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# Sociodemographic and Socioeconomic Correlates of Alcohol Use among Older Adults in Ghana

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## Abstract

**Background :** The global older adult population is increasing, however the health and care of this segment of the population has not been accorded optimal attention in Ghana and other low-income countries. This paper describes socio-demographic and socioeconomic correlates of alcohol use as major health risk factors among older adult Ghanaians.

**Methods:** This work was based on the World Health Organization's multi-country Study on global Ageing and adult health (SAGE), conducted in six countries including Ghana. Wave one of SAGE in Ghana was conducted in 2007-2008 as collaboration among WHO, National Health Research Unit and the University of Ghana Medical School through the Department of Community Health. A sample of 3109 older adults, ≥ 50 years were involved in this analysis. Data was obtained on the patterns and intensity of alcohol use among older adults in Ghana.

**Results:** Heavy drinking (Excessive alcohol use) was more prevalent among the 50-59 year group (3.4%), males (4.2%), rural residents (2.9%), the separated/divorced (4.0%), those with secondary education (or equivalent) completed (8.4%) and higher incomes (3.8%). Regional differences existed in heavy drinking; was most prevalent in the three northern regions, Upper West (97.1%); Upper East (70.1%) and Northern (62.5%). The two most developed and populous regions (Greater Accra and Ashanti) had relatively lower prevalence of heavy drinking (43.4% and 39.9% respectively). Significant socio-demographic correlates of alcohol use were male sex (OR=1.4, CI=1.37-1.52), rural resident (OR=1.3, CI=1.08-1.44), higher education (OR=2.4, CI=1.65-3.61) and lower income (OR=1.6, CI=1.44-1.70).

**Conclusions:** Risk reduction measures including improvement in access to health and social services, implementing the national aging policy with due consideration to demographic, socio-economic, religion, culture and regional disparities will engender health and social benefits to the older adult population in Ghana.

**Keywords:** Older adult; Alcohol use; Ghana; Low income countries

## Introduction

The older adult population of a country is a vital resource – particularly from the view point of wisdom, experience and skills which they bequeath to the younger generation. Despite their growing numbers, the health and care of the older population has not been accorded optimal attention in Ghana and in other low-income countries [1].

Given the demographic trends of rapid increases in older persons in all populations of the world, the significance of chronic diseases among the ageing population and the implications for the quality of life of the older adult population is also increasing [2]. The prevalence of non-communicable (NCDs) diseases and their risk factors is increasing in some sub-Saharan African settings including Ghana [3-6]. With the lack of vital statistics systems, epidemiologic and national level surveys (cross-sectional, longitudinal and interventional) capable of in-depth analyses of risk factors could provide a better understanding of NCDs and the risk factors in sub-Saharan Africa [6].

Excessive use of alcohol has been documented and demonstrated to have considerable impact on the cardiovascular health (and other non-communicable conditions) of the individual especially the older person; because of the detrimental effects on the human system [7-9]. Evidence shows that diet rich in saturated fat and high in calories, smoking, excessive alcohol use and physical inactivity, are some of the modifiable risk factors leading to an increase in the prevalence of coronary heart disease and other complications of hypertension [3-5,10].

How or why alcohol increases blood pressure is not exactly understood. It is believed that excessive alcohol use damages the muscles of the heart and thus compromises its function [9] however evidence from literature through cross-sectional and cohort studies have consistently related high average alcohol consumption to short- or long-term health consequences [11].

This research is based on the World Health Organization's (WHO) Study on Ageing and Adult Health (SAGE Wave 1) in Ghana which was aimed among many factors, to determine health risk factors and chronic disease patterns among the older members of the Ghanaian

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population. The inclusion of risk factors (such as alcohol use) in SAGE Wave 1 was that it has significant impact on mortality and morbidity from non-communicable diseases and that risk modification is possible through effective primary prevention and health promotion efforts [12].

Ghana launched the national ageing policy in 2010 by the Ministry of Employment and Social Welfare (MESW) with the goal of achieving overall social, economic and cultural re-integration of older persons into mainstream society, to ensure ageing in dignity and provision of adequate attention to the health needs of older persons [1].

The goal of this research is to describe the patterns of alcohol use among older adults in Ghana by selected socio-demographic and socio-economic characteristics as well as by geolocality (administrative regions) where the older adults reside to help identify high risk older adult men and women in the population. It is aimed at providing guidance for national policy implementation and to contribute to the wellbeing of older persons in Ghana.

## Methods

SAGE Wave 1 was undertaken in Ghana in a partnership between the University of Ghana's Department of Community Health, the Ministry of Health and WHO, as part of a multi-country longitudinal study to complement existing ageing data sources to inform policy and programs. A nationally representative sample was used for the survey (more details provided by Kowal and colleagues in a 2012 publication and a detailed national report on SAGE Wave 1 in Ghana) [12,13]. Respondents who were 50 years and above were interviewed regarding their household characteristics, socio-demographic and work history, perceived health status, risk factors and preventive health behaviors, chronic conditions and health services coverage, health care utilization, subjective wellbeing and quality of life, and social cohesion [14]. In addition, anthropometric measurements were recorded and blood spots for biomarkers were collected. Respondents also completed performance tests. Field work and data entry were undertaken between May 2007 and June 2008. SAGE was approved by the World Health Organization's Ethical Review Board as well as a national approval in all six countries. Informed consent has been obtained from all study participants. In all 3109 older persons ≥ 50 years were used for this analysis

## Measures

### Socio-demographic characteristics

Characteristics including age, sex, and highest level of education, marital status, and socioeconomic status were collected. In this analysis, educational level was categorized as no education, primary school completed or less, secondary education (or equivalent) completed and college/university completed or postgraduate. Marital status was categorized as never married, currently married or co-habiting, separated or divorced, and widowed.

**Alcohol use**: Lifetime alcohol use was assessed with the question 'Have you ever consumed a drink that contains alcohol (such as beer, wine, spirits, etc.)?' Response options were 'Yes', 'No, and Never'. Lifetime alcohol users were asked about current (past month) alcohol use, and current alcohol users were asked 'During the past 7 days, how many drinks of any alcoholic beverage did you have each day?'. In the survey both commercially available and home-brewed beverages were quantified in terms of alcohol content and quantity (i.e. a "standard drink") for comparability to other health surveys. The survey defined the net alcohol content of a standard drink as 10grams and defined a standard drink for males as five (5) standard drinks and four (4) standard drinks for females.

SAGE Wave 1 defined Alcohol use as:

- lifetime abstainers or those who never consumed alcoholic beverage;
- non-heavy drinkers (social drinkers), use alcohol 2 days per week with 5 or more standard drinks (in last 7 days);
- infrequent heavy drinker (binge drinkers): use alcohol 2–3 days per week with 5+ standard drinks in last 7 days;
- Frequent heavy drinkers, 4 or more days per week with 5+ standard drinks (in last 7 days).

**Economic or wealth status**: income quintiles were derived from the household ownership of durable goods, dwelling characteristics and access to services (improved water, sanitation and cooking fuel) for a total of 21 assets. Wealth levels were generated through a multi-step process, where asset ownership was converted to an asset ladder, Bayesian post-estimation method used to generate raw continuous income estimates, and then income transformed into quintiles. Permanent incomes of the older persons were classified into five income quintiles (Q1 being the lowest and Q5 the highest income earners) [13,15].

## Data Analysis

Associations between the key outcome of alcohol intake and socio-demographic and socioeconomic variables were evaluated calculating Odds ratio (OR). Demographic and socio-economic variables used included age, geolocality (administrative region), area of residence (urban/rural), educational level, marital status, and income levels. All variables were statistically significant at the 95% confidence level, p-value = 0.05

Logistic regression analysis was conducted to determine predictors of alcohol use in the older persons. The logistic regression model (using odds ratio [OR] and p-values at 95% confidence level) had use or life-time abstinence from alcohol in the older adult as binary dependent variable. Independent variables used included, sex, location (urban/rural), educational level, marital status, and income quintile. Data from SAGE Wave 1 for this assessment was analyzed using SPSS version 21.

## Results

### Patterns of alcohol consumption in older adults by socio-demographic and socioeconomic characteristics, SAGE Wave 1, Ghana

Table 1 indicates that the overall prevalence of frequent heavy drinkers was 1.5% and that of infrequent heavy drinkers 1.2%. There was a preponderance of older males among the frequent heavy drinkers (2.5% vs. 0.4%). Indeed the men had higher prevalence of alcohol use in all three categories (frequent heavy drinkers, infrequent heavy drinkers and non-heavy drinkers) than females. There were relatively higher prevalence among heavy drinkers (frequent and infrequent) among, older adults aged 50-59 years (3.4%); rural residents (2.9%); those with secondary education (or equivalent) completed (5.3%); the separated/divorced (4.0%).

Overall, 1796 (57.8%) of older adult were lifetime abstainers. Sex difference was evident in the pattern of lifetime abstinence from

| Characteristics | Alcohol consumption (%) | | | | | N(3109) |
|---|---|---|---|---|---|---|
| | Lifetime abstainers | Non-heavy drinkers | Infrequent heavy drinkers | Frequent heavy drinkers | Heavy drinkers (frequent and infrequent) | |
| **Age group** | | | | | | |
| 50–59 | 51.1 | 45.4 | 1.6 | 1.8 | 3.4 | 1 265 |
| 60–69 | 58.1 | 39.0 | 0.9 | 2.0 | 2.9 | 840 |
| 70+ | 65.9 | 32.4 | 0.9 | 0.7 | 1.6 | 1 004 |
| **Sex** | | | | | | |
| Male | 44.0 | 51.9 | 1.7 | 2.5 | 4.2 | 1 659 |
| Female | 73.6 | 25.3 | 0.7 | 0.4 | 1.1 | 1 450 |
| M: F Ratio | 0.6 | 2.1 | 2.4 | 6.3 | | |
| **Residence** | | | | | | |
| Urban | 64.1 | 33.4 | 1.3 | 1.2 | 2.5 | 1 235 |
| Rural | 53.6 | 43.5 | 1.2 | 1.7 | 2.9 | 1 874 |
| **Education** | | | | | | |
| No education | 65.2 | 33.9 | 0.6 | 0.3 | 0.9 | 1 778 |
| Primary school completed or less | 51.6 | 43.4 | 2.5 | 2.4 | 4.9 | 642 |
| Secondary education (or equivalent) completed | 32.7 | 62.0 | 1.7 | 3.6 | 5.3 | 591 |
| College/University completed or | 43.8 | 52.2 | 1.3 | 2.6 | 3.9 | 98 |
| **Marital status** | | | | | | |
| Never married | 47.2 | 50.8 | 0.0 | 2.0 | 2 | 46 |
| Currently married/ Cohabiting | 51.8 | 45.1 | 1.0 | 2.1 | 3.1 | 1868 |
| Separated/divorced | 60.3 | 35.6 | 2.6 | 1.4 | 4 | 381 |
| Widowed | 71.0 | 27.4 | 1.2 | 0.4 | 1.6 | 814 |
| **Total respondents (%)** | **1 796 (57.8)** | **1228 (39.5)** | **38 (1.2)** | **47 (1.5)** | **3.4 (85)** | **3109** |

**Table 1:** Alcohol consumption among older adults by selected socio-demographic and socioeconomic characteristics, SAGE Wave 1, Ghana.

alcohol, more women than men (73.6% vs. 44.0%). Proportion of lifetime abstainers increased with age: was higher among urban residents, those with no education, and those living without partners.

Among older adults who use alcohol (Table 2), the proportions of frequent heavy drinkers were lowest among Moslems (13.8%) and Christians (16.9%). It was highest among those who did not belong to any religion (45.6%). Regarding income levels and frequency of heavy drinking, those in the lower income groups (Q1, Q2, Q3) had relatively higher proportion of older persons being frequent heavy drinkers. Conversely, those with higher incomes tended to have higher proportions as being non heavy drinkers.

### Regional differences in patterns of alcohol consumption in older adults, SAGE Wave 1, Ghana

As demonstrated in Table 3, regional differences exist among older persons with the most health risk (excessive alcohol use) i.e. infrequent heavy drinkers and frequent heavy drinkers. The combined proportions of heavy drinkers (frequent and infrequent) were highest in the three northern regions (Upper West, 97.1%; Upper East, 70.1% and Northern, 62.5%). The Brong Ahafo region, Ashanti region, and Greater Accra region had relatively lower prevalence of heavy drinkers (38.8%, 39.9% and 43.4% respectively).

### Predictors of alcohol use among older adults, SAGE Wave 1, Ghana

Results of logistic regression displayed in Table 4, indicate that sex, location (urban/rural), educational level and income levels are significant predictors of alcohol use among older Ghanaians. Men have 1.4 increased risk of using alcohol than females (OR=1.4), rural residence had 1.3 increased risk than urban residents (OR=1.3). The risk of alcohol use was higher for older adults with education (OR=2.4) relative to those with no formal education. Also the risk of alcohol use was higher for those with the lower incomes (OR=1.6).

## Discussion

It is necessary to identify risks to focus on interventions that can improve the health of the older Ghanaian population through effective health promotion. Excessive alcohol use has significant impact on mortality and morbidity from non-communicable diseases; however risk modification is possible through effective primary prevention and health promotion efforts [7].

Excessive alcohol use (frequent and infrequent heavy drinkers) was more prevalent among the 50-59 year group, among males, in rural residents, those with some education, among the separated/divorced and those with low income (Q1, Q2 and Q3). This finding agrees with that of the 2008 Ghana Demographic and Health Survey (GDHS) which also found higher prevalence of alcohol use in males and rural residents [16]. The higher prevalence of heavy drinking in men seems to relate to recent findings by the World Health Organization that the burden of alcohol related disease is greatest in middle income countries especially among men in Africa [17,18]. This probably explains why in 2010, the WHO's *Global Strategy to Reduce the Harmful Use of Alcohol* proposes the prioritization of alcohol control measures in countries of the Global South, to as a matter of urgency stem the tide of growing burden of

| Characteristic | Alcohol Use | | | |
|---|---|---|---|---|
| | Non-Heavy | Infrequent Heavy | Frequent Heavy | Total |
| **Religion** | | | | |
| None | 47 (29.4) | 40 (25.0) | 73 (45.6) | 160 (100) |
| Christianity | 965 (53.8) | 526 (29.3) | 304 (16.9) | 1795 (100) |
| Islam | 52 (47.7) | 42 (38.5) | 15 (13.8) | 109 (100) |
| Indigenous/ Traditional | 92 (25.6) | 179 (49.6) | 89 (24.8) | 360 (100) |
| Other | 6 (37.5) | 4 (25) | 6 (37.5) | 16 (100) |
| **Total** | **1163 (47.6)** | **791 (32.4)** | **488 (20.0)** | **2441 (100)** |
| **Income** | | | | |
| Q1 | 200 (37.7) | 215 (40.5) | 116 (21.8) | 531 (100) |
| Q2 | 237 (47.7) | 158 (31.8) | 102 (20.5) | 497 (100) |
| Q3 | 209 (43.9) | 156 (32.8) | 111 (23.3) | 476 (100) |
| Q4 | 241 (53.3) | 130 (28.8) | 81 (17.9) | 452 (100) |
| Q5 | 274 (56.5) | 133 (27.4) | 78 (16.1) | 485 (100) |
| **Total** | **1161 (47.6)** | **792 (32.4)** | **488 (20.0)** | **2441 (100)** |

**Table 2:** Religion and income characteristics of older adults who use alcohol, SAGE Wave 1, Ghana.

| Characteristics | Alcohol consumption (%) | | | | | Total |
|---|---|---|---|---|---|---|
| | Lifetime abstainers | Non-heavy drinkers | Infrequent heavy drinkers | Frequent heavy drinkers | Heavy drinkers (frequent and infrequent) | |
| **Ashanti** | 51.3 | 60.1 | 24.4 | 15.5 | 39.9 | 492 |
| **Brong Ahafo** | 48.7 | 61.2 | 15.8 | 23.0 | 38.8 | 296 |
| **Central** | 51.3 | 44.3 | 30.1 | 25.6 | 55.7 | 328 |
| **Eastern** | 41.7 | 42.1 | 35.7 | 22.2 | 57.9 | 404 |
| **Greater Accra** | 26.6 | 56.7 | 29.5 | 13.9 | 43.4 | 357 |
| **Northern** | 62.3 | 37.5 | 41.9 | 20.6 | 62.5 | 279 |
| **Upper East** | 10.0 | 29.9 | 58.0 | 12.1 | 70.1 | 188 |
| **Upper West** | 22.0 | 2.9 | 75.7 | 21.4 | 97.1 | 96 |
| **Volta** | 29.0 | 51.3 | 17.9 | 30.8 | 48.7 | 298 |
| **Western** | 42.3 | 52.9 | 28.3 | 18.8 | 47.1 | 370 |
| **National (N)** | **58.7(1772)** | **47.6 (1164)** | **32.4 (792)** | **20.0 (488)** | **52.4 (1280)** | **3109** |

**Table 3:** Regional differences in patterns of alcohol consumption among older adults, SAGE Wave 1, Ghana.

| Characteristic | Predictive factor | Odds ratio | 95% Confidence Interval | P-value |
|---|---|---|---|---|
| **Alcohol use** | **Sex** | | | |
| | Female | -- | -- | -- |
| | Male | 1.44 | 1.373- 1.516 | 0.001 |
| | **Location** | | | |
| | Urban | -- | -- | -- |
| | Rural | 1.25 | 1.082- 1.444 | 0.002 |
| | **Educational level** | | | |
| | No Education | -- | -- | -- |
| | With Education | 2.44 | 1.645- 3.608 | 0.001 |
| | **Marital Status** | | | |
| | Never married | -- | --- | -- |
| | Living with partner (currently married and cohabiting) | 0.72 | 0.183-2.796 | 0.630 |
| | living without partner (separated/divorced and widowed) | 1.07 | 0.432-2.638 | 0.887 |
| | **Income level** | | | |
| | Highest income (Q5) | -- | -- | -- |
| | Lowest income (Q1) | 1.55 | 1.436- 1.695 | 0.001 |

**Table 4:** Predictive factors of alcohol use in older adults, SAGE Wave 1, Ghana.

non-communicable disease. The lower prevalence of heavy drinking in women is not surprising because most cultural and traditional systems in Ghana frown on women drinking alcohol. It is especially so for older women who are seen in most traditional societies as persons who pass on good morals in the homes and communities to the younger generation.

A similar study among older Americans (50 years and above) in 2009 by Blazer and Wu, showed similar socio-demographic correlates to alcohol use; prevalence of at-risk alcohol use and binge drinking was higher among males, among respondents 50 to 64 years of age relative to respondents aged 65 years or older and in respondents with high school and college education or higher [19]. Blazer and Wu however, found that those with higher incomes had higher prevalence of at-risk and binge alcohol consumption which is in contrast to the findings from SAGE Wave 1, which shows higher proportion of heavy drinkers in lower income groups. A potential reason may be because, these are poor old rural dwellers (mostly male) who may tend to consume alcohol as a main source of socializing and entertainment or that these poor older persons may be unemployed or retired and thus can afford to consume alcohol much more frequently (even during working hours of the day) than the active employed counterparts. In addition, older persons with some education are likely to attract some social networks and may belong to clubs and societies and thus have increased opportunities for socializing; be able to pay and engage in social events and be able to afford the cost of drinks. These points to the fact that people may drink as a rational response to their environment or as a form of coping rather than against the idea of morality. Indeed this analysis demonstrated that significant demographic and socio-economic predictors of alcohol use among older Ghanaians were sex (higher among males), rural residents, older persons with some education (secondary or equivalent) and those with lower incomes.

Increased alcohol consumption is associated with substantial morbidity and mortality in young, middle-aged and adult populations [20]. Evidence exist that excessive alcohol use affect the health of older adults due to changes in metabolism and physiology and the higher prevalence of medical co-morbidity and medication use [21]. The National Institute of Alcohol Abuse and Alcoholism of the United States has recommended that men and women aged 65 and older drink no more than one drink per day, or seven drinks per week [21,22]. In this analysis, excessive alcohol use declined with age, a good observation with positive implications for the health and wellbeing of older persons. However, some older persons 70 years and above continued excessive alcohol use. National preventive policies and implementation strategies should target limited resources to these high risk older persons. Implementing health risk reduction interventions in the national ageing policy document may garner positive health and social benefit to the nation [1].

Although the relationships between alcohol use, survival, and health status in older persons have not been fully explored, some studies have found that heavy drinking and alcohol dependence were each associated with worse health status [23,24]. However, other studies have indicated that people who drink at low levels have better health status and decreased mortality than non-drinkers [22,25-29]. Despite these seeming controversies from the literature, cross-sectional and cohort studies have consistently related high average alcohol consumption to short- or long-term health consequences [11].

High levels of alcohol use may account for individual behaviors that impose external costs on others including abuse of family members, crimes of violence, motor vehicle accidents, government expenditures on treatment of alcohol-related illness and custodial care [11]. In resource limited settings, preventive measures and targeted community health promoting ventures are more efficient [30].

In addition to the demographic/socioeconomic correlates discussed, regional (geolocality) differences exist in excessive alcohol use among older persons in Ghana. The three northern regions (Upper West, Upper East and Northern) have the highest proportion of older persons as heavy drinkers. This finding conforms to that of the 2008 GDHS, which found higher prevalence of alcohol use in the three northern regions [16]. Interestingly, SAGE Wave 1 in Ghana indicated that the two most populous and most developed regions (Greater Accra and Ashanti) had relatively lower proportion of older persons as heavy drinkers, compared to the poorest and least developed three northern regions [16,31,32]. These suggest that poverty and the rural nature of the three northern regions have some association with the patterns of alcohol use observed. In the same vein, it is not surprising that Central region, the fourth poorest region in the country also has relatively high proportion of heavy drinkers [16,31,32]. The implication is that the more social and economic inequalities widens as a result of poverty, the more likely there will be a rise of vulnerabilities to health risks associated with drinking practices.

It is however important to note that, the Northern region despite having the third highest proportion of heavy drinkers also had the highest proportion of lifetime abstainers. Our analysis shows older persons who are Muslims have the lowest proportion among heavy drinkers; Northern region has the highest proportion of its population being Muslims in the country [31]. It is therefore likely that indigenous traditional older persons in the region do not use alcohol while some educated, probably non-religious persons constitute the heavy drinking population. Since older persons who are Christians or Muslims had relatively lower proportion of heavy drinkers, the church and the mosque may offer good platforms for health promotion and national risk reduction strategies.

Thus apart from income, developmental and socio-demographic factors identified by SAGE Wave 1 as accounting for the regional differences in heavy drinking in Ghana, religious and cultural factors may play a key role. A more qualitative investigation in these high risks geolocalities may offer a better understanding for the overall national health risk reduction strategies in older persons.

## Limitations

The self-report of the health variable alcohol use in the SAGE Wave 1 should be interpreted with caution due to potential measurement errors in line with difficulties in quantifying some locally brewed alcoholic drinks in standard units. The questions asked on the quantity or intensity of alcohol use depended on memory, therefore, there is the possibility of recall bias. In the survey however, the questions referred to very short time periods to minimize the potential recall bias [13,33].

## Conclusions

The survey found excessive alcohol use as a major health risk factor among older adults in Ghana and varied across the ten regions; the three northern regions (Upper East, Upper West and Northern) had the greatest burden of alcohol use among older adults. Sex, place of residence, level of education, marital status and income levels were important correlates of heavy drinking in older persons.

Risk reduction measures including improvement in access to health and social services, implementing the national aging policy

with due consideration to demographic, socio-economic and regional disparities will engender more health and social benefits to the most at-risk population group.

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### Competing interests

The authors declare no competing interest. The views expressed in this paper are those of the authors. No official endorsement by the WHO or Ministry of Health / Ghana Health Service is intended or should be inferred.

### Authors' contributions

Yawson A E and Agyenim B J developed the concept, AE Yawson, Biritwum RB and Mensah G analyzed the survey data. AE Yawson, Welbeck J and Agyenim B J contributed to the writing of the various sections of the manuscript. All the authors reviewed the final version of the manuscript before submission.

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