

# Self-reported health and functional limitations among older people in the Kassena-Nankana District, Ghana

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**Background:** Ghana is experiencing significant increases in its ageing population, yet research on the health and quality of life of older people is limited. Lack of data on the health and well-being of older people in the country makes it difficult to monitor trends in the health status of adults and the impact of social policies on their health and welfare. Research on ageing is urgently required to provide essential data for policy formulation and programme implementation.

**Objective:** To describe the health status and identify factors associated with self-rated health (SRH) among older adults in a rural community in northern Ghana.

**Methods:** The data come from a survey on Adult Health and Ageing in the Kassena-Nankana District involving 4,584 people aged 50 and over. Survey participants answered questions pertaining to their health status, including self-rated overall health, perceptions of well-being and quality of life, and self-reported assessment of functioning on a range of different health domains. Socio-demographic information such as age, sex, marital status and education were obtained from a demographic surveillance database.

**Results:** The majority of older people rated their health status as good, with the oldest old reporting poorer health. Multivariate regression analysis showed that functional ability and sex are significant factors in SRH status. Adults with higher levels of functional limitations were much more likely to rate their health as being poorer compared with those having lower disabilities. Household wealth was significantly associated with SRH, with wealthier adults more likely to rate their health as good.

**Conclusion:** The depreciation in health and daily functioning with increasing age is likely to increase people's demand for health care and other services as they grow older. There is a need for regular monitoring of the health status of older people to provide public health agencies with the data they need to assess, protect and promote the health and well-being of older people.

Keywords: *self-reported health status; functional limitations; older people; INDEPTH WHO-SAGE; adult health; Kassena-Nankana District; Ghana*

Access the supplementary material to this article: INDEPTH WHO-SAGE questionnaire (including variants of vignettes), a data dictionary and a password-protected dataset (see **Supplementary files** under **Reading Tools** online). To obtain a password for the dataset, please send a request with "SAGE data" as its subject, detailing how you propose to use the data, to [global.health@epiph.umu.se](mailto:global.health@epiph.umu.se)

Received: 27 November 2009; Revised: 4 June 2010; Accepted: 8 July 2010; Published: 27 September 2010

Although population ageing is often associated with industrialised societies such as Europe, America and Japan, the phenomenon is gradually gaining attention in the developing world. Advances in public health and the associated improvement in life expectancy has increased the proportion of the aged

population in the developing world. It is expected that the proportion of older people will grow rapidly in many parts of the developing world, including sub-Saharan Africa (1, 2). The rapid growth of the aged population poses various challenges. Chronic diseases and disability are disproportionately high among older people. Thus, a

growing elderly population will increase the demand for health care and other social services. Due to their low economic development, inadequate health infrastructure and limited social security programmes, meeting the needs of older people in the developing world and especially in sub-Saharan Africa is and will be difficult. This is likely to be compounded by the erosion of the traditional family support systems for older people. Policies and programmes that address the health and other needs of the growing aged population are urgently needed to ensure successful ageing and functional independence of the aged.

However, health research in developing countries (including Ghana) has been and continues to be heavily focused on younger population groups. As such, the extent of ageing, the health needs of the ageing population, as well as the implications of national policies for the health and welfare of the aged are poorly understood and yet to be well appreciated. Questions about changing health over the life course and compression of morbidity demand an empirical basis for analysis, particularly in the context of planning and preparing social protection mechanisms (health and pension systems) to meet the demands of this growing population group.

The ongoing World Health Organization's global Study on Adult Health and Ageing (SAGE) provides an important platform for generating empirical data on ageing and health transition for policy formulation and programme implementation, especially in sub-Saharan Africa. Four African countries – Ghana, South Africa, Tanzania and Kenya – are participating in this programme of research, and have conducted various surveys on ageing and adult health using comparable instruments. This article draws on data from a survey conducted in the Kassena-Nankana District of northern Ghana as part of this global programme of research on ageing.

We describe the health status of older people based on their own reports on various aspects of their health. We then examine factors associated with self-rated health (SRH) among older people. In particular, we examine whether perceived disability in various activities of living influences rating of one's health status. The social, ecological and economic circumstances of the district are more representative of the northern ecological zone of Ghana as well as other Sahelian populations to the north of Ghana than of the southern and coastal zones of the country (3). The results of this study therefore have relevance for our understanding of the health of older people in Ghana and beyond.

## Methods

### *The setting*

The Kassena-Nankana District<sup>1</sup> (KND) in the Upper East region of Ghana is located at the northern-most part

of the country and shares a boundary with Burkina Faso to the north. Since 1993, the Navrongo Health Research Centre (NHRC) has been operating a demographic surveillance system in this area. The district lies between latitudes 10.5 and 11.0° N and longitudes 1.0 and 1.5° W (4). The land is relatively flat and covers an area of 1,675 km<sup>2</sup>, with altitude of between 200 and 400 m above mean sea level. Located in the Guinea savanna belt, the ecology of the study area is typically Sahelian, with a short rainy season from April to September and a prolonged dry season from October to March. The mean annual rainfall is about 1,300 mm, with the heaviest rains occurring in August. Monthly temperatures range from 20 to 40°C, with the mean annual minimum and maximum being 22.8 and 34.4°C, respectively.

Data from demographic surveillance estimated the population of the district as at end of June 2007 to be 147,536 with females constituting 53%, giving a M:F ratio of 0.89. About 38% of the population is under 15 years old, while those aged 65 and over constitute 4.7%. This gives a dependency ratio of 74.5%. The district is largely rural with dispersed settlements. There are two main ethnic groups – the Kassenas and the Nankanas – with other ethnic groups forming about 5% of the population. Although mortality and fertility are high, there have been declines since the 1990s. For instance, the crude death rate declined from 18.7 to 10.4 per 1,000 between 1997 and 2007, while the crude birth rate fell from 29.4 to 26.2 per 1,000 and the total fertility rate from 5.0 to 4.0 during the same period.

The economy of the district is largely agrarian with about 90% of the population dependent on subsistence agriculture. Major crops grown are cereals such as millet, maize, sorghum and rice. The Tono irrigation dam as well as several dug-out dams in various communities facilitate irrigated farming and dry-season gardening. Rearing of animals like cattle, goats, sheep and poultry form part of the agricultural activities. Due to the dependence on agriculture and declining agricultural yields, poverty is endemic in the area. The district has a poor road network and transportation in many parts is limited to bicycles and occasional vehicles. Typically, movement within communities is by foot and use of bicycles. Recently, however, there has been an increase in the use of motor bikes, especially in the urban part of the district.

Health facilities in the district include one hospital (located in Navrongo), six health centres, three clinics and several chemist's shops. In addition to these static health facilities, community health officers have been deployed to several communities to offer door-to-door services to the people. As part of recent efforts to promote access to basic health services, a national health insurance scheme has been instituted and district mutual health insurance schemes are operational in all districts of the country. The main causes of morbidity in the study area are

malaria, gastroenteritis and acute respiratory infection. Periodic outbreaks of epidemic meningococcal meningitis have been recorded in the district. Service provision data suggest an increasing prevalence of hypertension and diabetes, and there is need for more systematic documentation of the type and prevalence of non-communicable diseases among adults. The Adult Health and Ageing study being implemented in the district as part of the INDEPTH WHO-SAGE initiative will contribute towards highlighting the health situation of adults and inform health care delivery in the district. The survey reported here is the first district-wide population-based survey of adults to collect information on self-reported health status among persons aged 50 and over, and thus provides baseline data for monitoring and evaluating adult health.

### Data

The data for this study come from the summary version of the INDEPTH WHO-SAGE Adult Health and Ageing Survey implemented by the NHRC. The Adult Health and Ageing Survey is an INDEPTH Network multi-site activity in collaboration with the World Health Organization's Study on global AGEing and Adult Health (SAGE). The survey forms part of efforts by the INDEPTH Network to establish a longitudinal database on older people to inform policies related to their well-being. Ethical approval for the study was obtained from the ethics committee of the Ghana Health Service as well as the institutional review board of the NHRC. Community approval was obtained from the chiefs and elders. Written consent from individuals was obtained before interview.

The summary version of the SAGE study primarily targeted older people (50 and over), although smaller samples of adults 18–49 years were also included. A single-stage simple random sample of 6,074 older people (50 years and over) and 1,360 younger adults (18–49 years) in the Kassena-Nankana District was drawn using the Health and Demographic Surveillance System (HDSS) database as a sampling frame. The data collection was integrated into the routine HDSS data collection round that took place between January and April 2007. Trained HDSS interviewers visited households and conducted face-to-face interviews with selected individuals. The questionnaire was written in English although the interviews were conducted in the local languages of respondents. Translation of the questions in to Kassim and Nankam – the two principal languages in the district – (and back translation from the local languages into English) as well as pre-testing of the questionnaire was done as part of interviewer training.

The questions asked in the survey were grouped under two sections – Health Status Descriptions, and Subjective Well-being and Quality of Life. Items under Health

Status Descriptions included overall rating of health, questions on eight domains of health (mobility, self-care, pain and discomfort, cognition, interpersonal activities, sleep/energy, affect and vision), as well as functional assessment questions. Vignettes for health status descriptions were included in the Full SAGE survey but not in the Summary version. Under the Subjective Well-being and Quality of Life section, respondents were asked questions on their thoughts about their life situation. Almost all the questions in the questionnaire had 5-point scale response categories. Background information on age, education, marital status of each respondent as well as household information were obtained from the routine HDSS data.

Standardised self-reported surveys of health have contributed immensely to the understanding of the health status of elderly people in the developed world and Asia. However, such studies (particularly those focusing on older people) are rare in sub-Saharan Africa. The data reported in this article will contribute towards bridging the knowledge gap on the health status of older people in sub-Saharan Africa and the developing world at large.

### Outcome variables

The primary outcome of interest in this study is overall SRH status. This is based on respondents' assessment of their current health status on a 5-point scale in response to the question: 'In general, how would you rate your health today?' Response categories were: very good, good, moderate, bad and very bad. Barely 10% of respondents rated their health as very good and few rated their health either as 'bad' (4.8%) or 'very bad' (0.2%). Almost half (49.4%) reported their health as 'good', while 36.6% rated their health as moderate. From this we created a dichotomous measure coded 0 if response was 'very good' or 'good' and 1 if response was 'moderate', 'bad' or 'very bad'. This simple measure of health status has been used in population-based epidemiological research, and has been identified as a powerful predictor of morbidity and mortality (5–7). In dichotomising SRH in our analysis, we follow the lead of previous researchers who adopted a similar approach (5,7–9) and the observation by Manor et al. (10) that such dichotomisation does not make any difference.

Other indicators of health status examined in this study are overall health status and self-reported functional limitations. The overall health status of individuals was assessed based on responses to questions in eight domains of health covering affect, cognition, interpersonal activities and relationships, mobility, pain, self-care, sleep/energy, and vision. At least two questions were asked in each domain, thus providing more robust assessments of individual health levels and reducing measurement error for any single self-reported item. An

overall health status score (HSS) for each respondent was derived from responses to these various items using Item Response Theory (IRT) parameter estimates in Winsteps, a Rasch measurement software package (<http://www.winsteps.com>). The health score is then transformed to a scale of 0–100 (where 0 represents the worst health and 100 the best health status).

Based on self-reports of difficulty in carrying out various activities contained in the health status descriptions section of the questionnaire, an index of overall disability (WHO Disability Assessment Scale – WHO DAS) was constructed. Self-reported functioning was assessed through the standardised 12-item WHODAS, Version 2 (11). On a 5-point scale, respondents rated their level of difficulty in carrying out various activities. These responses were used to create a score of overall disability; the score was then transformed to a scale ranging from 0 (no disability) to 100 (greatest disability). In effect, WHODAS is an overall summary of one's perceived difficulties in carrying out various functions of daily living. A higher score indicates greater perceived difficulty in carrying out daily functions, while a lower score indicates lower perceived difficulty in functioning. In order to make this score conceptually consistent with the HSS, it was inverted to a score designated here as WHODASi, so that a higher score (on a 0–100 scale) represents better functioning. In the analyses we grouped WHODASi into quintiles to represent levels of functional ability.

### *Socio-demographic variables*

Socio-demographic information on respondents was obtained from routine demographic surveillance data including sex, age, education, marital status, relationship to head of household, number of older people in the household and household economic status. Age was categorised into three subgroups: 50–59, 60–69 and 70+. Marital status was categorised as married or unmarried. Educational status was categorised as never attended school or ever attended school. In the analysis those who have never attended school are referred to as having no formal education, while those who have ever attended school are described as having some formal education. The socioeconomic status of households was assessed in terms of wealth quintiles based on possessions and housing characteristics. The five quintiles represent poorest, poorer, poor, less poor and least poor households. In terms of relationship to the head of household, respondents were described as head, spouse of head, parent of head or other relation to head of household. The number of older people in the household was expressed as a proportion of the total number of people in the household and grouped into quartiles for the analysis.

### *Analysis*

The analysis is in two parts. First, we describe the health status of older people based on three indicators: overall SRH, an index of self-reported functional ability (WHODASi) and an overall HSS. In the second part of the analysis, we explore factors related to poor SRH using logistic regression. In this analysis we are particularly interested in the influence of reported functional ability (WHODASi) on self-related health status. Functional ability is an important dimension of health and an individual's assessment of ability to perform basic daily activities is likely to influence SRH. However, the magnitude of the influence of functional limitations on SRH may be mitigated by factors such as the cause and duration of disability, awareness of co-morbidity and access to assistive devices. Generally, we expect that adults with greater functional disability will rate their health poorer than those with lower disability. We controlled for confounders such as age, ever attended school, marital status, relationship to household head, socioeconomic status and proportion of household members aged 50 or over. These factors have been identified as significant factors in self-reported health, as have age and gender differences (5, 12). Similarly, marital status, education, socioeconomic status and social support have been identified as relevant factors in health status (13). We include relationship to household head and proportion of older people in household as crude indicators of social support.

### *Results*

Although a sample of adults aged 18–49 years were interviewed using the summary version of the SAGE Adult Health Survey, our analysis in this article is limited to older participants in the survey. Of the 6,074 older people targeted for survey, 4,584 were successfully interviewed (a response rate of 75.5%). A major reason for non-participation was the inability of the interviewers to meet the targeted respondent after at least three visits to the household. Other reasons include migration, death and inaccurate information. In Table 1 we compare respondents and non-respondents in terms of background characteristics (sex, age, education, marital status, relationship to household head, socioeconomic quintile of household, average household size and proportion of household members aged 50 years and over). The data indicate that compared with respondents, non-respondents were largely male, slightly younger, unmarried, more educated and from relatively less poor households. These are likely to be more active and mobile and hence are more likely to be away from home during the survey. To the extent that our respondents are not representative of the older population of the district, our results may have limited generalisability.

**Table 1.** Background characteristics of 4,584 adult respondents and 1,437 non-respondents aged 50 and over in northern Ghana

Variables	Respondents (n = 4,584)	Non-respondents (n = 1,437)
Sex (%)		
Men	39.0	44.9
Women	61.0	55.1
Mean age (SD)	62.5 (9.1)	61.4 (9.0)
Age group (%)		
50–59 years	43.0	50.2
60–69 years	35.9	30.8
70–79 years	16.6	14.8
80 years and over	4.5	4.2
Education level (%)		
No formal education	90.7	85.2
Less than or equal to 6 years	3.9	3.5
More than 6 years	5.4	11.5
Marital status (%)		
Now single	46.3	50.5
In current partnership	53.7	49.5
Socioeconomic quintile (%)		
First quintile	27.5	23.5
Second quintile	24.4	18.8
Third quintile	21.9	20.4
Fourth quintile	18.7	21.5
Fifth quintile	7.4	15.7
Relationship to household head (%)		
Head	51.0	52.3
Spouse	21.1	15.4
Parent	13.8	10.9
Other relation	14.2	21.4
Mean number of household members (SD)	6.6 (4.6)	6.2 (5.1)
Mean proportion of household members aged 50 and over (SD)	0.4 (0.2)	0.4 (0.3)

The majority of respondents (61%) were female, and the average age was 62.5 years, with men (average age of 63.7 years) being older than the women (average age of 61.7 years). Nearly three-quarters of the respondents were aged below 70, and less than 10% had ever attended school. About half of the respondents were married, while a similar proportion were heads of households.

Overall, less than half of the respondents (42%) rated their overall health as poor, with slightly more women (45%) than men (35%) reporting poor health (Table 2).

The percentage of older people reporting poor health increased with age among both men and women. However, the greatest differentials in SRH were observed in terms of levels of functional disability. The proportion of respondents reporting poor health was substantially higher among those also reporting low functional ability, both in men and women. Whereas less than one in five participants in the highest category of functional ability reported poor health, more than three in four of those in the lowest category of functional ability reported poor

**Table 2.** Proportions reporting poor self-rated health among 4,584 adults aged 50 and over in northern Ghana

Variables	Men (%)	Women (%)	All (%)
Sex			
Men	–	–	35.2
Women	–	–	45.2
Age group (years)			
50–59	26.7	37.7	33.5
60–69	33.7	48.8	43.4
70 years and over	50.7	58.8	54.9
Education level			
No formal education	37.1	46.3	42.9
Some formal education	25.5	36.4	29.8
Marital status			
Now single	41.1	48.5	47.3
In current partnership	33.9	40.6	36.6
Relationship to household head			
Head	34.7	44.9	38.2
Spouse	14.8	41.5	40.8
Parent	38.1	52.2	51.3
Other relation	43.5	47.0	46.1
Proportion of household members aged 50 and over (%)			
<25	32.9	45.4	40.3
25–49	37.2	44.3	41.4
50–74	32.6	44.4	40.4
≤75	46.4	53.2	50.7
Socioeconomic quintile			
Poorest quintile	36.7	45.7	41.8
Second quintile	36.8	52.0	45.7
Third quintile	37.6	46.3	43.1
Fourth quintile	30.1	41.3	37.5
Least poor quintile	29.1	34.8	32.7
WHODASi quintile			
Highest ability quintile	13.8	20.0	16.8
Second quintile	23.3	28.3	26.4
Third quintile	35.4	44.1	40.8
Fourth quintile	54.9	57.6	56.7
Lowest ability quintile	75.6	77.6	76.9



health (Fig. 1). Other differentials were also observed in terms of education, marital status and household socio-economic status. The proportion of household population aged 50 and over is included to indicate social support within the household. Households with more than half of members aged 50 or over have a greater proportion of elderly dependents and possibly less social support, hence SRH in such households could be poorer than in less-dependent households.

Table 3 shows results of WHODASi and HSS for older men and women in the Kassena-Nankana District by age category. A higher WHODASi score indicates a higher level of functional ability compared to a lower score. The mean WHODASi for the sample is 70.9 (73.7 for men and 69.1 for women), with the mean score decreasing with age such that the oldest respondents had lowest functional ability. Thus, the reported level of functional ability decreased with age. This pattern was observed among both men and women (Fig. 2). Generally, the WHODASi score was lower among women compared to men of comparable age. The age–sex pattern in functional limitations is evident in the proportion of older people whose WHODASi scores were below the median for the overall sample. Higher proportions of participants in the older age groups had scores below the median than their younger counterparts. Similarly, more women in each age group had WHODASi scores below the median (72.2) compared to men.

For the overall HSS a higher score indicates better health than a lower score. The mean HSS score for the sample was 64.0 with men scoring slightly higher (65.8) than women (62.8) as shown in Table 3. In terms of age, younger age groups tended to report better health (higher mean HSS) than their older counterparts; while more women than men in each age group reported HSS below the median (63.5).

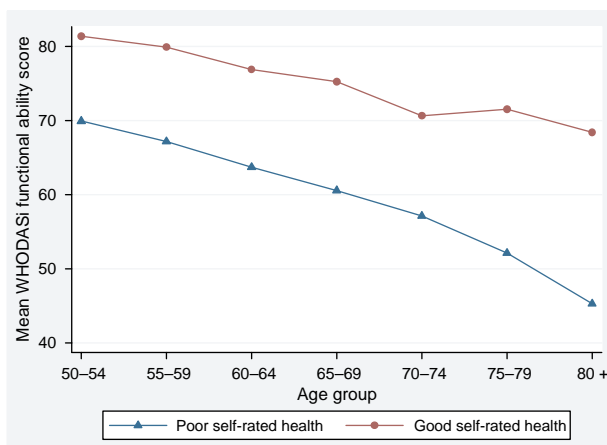


Fig. 1. Mean WHODASi functional ability score, by age group and self-rated health, among 4,584 adults aged 50 and over in northern Ghana.

These three indicators measure different dimensions of health, and although SRH, WHODASi and HSS are related, none is completely determined by the others. SRH and WHODASi are positively related with correlation of 0.49, while SRH and HSS are similarly correlated (0.50). The highest correlation is found between WHODASi and HSS (0.84).

On the basis of SRH, WHODASi and HSS, reported health status declined with age and was slightly worse among women than men. We explored the association between functional disability and SRH among older people while controlling for selected socio-demographic factors such as sex, age, education, marital status, relationship to head of household, proportion of people aged 50 and over in the household and socioeconomic quintile of the household.

Table 4 presents logistic regression results with poor SRH as the outcome variable. In the univariate model most factors (except proportion of household members aged 50 and over, and household socioeconomic status) had a significant association with SRH status. Individuals with lower functional ability levels were more likely to report poor health than their colleagues with better functional ability. Men appeared less likely to report poor health than women. Other researchers have suggested that women's poorer rating of their health may be indicative of greater sensitivity to health conditions rather than a female health disadvantage (7). The oldest old were much more likely to rate their health poorly than those 50–59 years old. Similarly those with no education were more likely to report poor health than those with some education; being single was associated with reports of poor health. In terms of relationship to the household head, those who were parents of or otherwise related to the head appeared more likely to report poor health compared to the household heads themselves.

In the multivariate model, the effects of WHODASi remained significant, with respondents in the higher disability quintiles much more likely to report poor health status than those in the lowest disability quintile. In other words, adults with greater functional limitations were more likely to rate their health as poor compared to those with less functional limitations. The other factors that had significant effect on SRH were sex and household wealth quintile. Women were more likely than men to rate their health as poor, while older people in the two higher wealth quintiles were less likely to rate their health as poor compared to their counterparts in the least wealthy quintile. The effects of age were barely significant after allowing for WHODASi, although older adults appeared more likely to report poor health than their younger colleagues.

These results suggest that functional disability is the primary factor associated with overall SRH among older people in the Kassena-Nankana District. The influence

**Table 3.** Distribution of WHODASi functional ability score and health status score by age and sex among 4,584 adults aged 50 and over in northern Ghana

Variables	Men (n = 1,789)	Women (n = 2,795)	All (n = 4,854)
<b>Mean WHODASi score (SD)</b>			
50–59 years	79.7 (15.7)	74.8 (15.0)	76.6 (15.4)
60–69 years	74.5 (16.9)	67.6 (16.8)	70.1 (17.2)
70 years and over	63.6 (20.9)	58.1 (18.7)	60.7 (20.0)
All ages	73.7 (18.7)	69.1 (18.7)	70.9 (18.1)
<b>Proportion of respondents with WHODASi less than median</b>			
50–59 years	29.4	40.1	36.2
60–69 years	41.8	57.7	51.9
70 years and over	63.7	75.2	69.7
All ages	42.5	53.0	48.9
<b>Mean health status score (SD)</b>			
50–59 years	68.4 (9.4)	65.2 (7.4)	66.4 (8.3)
60–69 years	65.9 (8.7)	62.1 (7.4)	63.5 (8.1)
70 years and over	61.7 (9.3)	58.3 (7.3)	59.9 (8.5)
All ages	65.8 (9.6)	62.8 (7.8)	64.0 (8.7)
<b>Proportion with health status score less than median</b>			
50–59 years	27.2	39.1	34.8
60–69 years	39.6	57.5	51.0
70 years and over	59.9	77.2	68.8
All ages	39.9	52.8	47.8

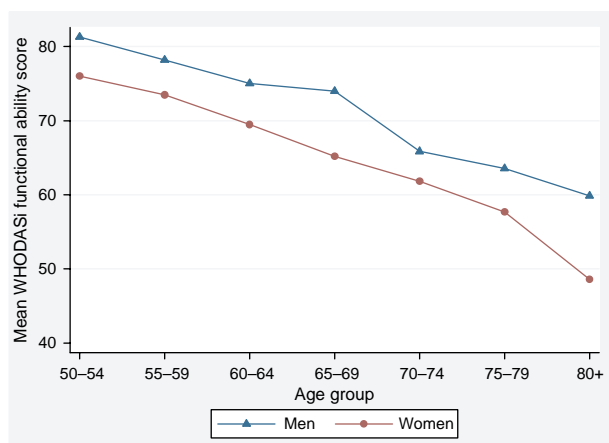
of functional limitations on SRH observed in this study is consistent with findings from other studies (9, 14, 15). Other significant determinants of SRH were sex and household wealth quintile. Although age, education and marital status appeared to be significant in the univariate analysis, their significance eroded when other variables were controlled for in the multivariate analysis. Unlike

other studies, it appears that these factors are not important determinants of SRH in this population.

## Discussion

Data on adult health status, particularly the health of older people in sub-Saharan Africa, are required to monitor trends in the health status of adults and the extent to which social and health policies impact on older people. One relatively easy way of generating such data is through population surveys of self-reported health. The implementation of such surveys has contributed immensely to the understanding of ageing and transitions in health with age in the developed world and Asia. Although self-reported health is subjective, it has been found to be a good predictor of future health care use and mortality. In 2007, the NHRC conducted a survey on ageing and adult health in the Kassena-Nankana District of Ghana as part of the INDEPTH WHO-SAGE Adult Health Study. The survey collected information on self-reported health among adults in the district. Data from this survey have been analysed to describe the health status as well as identify factors associated with SRH status among older people in this rural setting.

Our results indicate that the majority of older people rated their overall health as good. However, women were more likely than men to rate their health as poor. A similar pattern was observed with regard to reported



**Fig. 2.** Mean WHODASi functional ability score, by age group and sex, among 4,584 adults aged 50 and over in northern Ghana.

**Table 4.** Factors associated with poor self-rated health among 4,584 adults aged 50 and over in northern Ghana

Variables	Univariate model (OR and [95% CI])	Multivariate model (OR and [95% CI])
<b>WHODASi quintile</b>		
Highest ability quintile	1.00	1.00
Second quintile	1.78 [1.43–2.22]**	1.65 [1.32–2.07]**
Third quintile	3.42 [2.72–4.23]**	3.18 [2.56–3.96]**
Fourth quintile	6.51 [5.18–8.17]**	5.76 [4.54–7.32]**
Lowest ability quintile	16.56 [13.1–20.9]**	14.23 [11.1–18.3]**
<b>Sex</b>		
Men	1.00	1.00
Women	1.54 [1.37–1.75]**	1.40 [1.38–1.73]**
<b>Age group (year)</b>		
50–59	1	1
60–69	1.52 [1.32–1.74]**	1.12 [0.96–1.31]
70 years and over	2.41 [2.06–2.82]**	1.24 [1.02–1.51]*
<b>Education level</b>		
No formal education	1.00	1.00
Some formal education	0.56 [0.46–0.69]**	0.92 [0.71–1.17]
<b>Marital status</b>		
Now single	1.56 [1.32–1.75]**	0.94 [0.78–1.13]
In current partnership	1	1
<b>Relationship to household head</b>		
Head	1	1
Spouse	1.11 [0.96–1.30]	0.94 [0.75–1.19]
Parent	1.70 [1.43–2.03]**	1.00 [0.80–1.26]
Other relation	1.38 [1.15–1.66]**	1.06 [0.85–1.33]
<b>Proportion of household members aged 50 and over (%)</b>		
<25	1.00	1.00
25–49	1.04 [0.90–1.20]	1.00 [0.85–1.18]
50–74	1.00 [0.85–1.18]	0.96 [0.80–1.17]
≤75	1.52 [1.23–1.88]**	1.49 [1.16–1.92]**
<b>Socioeconomic quintile</b>		
Poorest quintile	1.00	1.00
Second quintile	1.17 [0.99–1.38]	1.12 [0.93–1.35]
Third quintile	1.05 [0.88–1.25]	0.95 [0.78–1.15]
Fourth quintile	0.83 [0.70–1.00]	0.74 [0.60–0.90]**
Least poor quintile	0.67 [0.52–0.87]**	0.65 [0.48–0.88]**

\* $p < 0.05$ ; \*\* $p < 0.001$ .

functional disability and overall health score. Functional disability was higher among women compared to men. Among both men and women, older adults were more likely to report functional disability. Adults with higher functional disability were more likely to rate their health

as poor compared to those with lower disability. Multivariate regression results showed that levels of functional disability, sex and household wealth quintile had significant influence on SRH status.

The findings in this study are comparable with the results of previous studies in various parts of the world. Earlier studies have noted the existence of socio-demographic differentials in SRH. Research evidence suggests that men generally report fewer diseases and fewer limitations in activities of daily living at older ages than their female counterparts. Women are more likely to rate their health poorer and to report more functional limitations and disability than men (16–20). Irrespective of sex, however, older age is related to higher odds of reporting health problems and various studies have observed that older adults tend to rate their health poorer than their younger colleagues (16, 21, 22). Lower socioeconomic status is associated with worse morbidity, mortality and self-reported health in older persons (23). Other factors such as marital status, socioeconomic status and education are also known to affect health status (24, 25), although marital status and education did not appear significant in our analysis.

Older people in this district face considerable health challenges like their colleagues elsewhere. As our results indicate, there is considerable increase in functional limitations and poor health with age, with more women tending to report health problems than their male counterparts. Unfortunately however, older people in the Kassena-Nankana District do not only have to deal with functional limitations, but also have to deal with infectious diseases such as malaria and gastroenteritis. What is more, they grapple with these health challenges in a context of inadequate health care and weak social support systems. Public policy and health interventions that promote healthier lifestyles and improve access to health care are required to improve the health and quality of life of older people. In spite of increasing urbanisation, the majority of Ghana's older people live in rural areas where health and social services are inadequate. Education and information on healthy living need to be made available to the general population to enhance prevention and control of chronic conditions. Programmes need to focus attention on promoting healthy ageing. Bold policy decisions are also needed to integrate ageing and adult health issues into all aspects of national planning and development. Some observers have noted that the concerns of older people remain marginalised in Ghana's social and economic debates (21). There is the need to marshal evidence on the health situation of older people in the country and to use this evidence to advocate for programmes and policies to address the health care and other needs of older people. This study has highlighted the situation of older people in one of the rural districts in Ghana, and it is hoped that this will broaden the evidence



on the health status of older Ghanaians and contribute towards effective policy formulation in the country. Results from the national SAGE study conducted in the country around the same time as our study will provide a broader national picture on the health status of older people. For the purposes of monitoring the health status of older people, such studies need to be conducted periodically and in a variety of settings.

This initial survey has demonstrated the feasibility of conducting population-based health surveys of adults in rural Ghana. The results of the analyses are generally consistent with other studies and indicate the scope for monitoring population health using self-assessments of health. There is the opportunity for follow-up and longitudinal analysis anchored on the HDSS platform existing in the district. Future analyses will explore the relationship between SRH and morbidity and mortality in this population. The INDEPTH WHO-SAGE Adult Health Research platform (of which this study is a part) is uniquely placed to contribute towards an understanding of the relationship between SRH and subsequent morbidity and mortality in the region. Subsequent analysis of SRH and mortality from INDEPTH Network sites will contribute to the literature on this topic, which is currently under-researched in sub-Saharan Africa.

## Conclusion

As in other developing countries, the population of older people in Ghana is increasing steadily. Despite the increasing number of older people in the country, however, very little is known about their health status, especially for those in rural areas. This lack of knowledge impedes development and implementation of policies and programmes as well as evaluation of the impact of social and health policies on older people. Ghana is participating in the WHO multi-country SAGE. The data presented in this study form part of this global study. Our results suggest that the ageing process in this district is consistent with what has been observed in other parts of the world. SRH declines with age among both men and women. It appears that with increasing age there is a decline in health which is manifest in increasing functional disability. This depreciation in health and daily functioning increases the demand for health care and other services by older people. Therefore, steps need to be taken to address the health care and other needs of older people. Health policies and programmes that improve functional capacity and well-being for older people are particularly urgent. There is also the need for regular monitoring and assessment of the health status of older people to provide public health agencies with the data they need to assess, protect, and promote the health and well-being of older people. The present study will serve as a

baseline for monitoring trends in the health status of older people in the Kassena-Nankana District.

## Acknowledgements

The authors would like to thank the people of the Kassena-Nankana District, especially all the men and women who agreed to be interviewed, for their support and participation in the study. We are grateful to the NHRC staff who collected and processed the data for this study.

## Conflict of interest and funding

This project was supported by a grant from the INDEPTH WHO-SAGE study and the INDEPTH Network. The authors would like to acknowledge the INDEPTH Network for their financial support.

## Note

1. In 2008 the Kassena-Nankana District was split into two districts – Kassena-Nankana and Kassena-Nankana West districts. In this article we use the original name of the district to refer to the two districts.

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