PREVALENCE AND FACTORS ASSOCIATED WITH SELF-REPORTED HEARING LOSS AMONG REGISTERED PENSIONERS IN GHANA

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Abstract

Background: Hearing loss affects quality of life. Prevalence of hearing loss varies across various geographical regions. The aim of the study is to determine the prevalence and factors associated with self-reported hearing loss among the registered pensioners in Ghana

Method: the study was a cross-sectional nation-wide study among members of the national pensioners association. It was carried out in thirteen study sites with at least a study site in each region capital of Ghana. Questionnaire administration, physical examination, urine and blood examinations were the method for data collection.

***Results*:** Overall prevalence of self-reported hearing loss among the pensioners was, 4.1%. Pensioners below 65years of age had a prevalence of 3.6% (95% CI, 2.7 – 4.5) whiles those above 80 years of age had an overall prevalence of 5.6% (95% CI, 1.5 – 9.6). Also, 14 pensioners per 10,000 pensioners in Ghana use hearing aids whereas 31 pensioners per 1000 reporting hearing loss, use hearing aid. The following factors were found to be associated with hearing loss; raised urine nitrates (AOR 2.3, 95% CI, 1.1 – 5.0), history of allergies (OR 1.9, 95% CI, 1.2 – 2.8), history of chronic bodily pain (OR 1.7, 95% CI, 1.3 – 2.4), use of eyeglasses (OR 1.8, 95% CI, 1.3 – 2.6) current alcohol intake (OR 1.5, 95% CI, 1.0 – 2.2) underweight (OR 1.7, 95% CI, 1.0 – 2.9)

Conclusion: The prevalence of self-reported hearing loss is low in Ghana compared to its regional and global estimates. The uptake of hearing aid use among pensioners in Ghana is very low.

Key Words: Hearing loss, Self reported hearing loss, Hearing aid, Pensioners

Introduction

Old age is associated with many health problems. Hearing loss (HL) has been described as the most common sensory deficit in the elderly[1]. The underlying problem for the HL in the elderly has mainly been attributed to presbycusis. Presbycusis is defined as a slowly progressive often symmetrical HL, of multifactorial process, associated with the cochlear degenerative process of aging.[2,3,4] Hearing loss affects the quality of life of the older adults.

Impact of HL on elderly quality of life is profound. Some of the effects ranges from difficulty in functioning normally, depression,[5] difficulty with communication,[6,7] decreased mental function,[8,9,10] loneliness, social isolation,[11] dependence, frustration[1], reduced self esteem and reduced social skills. Studies has also demonstrated that among community dwelling older adults, hearing loss poses a significant reduction in life-space mobility which has been interpreted to include the size of the space a person moves through in a daily routine.[12] The reduction in the life-space mobility is linked with the perceived and/or experienced challenges with walking difficulties, postural balance, and risk of falling among older adults with hearing loss[13,14,15]. Also, HL has been linked with increased mortality. HL in older adults have been associated with increased mortality independent of demographic and cardiovascular risk factors.[16] Studies have demonstrated that rehabilitation with hearing aids or cochlear implants in instances where hearing aids fail to improve HL has caused dramatic improvement in the quality of life of elderly with HL[17,18,19,20].

Humans studies over the years grouped these causes of age-related HL in to cochlear aging, environmental exposure to noise, genetic predisposition and co-morbidities including smoking[21]. Factors that have been associated with HL included increasing age, male sex, cardiovascular disease, diabetes, ear infections, socioeconomic status and exposure to loud noise[22,23]. Other factors associated with increased risk of HL included analgesics use particularly Ibuprofen and acetaminophen use,[24] higher body mass index and large waist circumference,[25] racial difference,[26] alcohol use[27] and increased serum cholesterol.[28] The effect of age is remarkably demonstrated by epidemiological studies showing that HL prevalence doubles every decade of life from the second decade to the seventh decade[29].

The gold standard for HL assessment has been the use of audiometry. However self-reported hearing loss (SRHL) was found to be fairly accurate with an acceptable sensitivity for use to identify older adults requiring hearing rehabilitation[30]. However, prevalence

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based on SRHL compared with audiometry has been shown to underestimate prevalence for adults above 70 years and overestimate prevalence for adults below 70 years[31]. Also, the sensitivity of SRHL is comparable to gold standard in moderate to severe hearing loss but low for mild hearing loss[32]. It therefore suggests that, most studies relying on SRHL mainly estimate the prevalence of moderate to severe hearing loss. For resource poor setting, SRHL remain a valuable tool in the assessment of HL.

Prevalence of HL varies across various geographical regions. The world health organization in 2012 estimated that about 5.3% of the world's populations have disabling HL with about one in three adults over 65 years affected by disabling HL[33,34]. The prevalence is estimated to be greatest in sub-Saharan Africa, south Asia and Asia pacific. In Ghana, there is lack of nationwide data on the prevalence of HL among the older adult population. However, some studies carried out in Ghana in 2004 suggested that approximately 8% report hearing problems[35,36]. A study conducted among 140 workers from the stone crushing industry and 150 health workers in 2012 in Ghana found that SRHL occurred in 2.8% of the health workers compared to a prevalence of 21.5% of workers in the stone crushing industry[37]. Hearing aid use is the approach most frequently used to correct age related HL. The prevalence of hearing aid use in Ghana among older adult is significantly lacking in Ghana. The aim of this study was to determine the prevalence of HL among the older adults in Ghana using a SRHL approach in a registered pensioner population. The study also identified factors that were significantly associated with HL among the pensioner population in Ghana.

Method

Study design

This study is a secondary analysis of data from the Pensioners medical Scheme (PMS) survey conducted in Ghana among members of the National Pensioners association. A cross-sectional study was conducted with study participants from all ten regions of Ghana. It involved questionnaire interviews, physical examinations as well as laboratory examinations of urine and blood samples collected from study participants. Physical examination carried out included: general examination (pallor, jaundice, pedal edema), eye exams (visual acuity, funduscopic examination), cardiovascular examination (pulse rate, blood pressure, heart auscultation), respiratory exams (respiratory rate, chest percussion and auscultation), abdominal examination (tenderness, palpation of liver, spleen and both kidneys). It was a nationwide exercise that took place from April to December of 2014. Members of the national pensioners association converged at the centers within the days of the screening.

Study sites

The study took place at thirteen sites of which ten were in the regional capitals of the ten regions of Ghana, West Africa. The study setting was predominantly urban. However participants from peri-urban and some rural areas within close proximity of each of the study sites also took part in the study. The study sites and their respective regions were as follows: Tamale (Northern region), Bolgatanga (Upper East region), Wa (Upper West region), Koforidua (Eastern region) and Cape coast (central Region). The other centers were Accra (greater Accra region), Sunyani (Brong Ahafo region), Kumasi (Ashanti region), Ho (volta region) and Takoradi (Western region). There were three additional study sites, which were not regional capitals. These extra sites were selected because they are major cities in their respective regions with high membership of pensioners yet much further from the regional capital. These extra sites were Tema (Greater Accra region), Tarkwa (Western region) and Hohoe (Volta region).

Study Population and Eligibility criteria

The study subjects were pensioners, majority of the pensioners qualified as elderly as defined by the United Nations classification of 60 years and above. There were some participants below 60 years who had retired before the retirement age of 60 years due to disability and other reasons thereby qualifying as pensioners. All pensioners who were members of the National Pensioners Association were eligible as participants of the study. Within the study period, 4813 members of the national pensioners association presented for the medical screening. Participant were member of the National Pensioners association and must be resident in Ghana.

Sample size and Sampling method

Every member of the National pensioners' association resident in the regional capital of the respective region and their surrounding towns and villages were eligible. It was the hope of the study to recruit as many as were pensioners in the region during the exercise. A census of all pensioners who were members of the national pensioners association within and around the selected study sites was the target. 4813 pensioners took part in the study.

Definitions and examinations

Study participants were asked about any hearing loss. They were then asked to specify the hearing loss. We excluded from the data all forms of hearing problems (tinnitus, ear pain, ear discharge) without hearing loss. Self-reported hearing loss was defined as perceived hearing loss in the elderly reported by the elderly. Medical officers conducted physical examination for all participants.

Study materials and data capture tool

Study questionnaires were used to record socio-demographic data of participants. It had a section on past medical history collecting information on known past medical history. It further collected information on allergies, alcohol, smoking, exercise and diet. There was a physical examination form attached, which was used to capture data of the physical examination conducted by medical officers. Weight was measured with a weighing scale with attached stadiometer for height. The Blood pressure was measured using standardized electronic sphygmomanometer with appropriate cuff sizes. Blood sample was taken and a glucometer was used to measure the random blood sugar. Blood sample was collected into a serum separator bottle and transported to a laboratory for measurement of serum cholesterol using automated and standardized techniques.

Data collection

Trained research assistants filled the questionnaire based on the response of the study participants. The weight was measured with the weighing scale to the nearest one-kilogram while the height to the nearest one millimeter. Random blood sugar was measured using glucometer. Medical officers perform physical examination while the eye team checked the vision and carried out the comprehensive eye examinations. Personalized reports of the medical screening were sent to each participant.

Data processing and Analysis

The data generated in the research were entered into Epidata 3.1 and exported into STATA/MP 11.0 (copyright 2004-2009) for analysis. The primary outcome in the study was self-reported hearing loss. The background characteristics of the respondents were obtained by cross tabulation. Logistic regression was used to analyze the factors association with self-reported hearing loss. First, the association between each of the potential factors and self-reported hearing loss was examined ignoring other variables. This analysis was important because it gave a fair idea as to which of the variables were strong predictors/ related to visual impairment/blindness. Second, to construct a model with factors that were independently associated with self-reported hearing loss, each of the independent variable was a candidate provided that the p-value was 0.05 or less. P-value of 0.05 was considered statistically significant. A choropleth map was constructed manually using CorelDraw and a plain map of Ghana from Google map to display the prevalence of self-reported hearing loss among pensioners in Ghana.

Ethical considerations

Review and approval was obtained from the National Pensioners Association board. The board further monitored each step of the data collection process. Members of the National Pensioners association gave their consent to participate. The content of the medical screening exercise was developed in extensive consultation with the executives of the National Pensioners Association. Consent was voluntary and each study participant had the right to withdraw at any stage of the study process. Uttermost privacy and confidentiality were maintained. No compensation or payments were made to any study participants. The results of the physical examination were carefully explained to all participants and were counseled on healthy lifestyle in old age. Personalized results of the study were sent to each participant in a sealed envelope. Data files were password protected. Hard copy data were stored in locked file cabinets, and access was limited to the Principal investigator.

Results

Table one displays the background characteristics of the study participants. Out of the 4,782 study participants who took part in the study, 69.0% were males. 3.1% of the study participants were above 80 years of age. 37.3% of the study participants were below the age of 65 while 34.0% were between the age of 65 and 69 years.

Prevalence of self-reported Hearing loss among the pensioners in Ghana

Table 2 shows the prevalence of SRHL among the registered pensioners in Ghana. Overall prevalence of SRHL among the pensioners was, 4.1%. The overall prevalence by sex was 4.1% (95% CI, 2.0 – 4.7) for males and 4.1% (95% CI, 3.0 - 5.2) for females respectively. The prevalence of SRHL increases with increasing age of pensioners. The pensioners below 65years of age had a prevalence of 3.6% (95% CI, 2.7 – 4.5) those above 80 years of age had an overall prevalence of 5.6% (95% CI, 1.5 – 9.6). The highest prevalence of SRHL was found among pensioners who were separated by marital status accounting for 5.6% (95% CI, 2.3 – 9.1). The least prevalence by marital status was within the widowed or widower group, 3.1% (95% CI, 1.8 – 4.4). By educational status, pensioners with educational status as vocational/technical had the highest prevalence of 5.6% (95% CI, 2.0 – 9.2) whereas pensioners with educational status as primary education had the lowest prevalence of SRHL.

There was a geographical variation in the distribution of the prevalence of self-reported hearing loss among the pensioners. The highest prevalence of self-reported hearing loss was found in the upper east region of Ghana where the prevalence of SRHL was 10.5% (95% CI, 6.5 – 14.5). Among the pensioners in the upper east region, the prevalence of SRHL among the male pensioners was 10.8% (95% CI, 6.4 – 15.1) whereas the females had a prevalence of 9.1% (95% CI, 1.0 – 19.1). The lowest prevalence was found in the central

Table 1: Characteristics of study participants

	Proportion by Sex		All Participants
Participant characteristics	**Female**	**Male**	**Total**
	n (%)	**n (%)**	**N (column %)**
All participants	1,482 (31.0)	3,300 (69.0)	4,782 (100)
Age in years			
< 65	704 (50.5)	960 (31.4)	1,664 (37.3)
65 - 69	461 (33.1)	1,056 (34.5)	1,517 (34.0)
70 - 74	166 (11.9)	627 (20.5)	793 (17.8)
75 - 79	50 (3.6)	295 (9.7)	345 (7.7)
≥ 80	14 (1.0)	123 (4.0)	137 (3.1)
Current marital status			
Never Married	36 (2.6)	40 (1.3)	76 (1.7)
Married	556 (40.3)	2,679 (88.0)	3,235 (73.1)
Widow/Widower	511 (37.1)	200 (6.6)	711 (16.1)
Divorced	157 (11.4)	63 (2.1)	220 (5.0)
Separated	119 (8.6)	62 (2.0)	181 (4.1)
Body Mass index (by WHO BMI cutoff/ classification)			
Underweight	34 (2.4)	232 (7.6)	266 (6.0)
Normal	393 (28.0)	1,743 (56.8)	2,136 (47.8)
Overweight	492 (35.1)	848 (27.6)	1,340 (30.0)
Obese	483 (34.5)	246 (8.0)	729 (16.3)
Highest formal educational status			
None	70 (5.4)	423 (15.1)	493 (12.0)
Primary	517 (39.7)	1,116 (39.9)	1,633 (39.4)
Secondary	195 (15.0)	434 (15.5)	629 (15.4)
Tertiary	452 (34.7)	724 (25.9)	1,176 (28.7)
Vocational	68 (5.2)	100 (3.6)	168 (4.1)

Table 2: Prevalence of Self-reported Hearing loss among pensioners in Ghana

Prevalence by Characteristics	Female	Male	Overall
	% (95% CI) [a]	% (95% CI) [a]	% (95% CI) [a]
Overall	4.1 (3.0 – 5.2)	4.1 (3.4 – 4.8)	4.1 (3.5 – 4.7)
Age in years			
< 65	3.3 (2.0 – 4.7)	3.8 (2.6 – 5.1)	3.6 (2.7 – 4.5)
65 - 69	5.0 (3.0 – 7.1)	3.7 (2.5 – 4.8)	4.1 (3.0 – 5.1)
70 - 74	3.9 (1.0 – 7.0)	4.7 (3.0 – 6.3)	4.5 (3.0 – 6.0)
75 - 79	8.9 (1.0 – 17.3)	4.7 (2.2 – 7.1)	5.2 (2.8 – 7.6)
≥ 80	-	6.3 (1.8 – 10.8)	5.6 (1.5 – 9.6)
Marital status			
Never Married	6.0 (2.2 – 13.9)	2.6 (2.5 – 7.8)	4.2 (0.5 – 8.8)
Married	4.2 (2.5 – 6.0)	4.2 (3.4 – 5.0)	4.2 (3.5 – 4.9)
Widow/Widower	3.5 (1.9 – 5.1)	2.2 (0.1 – 4.2)	3.1 (1.8 – 4.4)
Divorced	4.0 (1.0 – 7.1)	2.0 (1.6 – 5.0)	3.3 (0.9 – 5.7)
Separated	5.1 (1.1 – 9.2)	7.0 (0.3 – 13.3)	5.7 (2.3 – 9.1)
Highest Educational level			
None	4.4 (0.5 – 9.3)	5.0 (2.8 – 7.0)	4.8 (2.9 – 6.7)
Primary	3.3 (1.7 – 4.9)	3.0 (2.0 – 4.0)	3.1 (2.2 – 4.0)
Secondary	5.0 (1.8 – 8.2)	3.8 (2.0 – 5.6)	4.1 (2.5 – 5.7)
Tertiary	4.1 (2.2 – 6.0)	4.2 (2.7 – 5.7)	4.2 (3.0 – 5.3)
Vocational	6.3 (0.3 – 12.2)	5.1 (0.7 – 9.6)	5.6 (2.0 – 9.2)
Region			
Ashanti	3.1 (1.4 – 4.9)	2.3 (1.2 – 3.4)	2.6 (1.6 – 3.5)
Brong Ahafo	1.3 (1.2 – 3.8)	3.5 (1.0 – 6.1)	2.9 (1.0 – 4.9)

Continuation of table two

Prevalence by Characteristics	Female	Male	Overall
	% (95% CI) [a]	% (95% CI) [a]	% (95% CI) [a]
Central	2.6 (2.5 – 7.8)	0.8 (0.7 – 2.3)	1.2 (0.4 – 2.8)
Eastern	2.3 (0.3 – 5.0)	4.7 (2.2 – 7.2)	3.9 (2.1 – 5.8)
Greater Accra	5.2 (1.1 – 9.2)	5.1 (2.4 – 7.8)	5.0 (2.8 – 7.3)
Northern	-	3.4 (1.3 – 5.5)	3.1 (1.2 – 5.0)
Upper East	9.1 (1.0 – 19.1)	10.8 (6.4 – 15.1)	10.5 (6.5 – 14.5)
Upper West	8.8 (2.5 – 15.0)	7.4 (4.0 – 10.3)	7.5 (4.7 – 10.4)
Volta	6.7 (3.6 – 9.8)	4.6 (2.3 – 6.9)	5.5 (3.7 – 7.3)
Western	2.1 (0.06 – 4.1)	2.4 (0.8 – 4.0)	2.3 (1.0 – 3.5)

(95% CI) [a] - 95% confidence interval

Table 3: Factors associated with self-reported hearing loss among the pensioners in Ghana

Factors	OR [a]	(95% CI) [b#]	P-value
History of Allergies			
Normal	-		
Allergies	1.8	(1.2 – 2.7)	<0.005
Chronic body pains			
No chronic bodily pains	-		
Chronic bodily pains	1.9	(1.3 – 2.7)	<0.0005
Use of eyeglasses			
No eye glasses	-		
Uses eye glasses	1.5	(1.1 – 2.1)	<0.05
Alcohol intake			
No alcohol intake	-		
Takes in Alcohol	1.7	(1.2 – 2.4)	<0.005
Body Mass Index (Kg/M^2)			
Underweight (<18.5)	1.7	(1.0 – 2.8)	<0.005
Normal weight (18.5-24.9)	-		
Overweight (25.0-29.9)	0.7	(0.4 – 0.9)	
Obese (≥30)	0.7	(0.4 – 1.0)	
Urine appearance			
Clear	-		<0.05
Cloudy/ Hazy	2.0	(1.2 – 3.2)	
Urine nitrites			
Normal	-		
Raised	2.4	(1.2 – 5.1)	<0.05
≤ 2.25 (199 mg/dL)	-		<0.05
≥ 2.26 (200 mg/dL)	0.4	(0.2 – 1.0)	
Vegetarianism			
Non vegetarian	-		
Vegetarian	2.1	(1.0 – 4.7)	<0.05
Region of residence			
Ashanti	-		<0.0001
Brong Ahafo	1.1	(0.5 – 2.4)	
Central	0.5	(0.1 – 2.0)	
Eastern	1.6	(0.8 – 2.9)	
Greater Accra	2.0	(1.1 – 3.7)	
Northern	1.2	(0.6 – 2.4)	
Upper East	4.4	(2.5 – 7.8)	
Upper West	3.1	(1.8 – 5.3)	
Volta	2.2	(1.3 – 1.7)	
Western	0.9	(0.4 – 1.7)	

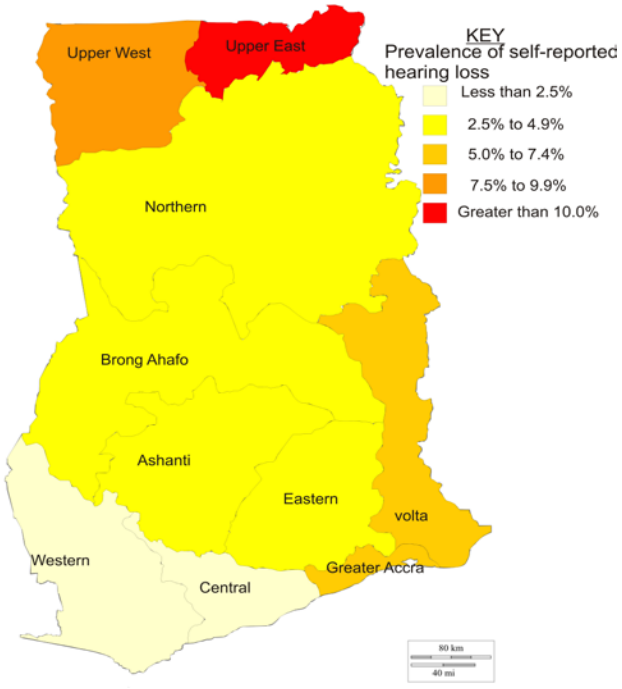
OR [a]; Odds ratio, unadjusted

(95% CI) [b#]; 95% confidence interval, Reporting for only significant findings

Table 4: Multivariate logistic regression analysis of factors associated with self-reported hearing loss among pensioners in Ghana.

Factors	AOR [c]	(95% CI) [b#]	P-value
History of Allergies			
Normal	-		
Allergies	1.9	(1.2 – 2.8)	<0.005
Chronic body pains			
No chronic bodily pains	-		
Chronic bodily pains	1.7	(1.3 – 2.4)	0.001
Use of eyeglasses			
No eye glasses	-		
Uses eye glasses	1.8	(1.3 – 2.6)	0.001
Alcohol intake			
No alcohol intake	-		
Takes in Alcohol	1.5	(1.0 – 2.2)	<0.05
Body Mass Index (Kg/M^2)			
Underweight (<18.5)	1.7	(1.0 – 2.9)	<0.05
Weight ≥ 18.5	-		
Urine appearance			
Clear	-		
Cloudy/ Hazy	1.7	(1.0 – 2.9)	<0.05
Urine nitrites			
Normal	-		
Raised	2.3	(1.1 – 5.0)	<0.05
≤ 2.25 (199 mg/dL)			
≥ 2.26 (200 mg/dL)			

(95% CI) [b]; 95% confidence interval
AOR [c]; Adjusted odds ratio - Adjusting for age, sex, region of residence
[#] Reporting for only significant findings



Source: Data analysis from this study

Figure 1: Choropleth Map showing the prevalence of Self-Reported hearing loss by region of residence in Ghana

region with an overall prevalence of 1.2% (95% CI, 0.4–2.8)

Figure 1 displays a choropleth map of the prevalence of SRHL by region of residence. Generally, the prevalence of SRHL increased form the south to the northernmost part of the country. Another feature was the relative increase in the prevalence of hearing loss from the west to the east of the country.

Prevalence of hearing aid use among pensioners in Ghana

The prevalence of hearing aid use among pensioners with self-reported hearing loss in Ghana was 3.1%. However, among all pensioners including participants with and without SRHL, the prevalence of hearing aid use is 0.14%. Thus overall, 14 per 10,000 pensioners in Ghana use hearing aids whereas 31 pensioners per 1000 with hearing loss use hearing aid.

Factors associated with Self-reported hearing Loss among Pensioners in Ghana

The following factors were associated with increased likelihood of SRHL: history of allergies (OR 1.8, 95% CI, 1.2 – 2.7), history of chronic bodily pain (OR 1.9, 95% CI, 1.3 – 2.7), use of eyeglasses (OR 1.5, 95% CI, 1.1 – 2.1) and current alcohol intake (OR 1.8, 95% CI, 1.2 – 2.7). Others included body mass index in the underweight region (OR 1.7, 95% CI, 1.0 – 2.8), being a vegetarian (OR 2.1, 95% CI, 1.0 – 4.7), raised urine nitrated (OR 2.4, 95% CI, 1.2 – 5.1) and cloudy/Hazy urine appearance (OR 2.0, 95% CI, 1.2 – 3.2).

Factors that were associated with reduce odds of SRHL were raised serum triglyceride above 2.26 mmol/L (200 mg/dL) and BMI weight classification within the WHO classification of overweight and obesity. Table 3 displays the odds ratio of unadjusted analysis of factors associated with SRHL.

In the multivariate analysis adjusting for age, sex and region of residence, it was found out that, raised urine nitrates had the highest odds of being associated with SRHL (AOR 2.3, 95% CI, 1.1 – 5.0). Other factors that were associated with increased odds of reporting with hearing loss were history of allergies (OR 1.9, 95% CI, 1.2 – 2.8), history of chronic bodily pain (OR 1.7, 95% CI, 1.3 – 2.4), use of eyeglasses (OR 1.8, 95% CI, 1.3 – 2.6) and current alcohol intake (OR 1.5, 95% CI, 1.0 – 2.2). Others included body mass index in the underweight region (OR 1.7, 95% CI, 1.0 – 2.9) and cloudy/Hazy urine appearance (OR 1.7, 95% CI, 1.0 – 2.9). Table 4 displays the results of the multivariate analysis.

Discussion

Prevalence of self-reported hearing loss

Overall prevalence of SRHL among the pensioners was lower compared to estimates based on audiometry [33,34, 35,36]. Data from this study reports an overall prevalence of SRHL of 4.1% far lower than the global estimates of over 30% hearing loss in elderly above 60 years[33,34] and the Ghanaian all age group estimate of 8%[35,36]. Audiometry assessment classifies elderly as having impaired hearing loss at frequencies that will appear normal and having little or no impact for the elderly patient. Also, many elderly in Ghana have come to accept hearing loss as a part of the processes of aging and would not consider it a problem worth reporting. This may account for the low prevalence of hearing loss compared to estimates from audiometry and global estimates.

This study did not find any significant difference between the sex prevalence of hearing loss among pensioners in Ghana. The study population for this study was predominantly from a class of the society that were in a formal employment sector unlike many studies that included elderly from the informal/ self-employed sector. Secondly, this study used a self-reported hearing loss as the tool for diagnosis whereas most of the studies that found difference in sex prevalence used audiometry.

By educational status, pensioners with highest educational status as vocational/technical had the highest prevalence compared to other educational status. It is an established fact that occupational exposure to noise increases the risk for hearing loss. Since the pensioners with highest educational status as vocational or technical were more likely to have been working in a vocational or technical settings where noise exposure may be higher compared to other work settings explains the higher prevalence of hearing loss among this category of pensioners.

Factors associated with hearing loss

With regard to factors associated with hearing loss, in a multivariate analysis adjusting for age, sex and region of residence, the following factors were found to be associated with hearing loss; raised urine nitrates, history of allergies, chronic bodily pain, use of eye lenses, current alcohol intake, underweight and urine appearance classified as hazy/cloudy. Contrary to findings suggesting higher body mass index to be associated with hearing loss (25), this study found underweight to be associated with hearing loss and overweight and obesity to be associated with lower risk of hearing loss. This requires further studies to determine what accounted for the observed association. Chronic bodily pain was associated with SRHL. Some studies have found analgesics use particularly Ibuprofen and acetaminophen use to be associated with hearing loss (24). We believe there is a link between these two findings as pensioners with chronic bodily pain were more likely to be using analgesics for the pain.

Conclusion

SRHL is a valuable tool in assessing hearing loss particularly in poor resource settings. The prevalence of self-reported hearing loss in Ghana is low compared to global and African regional estimates. The prevalence of hearing aid use among the older adults in Ghana is very

low. The following factors were identified to be related to self-reported hearing loss; raised urine nitrates, history of allergies, chronic bodily pain, use of eye lenses, current alcohol intake, underweight and urine appearance classified as hazy/cloudy.

Recommendations

We recommend that the Ghanaian ministry of health and the Ghana health service should intensify education on hearing aid options available for improving hearing loss in older adults. Self-reported hearing loss can be used as a fast screening tool by health workers particularly in the community settings. All elderly must be asked of reduced hearing by clinicians and helped appropriately. Also steps must be taken by employers and employees to prevent occupational noise induced hearing loss during active working life.

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