfied and partly dissatisfied.

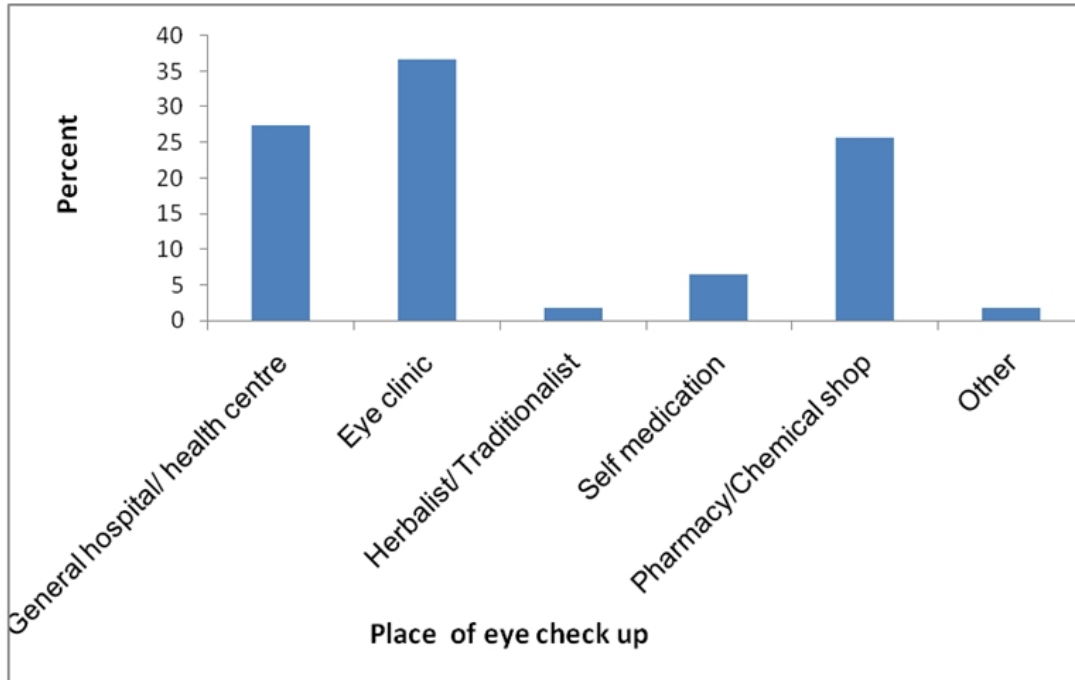


Fig. 1. Places where respondents sought eye care service

Table 5. Reasons for not visiting eye clinics

Reasons	First reason	Second reason
Cost	35.4	-
Time constraints	12.2	-
Transportation/No escort	6.1	5.9
Thinks problem was minor	22.0	35.3
Fear	6.1	5.9
Advised by others to do something else	13.4	52.9
Do not know where to go	3.7	-
No improvement from previous visit	1.2	-
Total	83	17

Table 6. Eye care utilization among respondents

Demographic characteristics	Eye care utilization			Chi-square (p-value)
	Sought care N=	Did not seek care N=	Total N=	
	87(51.2%)	83(48.8%)	170(100%)	
Sex*				4.721(0.013)
Male	42 (48.3)	29 (34.9)	71 (42.0)	
Female	45 (51.7)	54 (65.1)	99 (58.0)	
Age group				1.405(0.317)
60-69	43 (49.4)	43 (52.4)	86 (50.6)	
70-79	27(31.0)	27(31.7)	54 (31.8)	
80+	17(19.5)	13(15.9)	30 (17.6)	
Educational level*				3.441(0.021)
No formal education	1(1.1)	2(2.4)	3(1.8)	
Primary	54(62.1)	45(54.2)	99 (58.3)	
Middle school/JHS	9(10.3)	5(6.1)	14 (8.2)	
Secondary/Tech/ Vocational	18(20.7)	22(26.5)	40 (23.5)	
Post-secondary	5(5.7)	9(10.8)	14(8.2)	
Self-perception of eye problem *				5.309(0.012)
Yes	81(93.1)	77(92.8)	158(92.9)	
No	6(6.9)	6(7.2)	12(7.1)	
Presence of VI				1.528(0.376)
Yes	57(65.5)	58(69.9)	115(67.6)	
No	30(34.5)	25(30.1)	55(32.4)	

4. DISCUSSION

In the present study, a history of eye care use in previous five years was considered as the determinant of eye care service utilization. Some studies have examined the rate of eye care utilization among the elderly in other countries [3-5]. We found that elderly persons in peri-urban communities do not utilize eye care services to a large extent despite the presence of eye condition needing treatment. Over one third (35.8%) had never used eye care though 80.5% of respondents were identified with eye conditions that needed eye care attention. The rate of eye care utilization (51.2%) in the study population was higher than the average of 18% found in developing countries [6], 35.5 % found in Cameroon [15], 45.5% found in India [11] but lower than 64% among older America [4] and over 90% found in older Australians [5]. Some other studies in other countries among the elderly have also focused on utilization and ageing [5,21], elderly diabetics [22] and elderly glaucoma patients [23]. Depending on the geographical variation, the target population and period used to define utilization different rates of eye care utilization have been reported. Extrapolation of these results should therefore be carefully applied.

Sight is essential in everyday activities therefore it is clear that any disturbance in vision or symptom associated with the use of the eyes will easily be noticed and lead to eye care visits, yet we found only half (50.4%) of those with visual impairment had not sought for eye care in the previous five years. Although majority of respondents (76.9%) identified as

having conditions that needed treatments were much aware of their visual status, more than one third had never had an eye examination in their lifetime for persons 60 years and above.

Increasing age has been associated with increased utilization of eye care due to the high risk of blindness and visual impairment at old age. In the study, though there was increase in utilization of eye care with increasing age by proportion we did not find statistically significant relationship between age and utilization. More males than females utilized eye care services. In general, women have substantially worse eye care outcomes than men due to the lower rate of eye care utilization [24-25]. Two-thirds of the world's blind and vision impaired people are women [24]. The differences in the occurrence of eye disorders and treatment outcomes in women have been attributed to the lack of access and utilization of eye care due lower economic status and early change in the physiology of women [26]. The relationship between gender and utilization of eye care in this study is at variance with other studies that showed women are more likely to seek eye care [7,9] but comparable to a study where men sought eye care more than women in Cameroon [15]. Other studies have reported no significant difference found between the gender in Ireland [8] and in India [11].

Some studies have found an inverse relationship between both income and education and ability to utilize eye care services and visual impairment. Utilization among persons with low education and income has been found to be almost twice as low compared to those with higher income [3,26–28]. This study showed significant differences in eye care utilization and level of education. Education is an important factor in the determination of visits to eye care professionals. Those with lower educational levels may be unaware of the need for regular eye examinations with increasing age. The finding suggests that even in the presence of perceived eye problems, close to half of them had not sought care. Socio-economic background was not included in this study because of the homogeneity of subjects used as respondents; they were elderly persons who had similar economic background.

Consistent with other studies, the main barriers preventing uptake of eye care service identified in the study were related to medical costs of the services, time constraints, transportation and escort and poor knowledge about eye disease [4,11,14]. Respondents expressed that they thought the episodes of eye conditions they previously experienced were not serious to merit an eye care service. This could be inherently explained by the low level of education among the study population.

A study of the health profile and emerging aging issues in Ghana confirms that access to medical care remains problematic for the elderly in Ghana, especially for those without medical insurance and particularly those considered vulnerable [29]. In Ghana, eye care services are available in public hospitals and private clinics where medical insurance cover part of the fees incurred. However, unequal distribution of Ophthalmologists, Optometrists and Ophthalmic nurses in Ghana deprive eye care access to people in remote and rural areas. About a quarter of the study population were not registered with the national health insurance scheme. The elderly, due to their lower socio-economic status find the cost of health care especially eye care high in comparison with their mean income and it seems some cannot afford even where it is available.

5. CONCLUSION

The study examined the eye care seeking behavior and barriers to the uptake of eye care services among an elderly population in Yamoransa, a peri-urban community in Ghana. A number of the respondents who were diagnosed of various ocular health conditions had not

utilized eye care services in the last five years preceding the survey. The associations between utilization of eye care services and sex and educational level of respondents were statistically significant. Efforts should be made by the Ghana Health Service to investigate the barriers to up-take of eye care services and educate the elderly about their eye health to increase the utilization of eye care services. Since we used cross sectional data one needs to be cautious when interpreting the results. Also, because the clinical examination was conducted on site, some equipment needed for certain clinical or investigative procedures could not be conveyed to the site. Despite employing more than the minimum required sample size, the prevalence of eye problems may be over or underestimated assuming that respondents were more or less likely to suffer from ocular disorders than those who did not take part in the study. Utilization was also self-reported and was not verified by crosschecking from the places respondents claimed to have visited. The study also covered 5-year retrospective periods and may be subject to recall errors by respondents. In spite of these, the results provide valuable insight into the extent of eye care utilization among the aging population in the Ghana. The results of this study are very informative and indicate that a considerable proportion of the studied population had never utilized eye care services, even among those who had eye problems.

CONSENT

All authors declare that written informed consent was obtained from the respondents before their participation

ETHICAL APPROVAL

All authors hereby declare that this study was approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

ACKNOWLEDGEMENTS

The authors would like to thank the Chief and people of Yamoransa, in the Central Region of Ghana and the entire staff of the Ophthalmology unit of the Central Regional Hospital, Cape Coast, Ghana for the contributions towards this study. Authors disclose no funding sources.

COMPETING INTERESTS

Authors disclose no potential conflicts of interest.

REFERENCES

1. Fang Y, Chang L, Liu C, Chou YJ, Pu C, Lin PJ, et al. The association between physical disability and eye care utilization among elderly population in Taiwan: A nationwide cohort study. *Arch Gerontol Geriatr.* 2011;54(2):e181-e186. doi: e181-6 22119270.
2. Ryskulova A, Turczyn K, Makuc DM, Cotch MF, Klein RJ, Janiszewski R. Reported Age-Related Eye Diseases and Visual Impairment in the United States: Results of the 2002 National Health Interview Survey. *Am J Public Health.* 2008;98(3):454–461.

3. Filho AA. Prevalence of visual impairment, blindness, ocular disorders and cataract surgery outcomes in low-income elderly from a metropolitan region of São Paulo. *Arq. Bras. Ophthalmology*. 2008;71(2): doi: 10.1590/S0004-27492008000200021.
4. Orr P, Barrón Y, Schein OD, Rubin GS, West SK. Eye care utilization by older Americans: the SEE project. *Ophthalmology*. 1996;106(5):904-909.
5. Wang JJ, Mitchell P, Smith W. Use of eye care services by older Australians: the Blue Mountains Eye Study. *Australian and New Zealand Journal of Ophthalmology*. 1999;27(5):294-300.
6. Vela C, Samson E, Zunzunegui MV, Haddad S, Aubin M, Freeman EE. Eye care utilization by older adults in low, middle, and high income countries. *BMC Ophthalmology*. 2012;12(1):5.
7. Keefe JE, Weih LM, McCarty CA, Taylor HR. Utilization of eye care services by urban and rural Australians. *Br J Ophthalmol*. 2002;86(1):24-27.
8. Clendenin C, CoVey M, Marsh M, West S. Eye care utilization patterns in a rural county in Ireland: implications for service delivery. *Br J Ophthalmol*. 1997; 81(11):972-975.
9. Dandona R, Dandona L, Naduvilath TJ, McCarty CA, Rao GN. Utilization of eye care services in an urban population in southern India: the Andhra Pradesh eye disease study. *Br J Ophthalmol*. 2000;107(9):1710-1716.
10. Jin YP, Trope GE. Eye care utilization in Canada: disparity in the publicly funded health care system. *Canadian Journal of Ophthalmology/Journal Canadien d'Ophthalmologie*. 2011;46(2):133-138.
11. Nirmalan PK, Katz J, Robin AL, Krishnadas R, Ramakrishnan R, Thulasiraj RD *et al*. Utilisation of eye care services in rural south India: the Aravind Comprehensive Eye Survey. *Br J Ophthalmol*. 2004;88(10):1237-41.
12. Alliance for Reproductive Health Rights (ARHR), ISODEC, SEND Ghana, Oxfam GB. Achieving a Shared Goal: Free Universal Health Care in Ghana report, 2011. Alliance for Reproductive Health Rights (ARHR). Accessed 24th May 2012. Available: <http://www.oxfam.org/sites/www.oxfam.org/files/rr-achieving-shared-goal-healthcare-ghana-090311-en.pdf>.
13. Ghana Health Service [GHS]. The health sector in Ghana: Facts and Figures. Accra, Ghana Health Service; 2008.
14. Khandekar R, Mohammed AJ. Gender inequality in vision loss and eye diseases: Evidence from the Sultanate of Oman. *Indian J Ophthalmology*. 2009;57(6):443-449.
15. Nkumbe H. Helping older people get the eye care they need. *Community Eye Health J*. 2008;21(66):26-28.
16. World Health Organisation. Media Centre: Visual impairment and blindness. Fact sheet N^o282; 2011. Accessed on May 14th 2012 Available at: <http://www.who.int/mediacentre/factsheets/fs282/en/on>.
17. Vanneste G. Breaking down barriers: How to increase the cataract surgical rate. A practical guide for eye units in developing countries. CBM, 2001. Accessed on 4th June 2012. Available: www.v2020la.org/english/pdf/publications/Breaking_down_Barriers.pdf
18. Ghana Statistical Service [GSS]. Population and Housing Census: Summary Report of Final Results. Accra, Ghana Statistical Service; 2000.
19. World Health Organisation (WHO). International Statistical Classification of Diseases and Related Health Problems (10th Revision, 2nd Ed.) Geneva, World Health Organisation; 2005.
20. Pascolini D, Mariotti SP. Global estimates of visual impairment. *Br J Ophthalmol*. 2010;96(5):614-8.

21. Tay T, Rochtchina E, Mitchell P, Lindley R, Wang JJ. Eye care service utilization in older people seeking aged care. *Clin Experiment Ophthalmol*. 2006;34(2):141-5.
22. McCarty CA, Lloyd-Smith CW, Lee SE, Livingston PM, Stanislavsky YL, Taylor HR. Use of eye care services by people with diabetes: the Melbourne Visual Impairment Project. *Br J Ophthalmol*. 1998;82:410-414.
23. Robin AL, Nirmalan PK, Krishnadas R, Ramakrishnan R, Katz J, Tielsch J, et al. The utilization of eye care services by persons with glaucoma in rural South India. *Trans Am Ophthalmol Soc*. 2004;02:47–56.
24. Abou-Gareeb I, Lewallen S, Bassett K, Courtright P. Gender and blindness: A meta-analysis of population-based prevalence surveys. *Ophthalmol Epidemiol*. 2001;8(1):39-56.
25. Alanna S. Gender and Blindness-Initiatives to address inequity; 2012. Accessed on 6 December 2012.
Available: www.seva.org/publications/SevaCanada_GenderandBlindness.pdf.
26. Coleman AL, Kodjebacheva G, Wallace SP, Prelip M, Ortega AN, Giaconi J, et al. Visual Functioning of Individuals and Communities: A Conceptual Framework. *Clinical Medicine Geriatrics*. 2008;2:13–20.
27. Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, Pokharel, GP *et al*. Policy and practice: Global data on visual impairment in the year 2002. *Bulletin of the World Health Organization*. 2004;82(11):844-851.
28. Kuper H, Polack S, Eusebio C, Mathenge W, Wadud Z, Foster A. A Case-Control Study to Assess the Relationship between Poverty and Visual Impairment from Cataract in Kenya, the Philippines, and Bangladesh. *PLoS Med*. 2008;5(12):e244. Published online 2008 December 16.
29. Tawiah EO. Population aging in Ghana: a profile and emerging issues. *African Population Studies*. 2011;25(2):623-643.

© 2013 Ocansey et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sciencedomain.org/review-history.php?iid=269&id=23&aid=2061>