PUBLIC HEALTH RESEARCH

Work history and diagnosed hypertension among older adults in Ghana: Evidence from WHO SAGE Wave2

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ABSTRACT

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Introduction	There is limited knowledge in the context of Africa on how work history associates with hypertension at old age. Therefore, this paper analyses such an association using Ghana as a case study.
Methods	Data from the World Health Organisation Study on Global AGEing and Adult Health Wave 2 was used to explore the relationship between work history and diagnosed hypertension at old age. In the Wave2 study, a multistage cluster sampling was used to select participants at the household level across rural/urban areas in all administrative regions. A multifactor logit regression analysis was performed. The paper also estimated diagnosed hypertension prevalence across subgroups.
Results	The mean age of the total of 3564 participants examined was 64 years (SD = ±10years). The overall prevalence of hypertension was 10.3% [95% CI = 9.4–11.1]. The highest predicted rate was 41.1% [95% CI=38.0 – 49.2] among those who stopped working before the statutory retirement age 60 years, whereas it was only 4% [95% CI = 3.7 – 5.2] for those who retired from active work at age 60 years. Those who retired at age <60years recorded the highest risk of hypertension diagnosis [OR = 14.1; 95% CI=10.5-19.5]. There was also a significant association between diagnosed hypertension and a history of working <5 days per week [OR=1.6; 95% CI=1.1-2.3]. It emerged that those with a history of informal sector employment were at significant risk of hypertension at old age, if they worked <5days per week [OR=1.5; 95% CI=1.0-2.3].
Conclusions	Overall, retirement age emerged as a significant risk factor for diagnosed hypertension at old age, followed by a history of less than five working days per week.
Keywords	Hypertension - Work History - Older Adults.

INTRODUCTION

Demographic and socio-economic transitions such as work history have increasingly been associated with the diagnosis of non-communicable diseases [NCD] particularly in low and middle-income countries [LMIC]. Of interest is hypertension which has been recognized to contribute a major NCD burden and mostly results from multifactorial risks. Hypertension currently accounts for about 50% of coronary heart diseases worldwide and an estimated 9.4 million deaths annually.[1,2] Approximately 17% of the estimated 7.7 billion people in the world today are hypertensive.[3] The prevalence of hypertension varies by age-specific population group, reaching as high as 70% among older adults in sub-Saharan Africa.[4,5]

Being a preventable public and global health problem that threatens the aging population and contributes to the burden of disease and death, many studies have sought to explain how to effectively prevent and manage hypertension.[6-8] Among various mechanisms that explain the burden of hypertension, accumulating research has established mixed associations between hypertension and work history.[9-11] For example, one study conducted in Northern Sweden found that being unemployed between the ages of 16-21 years exposes more women than men to hypertension at age 43 years.[9] Another study finds an association between shift workers and hypertension.[12] Yet, others found no association between break in employment and hypertension across 13 European countries including Denmark, Germany, Spain and Italy.[10]

It has been reported that a history of working under healthy conditions devoid of severe pressure from employers, available access to stable income, social security benefits, occupational risk allowances, other fringe benefits and favourable work conditions such as career progression opportunities can potentially minimise unexpected economic and psychological shocks that often trigger cardiovascular diseases such as hypertension.[13,14] There is growing body of literature especially in Europe that supports the theory that physically active work - defined as workdays per week and time/hours of work within the day/night - reduces or increases the risk of cardiovascular diseases.[15-18] Likewise, some have argued that a person with less or no history of economic activity may adopt the habit of alcohol consumption over time to overcome any state of economic, social and psychological pressure and consequently increase their risk of hypertension at old age.[19,20] However, limited research exists in sub-Saharan Africa and in Ghana in particular regarding the role of work history in diagnosed hypertension and the debate surrounding it.

Consequently, the present analysis aims at exploring these hypotheses and to contribute to the extant literature on this topic. To begin, we argue that the active lifestyle of a person at an old age must encompass one's work history that includes the intensity of work and type of economic activity. From the literature, we attached a healthy working condition to formal employment in which people are most likely to benefit from stable income, career progression, and other incentives that include retirement benefits and health insurance that may reduce the economic and psychological stressors of hypertension. On the other hand, informal sector work such as self-employed traders and farmers, contributing family workers, and unpaid house work provide no incentives to respond to unexpected shocks that render people vulnerable to hypertension. With about 90% of Ghanaian workers and aged populations having a history of informal sector employment [21], the paper analysed if a history of informal sector work put older people at higher or lower risk of hypertension than that of formal sector work.

Secondly, we explored the hypothesis that a person at age 50 years and older, with a history of at least 20 years of physically active work, is most likely to avoid hypertension at old age. Also, one might speculate that the intensity of work measured as the number of working days in a week, and daily working time can influence inactive lifestyle and obesity that contribute to hypertension.[12] In Ghana, formal sector work is a full time employment that requires an average of 5 working days in a week and 8 hours of work per day, except for some shift professional work such as nursing, police, military and other security services. Using the formal sector as reference point for the analysis, the paper tests the hypothesis that a person with a history of working maximum 5 days per week and the statutory 8 hours per day is most likely to prevent hypertension at old age. Thirdly, it draws from the findings by Nygren *et al.*[9] to test the hypothesis whether the age at which participants started work and retired contribute to their hypertensive status at old age.

The objective of this paper is to explore the combination of the stated hypotheses in a bid to trace the diverse root causes of hypertension among older adults and also help chart a new pragmatic way in which people can prevent hypertension at old age through multiple lifestyle changes. With Ghana's aged population estimated to reach approximately 12% by 2050 from the current 7%, early changes in lifestyle factors that include how people plan and manage their economic lifestyle could reduce the high prevalence of hypertension that characterises Ghana's aged population.[6,22,23]

METHODS

Data

The paper utilized data from Ghana's World Health Organisation Global AGEing and Adult Health (SAGE) study. Wave 2 of the SAGE study was

conducted in six countries including Ghana between 2014 and 2015. The target population of the study was primarily persons aged 50 years and older. A multistage cluster sampling was used to select participants at the household level across rural/urban areas in all administrative regions. Data collected covered several domains including demographic characteristics, health state description, healthcare utilisation, work history, and a number of health outcomes including hypertension. The Ghana SAGE study included an overall randomly selected representative sample of 5,110 people in the baseline survey [Wave 1] and 4,704 in the follow-up survey [Wave2]. Wave1 was conducted between 2007 and 2008 while Wave 2 took place between 2014 and 2015. However, only 3,564 of the sample aged 50 years and older who completed the wave 2 survey including data on their work history and diagnosed hypertension status were included in this analysis. Exclusion criteria were incomplete questionnaire, missing data on both dependent and independent variables, and the small number of participants below age 50 years. Details of the WHO SAGE survey data and methods is publicly available on the WHO website subject to registration protocol, and can also be accessed elsewhere.[22,24]

Measures

Dependent variable

Hypertension status of the participants was modelled as a binary dependent variable. The SAGE study asked participants whether or not they have been diagnosed with hypertension by a medical doctor in both the baseline and follow-up study. A positive response to the question was coded yes = 1, and 0 = otherwise. The choice of hypertension as a dependent variable for this study was informed by recent literature on the need to explore the diverse behavioural risk factors associated with global prevalence of hypertension among older adults.[8,25]

Independent variables

The main predictor variable for this study is work history. We envisaged that a person with a good work history, defined as a record of secured employment and income, is most likely to have economic stability at old age.[15] The stated assumptions and the available data on the work history of respondents led to the construction of the following continuous independent variables: (i) the age at which one started working for income; (ii) the age they stopped working for income; (iii) the average daily hours of work; and (iv) the number of working days per week. It also includes the most recent employment type (informal employment = 1; formal = 0) and whether or not participants ever engaged in more than one income jobs (yes = 1; no = 0).

The paper adjusted for three other continuous variables (age, annual income, and years of schooling), and five categorical variables [sex – male = 0, female = 1; marital status – married = 0, single = 1, widowed = 2; smoker – no = 0, yes = 1; alcoholic – no = 0, yes = 1; residential location – rural = 0, urban = 1]. The inclusion of these variables was based upon the data available and previous studies establishing their association with hypertension.[5,26,27]

Statistical Analysis

In the descriptive analysis, mean and standard deviation of continuous variables were evaluated and reported. We estimated hypertension prevalence across subgroups at 95% confidence interval [95%CI]. Given the binary nature of the dependent variable, robust generalized regression models with Logit link function was used to estimate the relative associations between work history and hypertension diagnosis among older people. Model 1 presents the analysis of the pooled sample adjusted for the relevant confounding variables. Studies have demonstrated a strong association between hypertension outcome and socio-demographic characteristics such as gender, spatial variation as well as type of employment. To understand the modifying effects of gender, rural/urban residence and job type, additional stratified analyses were performed. Models 2 and 3 present gender-specific analyses. Models 4 and 5 show residential-based analysis while Models 6 and 7 provide stratified analysis of employment type. In each model, we analysed the model fit by reporting Naegelkerke R^2 derived from the log-likelihood full model. We reported odds ratios and 95% confidence intervals with level of significance at 0.01 and 0.05. Stata version 14 was used for the analysis.

RESULTS

Sample characteristics

The sample characteristics are provided in Table 1. The mean age of the sample was 64 years (SD = 10years), while the mean age at which participants started and stopped working for income was 20yrs (SD = 4yrs) and 60yrs (SD = 5yrs) respectively. Those with a history of alcohol consumption and tobacco smoking constituted 29.7% and 5.7% respectively. Approximately 91% of the sample reported having worked in the informal sector and about 12% worked in more than one income jobs. On average, participants had a history of 5 working days per week and 7 hours of work daily. Those with a history of working >5 days weekly and more than the statutory 8 hours per day were 47.2% and 21.5% respectively.

Table 1 Descriptive statistics on selected socioeconomic and demographic characteristics of respondents

	Overall	Male	Female	Urban	Rural	Formal emp.	Informal emp.
Start working age (<18 = ref)	2525 [70.8]	1,042 [71.1]	1483 [70.7]	955 [68.2]	1570 [72.6]	228 [68.3]	2,297 [71.1]
18-25 yrs.	715 [20.1]	278 [19.0]	437 [20.8]	283 [20.2]	432 [19.9]	60 [17.9]	655 [20.3]
>25 yrs.	324 [9.1]	146 [9.9]	178 [8.5]	162 [11.6]	162 [7.5]	46 [13.8]	278 [8.6]
Stop working age in years (60yrs. = ref)	2747 [77.1]	1,183 [80.7]	1564 [74.5]	969 [69.2]	1778 [82.2]	253 [75.8]	2,494 [77.2]
<60 yrs.	321 [9.0]	90 [6.1]	231 [11.0]	193 [13.8]	128 [5.9]	40 [12.0]	281 [8.7]
>60 yrs.	496 [13.9]	193 [13.2]	303 [14.4]	238 [17.0]	258 [11.9]	41 [12.2]	455 [14.1]
Working days in a week (5 = ref)	1123 [31.5]	509 [34.7]	614 [29.3]	450 [32.1]	673 [31.1]	211 [63.2]	912 [28.2]
<5	757 [21.2]	248 [16.9]	510 [24.4]	253 [18.0]	504 [23.3]	14 [4.2]	743 [23.0]
>5	1,684 [47.3]	709 [48.4]	969 [46.3]	697 [49.8]	987 [45.6]	109 [32.6]	1,575 [48.8]
Daily hours of work (8 = ref)	937 [26.3]	436 [29.7]	497 [23.8]	445 [31.8]	492 [22.7]	209 [62.6]	728 [22.5]
<8	1862 [52.2]	729 [49.7]	1133 [54.0]	518 [37.0]	1344 [62.1]	57 [17.1]	1,805 [56.0]
>8	765 [21.5]	301 [20.6]	464 [22.2]	440 [33.8]	325 [15.0]	68 [20.4]	697 [21.5]
History of >1 job with pay (yes =1)	418 [11.7]	164 [11.2]	254 [12.1]	131 [9.4]	287 [13.3]	57 [17.1]	361 [11.2]
Employment type (informal = 1)	3230 [90.6]	1242 [84.7]	1988 [94.8]	1165 [83.9]	2065 [95.4]	-	-
Female sex	2098 [58.9]	-	-	895 [63.9]	1203 [55.6]	110 [32.9]	1,988 [61.6]
Marital status (married = ref)	2066 [57.9]	1,184 [80.8]	882 [42.0]	739 [52.7]	1327 [61.3]	217 [64.9]	1,849 [13.7]
Single	497 [13.9]	148 [10.1]	349 [16.6]	242 [17.3]	255 [11.8]	53 [15.9]	444 [13.3]
Widowed/Divorced	1001 [28.1]	134 [9.1]	867 [41.3)	419 [30.0]	582 [26.9]	64 [19.2]	937 [29.0]
History of smoking (yes)	202 [5.7]	198 [13.5]	4 [0.2]	83 [5.9]	119 [5.5]	19 [5.7]	183 [5.7]
Alcohol intake (yes)	1059 [29.7]	1,033 [70.5]	26 [1.2]	967 [69.1]	92 [4.3]	111 [33.2]	948 [29.4]
Urban	1400 [39.3]	504 [34.4]	896 [42.7]	-	-	235 [70.4]	1,165 [36.1]
Region of residence (Southern belt = ref)	1546 [43.4]	605 [41.3]	941 [44.8]	722 [51.6]	824 [38.1]	207 [62.0]	1,338 [41.4]
Middle belt	1281 [35.9]	472 [32.2]	809 [38.6]	517 [36.9]	764 [35.3]	96 [28.7]	1,186 [36.7]
Northern belt	737 [20.7]	389 [42.7]	348 [16.6]	161 [11.5]	576 [26.6]	31 [9.3]	706 [21.9]
Mean age**	64 [50–110]	66 [50–108]	64 [50–110]	64 [50–108]	65 [50–110]	64 [50–102]	65 [50–110]
Mean years of schooling**	5 [0*–30]	7 [0–30]	4 [0–30]	7 [0–30]	4 [0–30]	12 [9–30]	4 [0–30]
Mean annual income[♯]	9,604 [0–13m]	13,021 [0–13m]	7,216 [0–8.4m]	6,195 [0–13m]	8,256 [0 – 9m]	33,571 [0–13m]	7,123 [0–9m]
Observations	3564	1466	2098	1400	2164	334	3230

*Never been to school **Minimum & maximum values in bracket m = million US$; ♯= 2015 US$ PPP-adjusted

Prevalence of hypertension among older adults

The estimated prevalence of hypertension was 10.3% (95% CI=9.4– 11.1). There were variations in the prevalence across several domains. The predicted rate was 41.1% (95%CI = 38.0 – 49.2) among those who stopped working before the statutory retirement age 60 years, whereas it was only 4% (95%CI = 3.7 – 5.2) for those who retired from active work at age 60 years. Females recorded 4.6% higher prevalence than their male counterparts (12.2% [95%CI = 11.7 – 13.1] vs 7.6%, [95%CI = 6.4–7.9]). Similarly, those with a history of formal sector work and urban residents recorded 6.8% (16.5% [95%CI = 16.3–17.0] vs 9.7% [95%CI = 9.4 – 9.9]) and 11.9% (17.6% [95%CI = 17.1- 18.4] vs 5.7 [95%CI = 5.3– 6.1]) more prevalence than their counterparts (Figure 1).

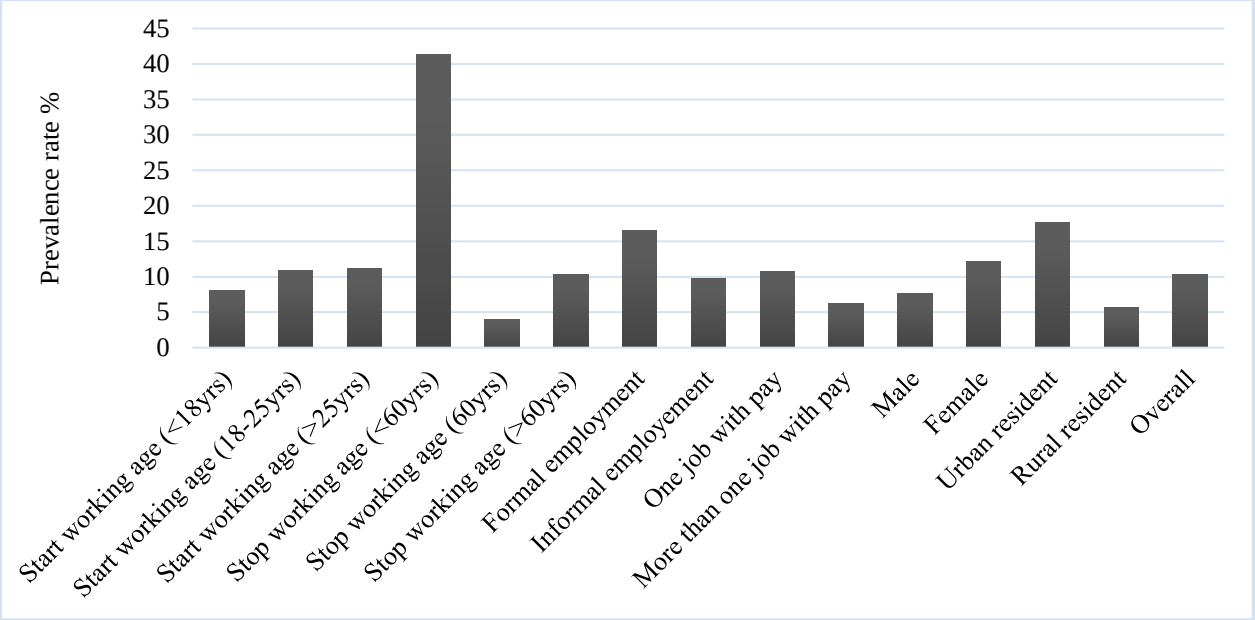

Figure 1 Prevalence of hypertension among older adults in Ghana, 2014/2015

Main Regression Analysis

Table 2 shows the results of the association of diagnosed hypertension with work history. In the overall adjusted model, retirement age emerged as the most significant risk factor for hypertension, accounting for an estimated 19% of the model fit. Those who retired at age <60 years recorded the highest odds of diagnosed hypertension [OR=14.1; 95%CI=10.5-19.5] followed by those who retired above the statutory retirement age 60 years [OR=10.5; 95%CI = 7.2-15.6]. There was also a significant association between hypertension and a history of working <5 days per week [OR=1.6; 95%CI = 1.1-2.3].

It was observed that both men and women were almost at equal risk of hypertension if they retired before the statutory retirement age 60 years [OR =15.3; 95%CI=8-24] for men, and [OR =15.4; 95%CI=10-21] for women. The risk is, however, higher for women [OR=13.2; 95%CI = 7.9-17] than men [OR=7.5; 95%CI=3.9-8.4], if they both retired at age >60 years. Also, men were at high risk of hypertension if they have a history of working <5 days in a week [OR =2.5; 95%CI=1.2-5.3]. Women with a history of more than one income job were also at high risk [OR=1.3; 95%CI=0.8-2.2] (Models 2 and 3).

Table 2 Regression results establishing an association between hypertension and work history among older adults in Ghana

	Model 1 Overall OR[95% CI]	Model 2 Male OR[95% CI]	Model 3 Female OR[95% CI]	Model 4 Urban OR[95% CI]	Model 5 Rural OR95% CI]	Model 6 Formal emp. OR[95% CI]	Model 7 Informal emp. OR[95% CI]
Start working age (<18 = ref)							
18-25 yrs.	0.6*[0.4 – 0.9]	0.6[0.3-1.1]	0.6**[0.4-0.9]	0.7[0.5-1.1]	0.4**[0.2-0.8]	1.5[0.7-2.4]	0.5*[0.4-0.7]
>25 yrs.	0.8[0.5 – 1.2]	1.0[0.5-2.1]	0.6**[0.4-1.1]	0.7[0.4-1.1]	0.9[0.4-1.9]	0.3[0.1-1.0]	0.9[0.6-1.3]
Stop working age in years (60yrs. = ref)							
<60 yrs.	14.1*[10.5 – 19.5]	15.3*[8-24]	15.4*[10-21]	10.1*[6.8-13]	26.2*[15-35]	5.4*[2.2-8.9]	18.0*[12-25.6]
>60 yrs.	10.5*[7.2 – 15.6]	7.5*[3.9-8.4]	13.2*[7.9-17]	8.9*[5.5-10]	14.2*[7.4-27]	4.3*[1.4-7.3]	12.8*[8.4-19.6]
Working days in a week (5 = ref)							
<5	1.6*[1.1 – 2.3]	2.5*[1.2-5.3]	1.4[0.9-2.2]	1.7*[1.0-2.8]	1.2[0.7-2.2]	3.4[0.7-8.3]	1.5*[1.0-2.3]
>5	1.1[0.8 – 1.6]	1.3[0.7-2.4]	1.1[0.7-1.6]	1.2[0.8-1.7]	1.0[0.6-1.7]	1.3[0.6-2.9]	1.1[0.8-1.5]
Daily hours of work (8 = ref)							
<8	0.7[0.5 – 0.9]	0.4*[0.3-0.8]	0.8[0.5-1.2]	0.6*[0.4-0.9]	0.9[0.5-1.5	0.5[0.2-1.7]	0.7[0.5-0.9]
>8	0.9[0.6 – 1.3]	1.0[0.5-1.8]	0.9[0.6-1.4]	0.9[0.6-1.4]	0.9[0.5-1.8]	1.4[0.6-3.4]	0.8[0.6-1.2]
History of > 1 job with pay (yes =1)	0.9[0.6 – 1.3]	0.5[0.2-1.2]	1.3*[0.8-2.2]	1.1[0.6-1.9]	1.1[0.5-1.6]	0.7[0.3-1.7]	1.1[0.7-1.8
Employment type (informal = 1)	0.7[0.5 – 1.2]	1.1[0.6-2.0]	0.5[0.3-1.0]	0.8[0.5-1.3]	0.9[0.4-2.2]	-	-
Female sex	1.3*[1.0 – 1.8]	-	-	1.2[0.8-1.8]	1.6*[0.9-2.6]	2.7*[1.3-5.7]	1.2[0.9-1.7]
Marital status (married = ref)							
Single	1.2[0.9 – 1.7]	0.4*[0.2-0.9]	1.7*[1.1-2.6]	1.2[0.8-1.9]	1.1[0.6-2.0]	1.0[0.4-2.6]	1.2[0.9-1.8]
Widowed	1.3[0.9 – 1.7]	1.1[0.5-2.2]	1.5*[1.0-2.3]	1.4[0.9-2.1]	1.1[0.6-1.8]	1.2[0.5-2.9]	1.2[0.9-1.7]
History of smoking (yes)	1.6*[0.9 – 2.7]	1.6[0.7-2.5]	1.5[0.8-3.0]	1.3[0.6-2.8]	1.8*[0.9-3.8]	2.5[0.7-8.8]	1.6**[0.9-2.8]
Alcohol intake (yes)	0.9[0.7 – 1.2]	0.8[0.5-1.4]	0.9[0.7-1.4]	0.9[0.7-1.4]	0.8[0.5-1.2]	0.8[0.4-1.7]	0.9[0.7-1.3]
Urban	2.2*[1.6 – 2.8]	2.5*[1.6-4.0]	2.0*[1.4-2.8]	-	-	2.3**[1.0-5.6]	2.2*[1.6-2.9]
Region of residence (Southern belt = ref)							
Middle belt	1.6*[0.9 – 2.6]	0.6[0.3-1.3]	3.7*[1.7-4.9]	1.7[0.8-3.8]	1.5[0.7-2.8]	0.2[0.1-0.7]	2.0*[1.2-3.6]
Northern belt	2.0*[1.2 – 3.2]	0.9[0.5-1.9]	4.4**[2.1-6.4]	2.8*[1.2-.3.3]	1.2[0.6-2.4]	0.4[0.1-1.2]	2.5*[1.5-4.2]
Age	0.9[0.9 – 1.0]	0.9[0.9-1.0]	1.0[0.9-1.2]	0.9[0.8-1.1]	0.9[0.9-1.0]	1.0[0.9-1.1]	0.9[0.9-1.0]
Years of schooling	1.0[1.0 – 1.1]	1.1[1.0-1.2]	1.0[1.0-1.1]	0.9[0.7-1.1]	1.1[1.0-1.1]	1.1[1.0-1.1]	1.0[1.0-1.1]
Annual income	1.0[0.9 – 1.0]	0.9[0.9-1.0]	1[0.9-1]	1.0[0.9-1.0]	1.0[0.9-1.0]	0.9[0.9-1.0]	1[0.9-1]
Cragg-Uhler (Nagelkerke) R^2	0.319	0.3000	0.347	0.277	0.332	0.275	0.344
Observations	3564	1466	2098	1400	2164	334	3230

*p < 0.01; **p < 0.05; Odds ratio (OR); Confidence Interval (CI)

In Models 3 and 4, retiring before and after age 60 years was a high risk factor of hypertension but the risk is as twice as higher in rural than in urban settings. For instance, retiring at age <60 years in rural setting poses higher odds [OR=26.2; 95%CI=15-35] compared with the risk in urban areas [OR=10.1; 95%CI=6.8-13]. Again, a history of working <5 days in week in urban setting was a significant risk factor for hypertension [OR=1.7; 95%CI=1.0-2.8].

The results again showed that a history of work in informal sector led to a comparatively higher risk of hypertension [OR=18; 95%CI=12-25.6] than having work history in the formal sector if both groups retire at age <60 years. A similar trend was observed for those who retired at age >60 years. Additionally, a history of <5 working days per week in the informal sector was a significant risk factor of diagnosed hypertension at old age [OR=1.5; 95%CI=1.0-2.3].

DISCUSSION

Ageing and ill-health are two bedfellows thwarting human existence and impose significant burden of care on affected individuals, families and the entire healthcare system. Although the two remain inevitable within the lifespan of humankind, ill-health at old age can be avoided or minimized if appropriate risk factors are identified for preventive measures by targeted population.

This paper has in the context of Ghana explored and established an association between work history and hypertension among older people using nationally representative data. The variation in the prevalence of hypertension across subgroups suggests that the disease does not discriminate among victims although it can be avoided, minimized, and controlled.[6] An interesting observation was a lower prevalence for those who started working before their eighteenth birthday compared to those who started later. The result means that one is more likely to avoid hypertension at old age if they have a longer work history. To an extent, the finding corroborates another study conducted in Northern Sweden, which finds that being economically inactive at the ages between 16 to 21 increase the risk of hypertension, especially for women.[9] One will argue that the overall prevalence is also an indication that not every individual prioritizes the culture of health-seeking such as hypertension risk assessment. This is typical of many Africans including Ghanaians who see the act of preventive care as a waste of limited economic resources.[27,28] It is imperative to add that the baseline differences in the prevalence of hypertension could also be a function of the incidence and duration of high blood pressure within the study period.

The regression analysis shows that the most significant factor contributing to the algorithm of hypertension among older adults in Ghana is retirement age, and to a lesser degree, a history of working less than five days in a week. In the buildup of the study hypotheses, the paper argues that formal sector work (a proxy measure for healthy working condition) provides some sort of financial relief in the form of pension entitlement, as a result reduces the risk of hypertension that may result from unexpected economic pressure post-retirement. Model 6 and 7 provide some explanation to the hypothesis that there exists an association between type of employment history and risk of hypertension at old age.

We see that working in an informal sector poses increased risk of hypertension than working in the formal sector. One can speculate that such an association comes about because unlike most formal sector work, there is no guaranteed retirement benefit such as pension to cushion the economic and psychological pressure of older people post-retirement. The authenticity of this finding has been proven in previous studies conducted in different parts of the world including Peru[29], and the United States of America.[29,30] From both the stratified and overall adjusted models, it is also important to mention that the positive association between retirement age and hypertension diagnosis among older people can be explained by the sedentary lifestyle that characterizes people post-retirement.[1]

Also, the stratified models based on sex and residential location suggests that men have a high risk of hypertension at old age if they work less than five days in a week. Although it cannot be immediately established why men working less than five days in a week in an urban setting have a high risk of hypertension than in rural setting, one may argue that perhaps it is as a result of multiple factors including differences in cost of living between rural and urban that places more economic pressure on men who often double as household heads in Ghana. As stated earlier, this can also be the result of reduced physical activity that accompanies less working days per week post-retirement. From the regression analysis, the paper argues that the most suitable model besides the overall model with the highest predictive power is the seventh model because it includes about 90% of the study population, and explains about 34% of the model fit.

Strength and Limitations

This study has provided some clarity on how elements of work associate with hypertension in Ghana as it does elsewhere. The hypotheses explored suggest that beyond the known fundamental risk factors of hypertension such as ageing, obesity, poor diet, alcohol and smoking, a proximate factor like work history also associates significantly with hypertension diagnosis among older adults. Most importantly, the data and methodology employed lend support for generalisation of the finding.

Our model fit suggests that factors other than what we included in our model estimation also contribute to the risk of hypertension diagnosis at old age. However, it is important that our choice of variables and discussion of results are restricted to work history in line with the study objective.

CONCLUSION

The conclusion from the finding is straightforward. Retirement age is a significant risk factor of diagnosed hypertension at old age. A history of less than five working days per week elevates the risk of hypertension among older adults. The finding suggests early engagement in paid work, preferably before age 25 years can help reduce the risk of hypertension at old age.

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