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Utilization of outpatient healthcare services among elderly people with hypertension in Ghana

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ABSTRACT

Background: Aging population has become one of the most pressing demographic phenomena in the world. The situation presents challenges to the health sector due to the higher number of chronic diseases (e.g., hypertension) that the situation presents. One of the major risk factors for cardiovascular diseases is hypertension, and its management may reduce such risk. Therefore, this study examines the factors affecting outpatient healthcare utilization among the elderly for the management of hypertension.

Methods: Using data from the 2007/2008 Global Aging and Adult Health (SAGE) study on Ghana, this study investigated the determinants of outpatient healthcare utilization among 332 elderly persons with hypertension in Ghana. Chi-square test of association and logistic regression model were used to examine the effect of socio-economic factors on outpatient healthcare use.

Results: The analysis was conducted on 332 elderly persons suffering from hypertension in Ghana. Out of this number, 78.61% utilized outpatient healthcare services in the 12 months prior to the SAGE Ghana Wave 1 survey. Patients with health insurance constituted 51.51% of the sample; and this was a significant determinant of healthcare use. There was a statistically significant positive association between patients' age and use of outpatient healthcare services. Outpatient healthcare utilization increased for persons in the 70–79 age group and below. After this, outpatient healthcare use declined. Education, household wealth, location, and sex of the patient did not have any significant effect on outpatient healthcare service utilization.

Conclusion: The level of outpatient healthcare use was higher among elderly patients. Membership of health insurance plan is a major factor affecting the use of outpatient healthcare services in managing hypertension among the elderly. Factors such as education, household wealth, location, and sex did not have any significant influence on outpatient healthcare consumption patterns for elderly hypertensive patients.

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Background

Fertility and mortality rates have fallen, and life expectancy has improved due to socio-economic progress of countries and improved public health interventions [1,2]. Thus, people are now living longer than before. Worldwide population aging has, therefore, become one of the most important demographic phenomena, partly, due to the growing burden of chronic diseases [3]. The growing aging population presents economic opportunities and challenges to countries. For instance, the increasing episodes of health-related problems associated with age and the growing elderly population would reflect a rise in the amount of social and healthcare requirements to ensure healthy aging population. Healthcare utilization as well as cost would, therefore, be high among the elderly due to the sophisticated diagnostic and treatment therapies [4–6]. Though aging might not necessarily be associated with chronic diseases, the cumulative effect of multiple exposures and psychological, physical as

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well as social conditions, that are frequently unfavorable, increase the risk of health problems among the elderly [7]. The prevalence of complications such as hypertension, diabetes, angina, and dementia rise as the population ages [3].

Older people are usually affected by growing inadequacies in customary family support systems and vulnerability to poverty which may inhibit their healthcare consumption [3,8,9]. Several millions of elderly people suffer and die from conditions for which there are effective treatment and management strategies. For instance, heart failures, diarrhea, pneumonia, and malaria, according to O'Donnel [10], account for 55% of elderly deaths across the globe. Some of these diseases, if not all, have one form of effective prevention, treatment, and management methods for elderly people. Yet, most of them do not seek care either from traditional sources or modern scientific health facilities.

The prevalence of hypertension continues to increase in Ghana. For instance, new reported cases rose from 49,087 in 1988 to 505,180 in 2007 [11,12]. Hypertension is one of the risk factors for cardiovascular diseases across the globe. In Ghana, majority of renal and heart failures are due to hypertension [13,14]. It is estimated that cardiovascular disease and hypertensive heart disease accounts for about 7% of total healthy years of life lost in Ghana [15]. Hence, it is imperative to investigate the use of outpatient healthcare services in the management and/or treatment of the diseases such as hypertension among the elderly.

The model of the demand for health capital, by Grossman [16], hypothesizes that the health stock of the individual depreciates over time. Thus, rising age is associated with depletion of health stock. Since the depreciation rate is higher among elderly people than younger ones, their healthcare consumption is expected to be higher. Additionally, Andersen [17] postulates that environmental factors, behavior, and population characteristics as well as facility features may affect healthcare utilization.

Empirically, Sanjel et al. [18] studied the demand for healthcare services among the elderly in Dhulikhel municipality in Nepal and found that most elderly people report heart-related diseases. Their healthcare utilization was influenced by marital status, daily living habits, and existence of chronic disease. Also, regular medication demonstrated significant association with the utilization of healthcare. In a similar study, Maurer [19] found from 10 European countries that socio-economic factors play a minimal role in determining healthcare utilization among the elderly. In estimating the demand for healthcare, the price of healthcare has been found to be a significant determinant of the choice of healthcare provider. Thus, where the sick person seeks treatment is significantly affected by price, whether user fee or co-payment [20,21].

Also, in their study, Saeed et al. [22] found that adjustment for health status among the aged in Ghana nullified the socio-economic gradients in consulting with orthodox medical services. In Yamoransa, Ghana, education, marital status, income, and health insurance status significantly influenced healthcare consumption among the elderly [23]. Using Global Aging and Adult Health (SAGE) China Wave 1 data, Dou et al. [3] found that outpatient healthcare utilization among older people in China was influenced by age, sex, health insurance membership, and household wealth. Several other studies have investigated the factors affecting healthcare use among the elderly population [24–26], and they found that socio-economic factors play an important role in healthcare use. While several studies have examined healthcare utilization among the elderly in Ghana, studies focusing on elderly hypertensive patients remain scanty. Therefore, this study attempts to investigate the factors influencing utilization of healthcare services among the elderly with hypertension in Ghana.

Methodology

The model

Following Grossman [16], Amaghionyeodiwe [27], and Boachie [20], we assume that the utility of a hypertensive patient depends on the consumption of two goods: good health (H); and consumption of all other goods and services (X). S represents the social and economic characteristics of the patient. That is, the expected utility function for each hypertensive patient may be given as:

$$U_i = f(H, X; S) \quad (1)$$

From equation (1), it follows that each hypertensive patient combines certain inputs to improve their health conditions, i.e., to control or manage hypertension, given *S*. Therefore, the health production function can be given as:

$$H_i = f(h, x; S) \quad (2)$$

where H_i is the health condition of the person, *h* is the consumption of health services such as outpatient healthcare utilization; *S* represents the characteristics of the patient such as age, gender, income or wealth, and ownership of health insurance policy. Given input

prices, P_h for outpatient healthcare use; and P_x for all other commodities, the patient, therefore, allocates his/her income (wealth) over healthcare utilization, *h*; and consumption of other goods, *X* to maximize utility. The budget constraint is given as:

$$Y = hP_h + XP_x \quad (3)$$

By algebraic manipulations, the demand function for *h* is then given as

$$h = f(Y, P_h, P_x; S) \quad (4)$$

Therefore, the operational model for the demand for outpatient healthcare services among hypertensive patients is given as:

$$h_i = \beta_1 + \beta_2 Y_i + \beta_3 G_i + \beta_4 A_i + \beta_5 Edu_i + \beta_6 Loc_i + \beta_7 Ins_i + \varepsilon_i \quad (5)$$

The above demand function for outpatient healthcare services is analogous to that used in Duo et al. [3]. *Y* is household wealth in quintiles, *A* is age of the respondent, *G* is sex of the respondent (male or female), *Edu* is educational level of the respondent (completed basic school or lower, and high school or higher), *Loc* is location (urban or rural), and *Ins* is health insurance membership (yes or no). The ages of the respondents were in the categories of: 50–59, 60–69, 70–79, and 80 years or older.

Sources of data and statistical analysis

We utilized data from the SAGE study on Ghana. This survey was part of a larger study conducted by the World Health Organization to provide standardized health data among older adults in six low- and middle-income countries [3,28]. The SAGE Ghana Wave 1 survey was carried out between May 2007 and June 2008. Using a multi-stage, systematic, and random sampling designs at different stages, data were collected from Ghanaians aged 50 years or older [29]. Similar to other SAGE surveys, trained personnel conducted face-to-face interviews with eligible participants to collect information with the help of interview schedule. The information, among others, were related to demography, socio-economic status, and health conditions as well as outpatient healthcare utilization. We acknowledge that more recent waves have been conducted. However, such data have not been made available to the public; hence, our reliance was on Wave 1. Indeed, some studies have used SAGE Ghana Wave 1 data to study the pattern of healthcare use among older people [22]. The focus of Saeed et al. [22] was not specific to any disease.

Overall, 4,307 respondents aged 50 years or older took part in the study [29]. The data contained information on sex, location (rural/urban), household wealth (quintiles), and health insurance status as well as outpatient healthcare consumption. The survey compiled wealth of household using ownership of certain household assets and other living conditions [3,29]. The wealth of households were then used to create categories or quintiles from Q1 through Q5 with Q1 representing the poorest household category and Q5 representing the richest household [3,29]. Like Duo et al. [3], we focus our analysis on persons aged 50 years or older who reported to have hypertension during the survey. That is, only respondents who reported to have been diagnosed with hypertension were included.

Having visited a healthcare facility for treatment purposes within 12 months prior to the survey, except for overnight hospital stays, was considered outpatient healthcare utilization. The study employs descriptive and inferential statistics to analyze the data. As in Dou et al. [3] and Boachie [20], percentages are used to obtain the differences in responses and background information. To ascertain the effect of socio-economic and demographic variables on outpatient healthcare utilization, we employed logistic regression model. Prior to this, the associations between outpatient healthcare use and the independent variables were verified using Chi-square (χ^2) test. A coefficient was deemed statistically significant if *P* value was 0.05 or less. STATA version 11 was used conduct the statistical analysis.

Results

A total of 565 respondents who had attained 50 years or older self-reported to have hypertension during the survey. However, in this study, only 332 respondents were retained for further analysis due to incomplete data on all the variables considered. Thus, data on persons with hypertension were extracted from the larger dataset based on the variables in Table 1 and outpatient healthcare use. The determination of these 565 respondents was based on case-wise deletion of all observations which did not satisfy the inclusion criteria. The characteristics of the respondents are summarized in Table 1.

There were more females (52.71%) with hypertension than males (47.29%). Most of the hypertensive patients were in the 50–59 age group. This represented 46.69% of the sample. The lowest number of hypertensive patients was found among persons who were 80 years or older, whereas 60–69 and 70–79 age groups recorded 29.22% and 19.88% of hypertensive patients, respectively.

Table 1. Socio-economic characteristics of the respondents.

Variable	*n* = 332	%
Age		
50–59	155	46.69
60–69	97	29.22
70–79	66	19.88
80+	14	4.22
Sex		
Male	157	47.29
Female	175	52.71
Education		
Basic school or lower	160	48.19
High school or higher	172	51.81
Health insurance		
Yes	171	51.51
No	162	48.49
Location		
Rural	93	28.01
Urban	239	71.99
Wealth		
Poor	16	4.82
Q2	28	8.43
Q3	39	11.75
Q4	86	25.90
Richest	163	49.10

Source: Computed from SAGE Ghana Wave 1.

In terms of education, 51.81% of the respondents had completed high school or higher prior to the survey, whilst 48.19% had completed only basic education or lower. Table 1 also shows that a little over 50% of the respondents had health insurance policy, either mandatory and/or voluntary, whereas 48.49% did not have any health insurance policy. Hypertensive patients were more in the urban areas (71.99%) than in the rural areas (28.01%). The number of poor people with hypertension was lower than that of rich people. Precisely, 4.82% and 49.10% of hypertensive patients were in the poorest and richest quintiles, respectively. Patients in the second and third quintiles constituted 8.43% and 11.75% of the sample, whilst 25.9% of the patients were found in the fourth quintile. This suggests that as household wealth rises, the probability of being diagnosed with hypertension rises.

Out of the 332 patients, 261 of them were utilized outpatient healthcare services, while 71 patients did not. Thus, 78.61% of hypertensive patients sought treatment from outpatient healthcare facilities within 12 months prior to the SAGE Wave 1 survey. Outpatient healthcare utilization patterns are summarized in Table 2.

Column A presents the total number of respondents in each group. Column B presents the number and proportion of A using outpatient care services. Column C represents the Group share of total outpatient care utilization.

Table 2. Association between outpatient healthcare utilization and socio-economic covariates.

Variable	A	B	C	*p*-value
	Total no. of respondents (*N*)	Respondents who sought treatment *n* (%)	Group share of total outpatient care utilization % (261)	
Total	332	261 (78.61)		
Age				
50–59	155	113 (72.90)	43.30	0.012
60–69	97	75 (77.32)	28.74	
70–79	66	61 (92.42)	23.37	
80+	14	12 (85.71)	4.60	
Sex				0.673
Male	157	125 (79.62)	47.89	
Female	175	136 (77.71)	52.11	
Educational				0.096
Basic school or lower	160	132 (82.5)	50.57	
High school or higher	172	129 (75)	49.49	
Health insurance				0.005
Yes	171	145 (84.80)	55.56	
No	162	116 (71.60)	44.44	
Location				0.740
Rural	93	72 (77.41)	27.59	
Urban	239	189 (79.08)	72.41	
Wealth				0.132
Poorest	16	12 (75)	4.60	
Q2	28	20 (71.43)	7.66	
Q3	39	28 (71.79)	10.73	
Q4	86	63 (73.26)	24.14	
Richest	163	138 (84.66)	52.87	

Majority (52.11%) of the hypertensive patients who sought treatment were females. However, within groups, more males (79.62) sought treatment than females (77.71%). As shown in Table 2, most of the patients who sought treatment within 12 months prior to the survey were in the 50–59 age group. They accounted for 43.30% of the total outpatient healthcare use during the period. There were 28.74 % and 23.37% patients in the age group of 60–69 and 70–79, respectively, who utilized outpatient healthcare services. Only 4.60% of patients aged 80 years or higher sought outpatient treatment. Within the age groups, it is evident that healthcare consumption was higher in the 70–79 and 80 years plus age groups as shown by the proportion of people who sought treatment (i.e., 92.42 % and 85.71 %, respectively).

Regarding education and healthcare use, patients with basic education or lower accounted for 50.57% of the total outpatient healthcare utilization. Again, 55.56% of patients who sought treatment had health insurance policy, either voluntary and/or mandatory. There were more patients residing in urban areas (72.41%) than rural areas (27.59%); and there were some variations within urban and rural areas in relation to outpatient healthcare use. Specifically, 79.08% of the patients in urban areas sought treatment as compared to 77.4% of rural dwellers. Out of the 261 patients who sought treatment during the period, 4.6% were in the poorest quintile, while 52.87% were in the richest quintile. However, except for the richest households, the proportion of patients who utilized outpatient healthcare services was higher in the poorest quintile (75%) than all other wealth groups.

We employed the Chi-square test of associations to verify if there is any association between outpatient healthcare utilization on one hand, and the socio-economic and demographic variables on the other hand. As shown in Table 2, there was a significant association between healthcare utilization and age (p = 0.012). The Chi-square test did not reveal any significant association between sex of the patient and outpatient healthcare utilization even though females accounted for higher proportion of total outpatient healthcare utilization (52.11%; p = 0.673). The association between education and healthcare use among the patients was not statistically significant (p = 0.096). Similarly, there was no statistically significant association between household wealth and healthcare use (p = 0.132) neither was there any significant association between patients' residence and the use of outpatient healthcare services (p = 0.740) in the management of hypertension.

Similar to Dou et al. [3] and Boachie [20], we made use of logistic regression model to find the direction of association of the socio-economic factors with outpatient healthcare utilization, and their magnitudes. The results of the logistic regression are presented in Table 3.

Table 3. Logistic regression of socio-economic covariates of outpatient healthcare utilization.

Variable	Coefficients	Odds ratio (OR)	OR 95% CI	*p*-value
Age				
50–59	1	1		
60–69	0.150	1.162	0.627–2.153	0.633
70–79	1.319	3.738	1.37–10.222	0.010
80+	0.587	1.799	0.363–8.920	0.472
Sex				
Male	1	1		
Female	−0.042	0.959	0.547–1.681	0.883
Education				
Basic school or lower	1	1		
High school or higher	−0.499	0.607	0.341–1.082	0.090
Health insurance				
Yes	0.648	1.912	1.085–3.368	0.025
No	1	1		
Location				
Rural	0.004	1.004	0.508–1.982	0.991
Urban	1	1		
Wealth				
Poor	−0.810	0.445	0.116–1.709	0.238
Q2	−0.786	0.455	0.160–1.294	0.140
Q3	−0.799	0.450	0.185–1.093	0.078
Q4	−0.668	0.513	0.259–1.015	0.055
Richest	1	1		

CI = confidence interval.

The regression results reveal that age is a significant predictor of outpatient healthcare use. Specifically, patients in the age groups of 60–69 (OR = 1.16), 70–79 (3.73), and 80+ (OR = 1.80) used more outpatient healthcare services relative to patients in the 50–59 age group. However, the outpatient healthcare use was statistically significant in the 70–79 age group only. Also, the coefficient for gender, females, was statistically insignificant. This means that there was no difference between outpatient healthcare utilization between males and females during the period. Additionally, the location (residence), educational level, and household wealth of the patient were insignificant determinants of outpatient healthcare utilization among the patients. Ownership of health insurance policy or plan was one of the factors deciding healthcare use. Those who had health insurance consumed more healthcare compared to those without it (OR = 0.607; $p = 0.025$).

Discussion

We used data from the SAGE Wave 1 survey on Ghana to analyze the determinants of outpatient healthcare utilization among elderly persons with hypertension. We found that 78.61% of elderly hypertensive patients utilized outpatient healthcare services within 12 months prior to the SAGE Wave 1 survey in Ghana. This is higher than the case in China as only 54.9% of similar patients utilized outpatient healthcare services [3]. As outpatient healthcare services increase among elderly patients, it improves the management of the disease to prevent hospitalizations with its associated higher cost. That is, close monitoring of blood pressure is crucial for the management of the disease [3,30].

We also find that age and ownership of health insurance policy are the major determinants of outpatient healthcare use among elderly hypertensive patients in Ghana. First, as people age they tend to consume more health services. These findings may be attributed to the fact that patients in the 70–79 age group or lower are strong and are sometimes able to seek care without caregivers. As people cross this age group, their healthcare utilization is then determined by caregivers, who make most of the decisions regarding healthcare services. It has been argued that healthcare use tends to peak at 70–79 and thereafter declines in most developing countries [26]. Our findings are consistent with this line of argument. In China, Dou et al. [3] also found that age is a significant determinant of outpatient healthcare use among elderly Chinese with cardiovascular diseases though healthcare use peaked at 80 years or higher.

Secondly, aside private health insurance, the introduction of the National Health Insurance Scheme in Ghana has played a major role in ensuring access to healthcare services. Health insurance provides protection against financial risks from illness and helps to eliminate financial hurdles to grant access to healthcare services when needed [3]. Yip et al. [31] have argued that patients may not get sufficient protection against the high outpatient cost associated with chronic ailments.

In the sample of 332 patients, 51.51% had health insurance; and we find that elderly patients with health insurance utilized more health services than their counterparts without it. A similar finding was reported by Dou et al. [3] from China using the SAGE China data. Our findings are also consistent with those reported by Addo and Gyamfuah [23]. That is, membership of health insurance plan is an important factor determining whether an elderly person will monitor and manage the disease via outpatient healthcare services. It must, however, be noted that elderly people aged 70 or above do not pay premiums but their membership cards should be renewed just as premium paying members.

Our results do not suggest any differences in healthcare use among males and females. That is issues relating to inequities were not prevalent since the effect of gender was statistically insignificant. The finding, in this regard, contradicts previous studies [3,24,26]. They found that elderly women used more outpatient healthcare services than men. In this study, however, healthcare utilization does not differ for males and females.

Education, household wealth, and residence of the patient are not significant determinants of outpatient healthcare use. While the finding on education and location are consistent with those reported by Dou et al. [3], that of household wealth is inconsistent. Since health insurance permits access to health services, it is possible that most of the poor households with health insurance plans were insulated against financial risks. This might be the reason for the insignificance of wealth in influencing healthcare utilization.

This study has some shortfalls. The factors presented here are not the only factors influencing healthcare use. Indeed, older people, sometimes, may not be interested in utilizing modern healthcare services for some traditional reasons. For

these and some other reasons, interpretation of the present findings may not be generalized.

Conclusion

Our aim, in this study, was to find the socio-economic covariates of outpatient healthcare utilization among the elderly with hypertension using SAGE Ghana Wave 1 data. We find that age and health insurance were the major determinants of outpatient healthcare use among elderly people with hypertension in Ghana. Healthcare utilization peaked at 70–79 age group. Education, location or residential type, and household wealth were not significant determinants of outpatient healthcare use. Further, there was no difference in outpatient healthcare use among males and females. The level of outpatient healthcare use was higher among elderly patients. In this regard, expanding health insurance coverage among the elderly, particularly for those below 70 years, may be useful. Also, efforts must be made to help patients aged 80 years or older to utilize outpatient health services in managing hypertension. Future studies may investigate why healthcare consumption peaks at 70–79 age group. This may be useful for policy.

Ethical considerations

The WHO Ethical Review Committee granted the use of SAGE Wave 1 Ghana data. The data used in this study have no personal identification.

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