



## RESEARCH ARTICLE

**REVISED** Predictors of quality of life of older persons in rural Uganda: A cross sectional study [version 2; peer review: 1 approved, 2 approved with reservations]

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**Abstract**

**Background:** Little is known about the quality of life of older persons (OPs) in Uganda in particular, and Africa in general. This study examined factors associated with quality of life of older persons in rural Uganda.

**Method:** We performed a cross-sectional survey of 912 older persons from the four regions of Uganda. Data were analyzed at univariate, bivariate and multivariate level where ordinal logistic regression was applied.

**Results:** Older persons in northern (OR=0.39; CI=0.224-0.711) and western (OR=0.33; CI=0.185-0.594) regions had poor quality of life relative to those in central region. Those who were HIV positive had poor quality of life (OR=0.45; CI=0.220-0.928) compared to those who were HIV negative. In contrast, living in permanent houses predicted good quality of life (OR=2.04; CI=1.391-3.002). Older persons whose household assets were controlled by their spouses were associated with good quality of life (OR=2.06; CI=1.032-4.107) relative to those whose assets were controlled by their children.

**Conclusion:** Interventions mitigating the HIV and AIDS related Quality of life should target older persons. The government of Uganda should consider improving housing conditions for older persons in rural areas.

**Keywords**

Ageing, older persons, elderly persons, later life, quality of life



This article is included in the [African Population Health Research Center](#) gateway.

**Open Peer Review**

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**REVISED Amendments from Version 1**

We have revised the article in accordance with the comments from the referees. For instance, we have explained why we did not interview ill older persons. This has also been discussed as a limitation of the study. Furthermore, as highlighted by the referees, in the revised article, [Table 4](#) has a column of the confidence intervals which replaced standard errors. In the discussion of findings, we have also included variables which were not significant. We have also added some recommendations in addition to what is in the old version. Lastly, we have indicated that the authors did not have competing interests.

**See referee reports**

## Introduction

The world is experiencing remarkable and irreversible demographic changes as many people are living longer than ever before<sup>1</sup>. Population ageing is a dynamic process that involves physical, psychological and social changes<sup>2</sup>. It is expected to advance faster in the developing world including sub-Saharan Africa (SSA)<sup>3</sup>. Older persons are defined as persons aged 60 years and older<sup>3</sup>. Although the World Health Organization (WHO) uses 50 years and above to define older persons for Africa<sup>4</sup>, this study used United Nation's definition of age 60 years and older, since Uganda's life expectancy is 63 years<sup>5</sup>. Globally, one in every nine persons is an older person. This ratio is expected to reduce to one person in every five people by 2050<sup>2,6</sup>.

Uganda's population is largely characterized by young people. Nonetheless, the country's older population has more than doubled from 686,000 in 1991 to 1,433,596 in 2014 (UBOS 2016). This is attributed to the reduction in adult mortality<sup>5,7</sup>. This is an unprecedented phenomenon that requires strategic planning.

Just like in other developing countries where population ageing is taking place, the older people in Uganda experience a diversity of challenges<sup>8</sup>. These range from loneliness, poor housing, and financial challenges to poor health particularly non communicable diseases<sup>9</sup>. The situation is compounded by poverty and limited access to health services which ultimately affect their quality of life<sup>2,8,10,11</sup>.

Many older persons lack social security which makes it difficult for them to meet their basic needs<sup>10,12</sup>. Only a small proportion (7.1%) have access to pension<sup>7</sup>. Close to a half (45%) of the older persons in Uganda have physical disabilities<sup>10</sup> which limit their access to health services. These challenges are worse in rural areas where older persons are particularly vulnerable owing to financial resource limitations, long distances to health facilities, discrimination at health facilities and in matters of social engagements<sup>2,11</sup>.

The Government of Uganda has put in place policies and programmes such as social assistance grant for empowerment (SAGE) and decentralization of retirement benefits with the aim of improving OP's quality of life<sup>7</sup>. The SAGE is being piloted in 40 out of 121 districts. New hospitals are also being constructed while old ones are undergoing renovation to ease accessibility to the health services<sup>10</sup>. However, more remains to be done.

For instance, since most people are employed in the informal sector, economic empowerment through social security systems does not cater for the well-being of the majority older persons<sup>10</sup>.

Research on older persons in Uganda has focused on areas such as vulnerability of older adults<sup>13</sup>, chronic poverty among older persons<sup>14</sup>, nutritional status and functional ability of the older persons<sup>15</sup> and understanding the vulnerability of older adults: extent of and breaches in support systems in Uganda<sup>16</sup>. Although these studies address important aspects of population ageing, comprehensive evidence regarding quality of life of older persons remains scanty in Uganda. None of these studies focused on the predictors of quality of life of older persons in rural Uganda. Some of these studies such as that done by Kikafunda and Lukwago<sup>15</sup> utilized data from a limited geographical scope while others<sup>13,14</sup> used secondary data collected some years back. Therefore, to bridge the highlighted knowledge gap, our study builds on the existing body of literature using the most recent dataset collected from a wide geographical scope to evaluate the factors associated with perceived quality of life of older persons in rural Uganda.

## Methods

This paper is based on a cross sectional study on predictors of quality of life of older persons in rural Uganda. The data were collected from February to March, 2017. The study included both men and women aged 60 years and above. It excluded those who were ill or lacked capacity to provide rational voluntary consent. We did not interview OP's who were ill. The challenge with interviewing such ill OPs is that some are too weak to sustain the interview as they need to rest. We note, however that this exclusion can bias the outcome of the study. A sample of 912 respondents was calculated basing on survey sampling<sup>17</sup>. Multi-stage stratified cluster sampling was used to select respondents from Uganda's geographical regions of central, eastern, northern and western which constituted the strata. The districts, sub counties, villages and households were randomly selected ([Table 1](#)). In each region, one district was selected within which three sub-counties were also randomly selected. Four villages were selected per sub-county, providing a total of 12 villages per district and hence 48 villages across the country. Simple random sampling was used at each stage of selection.

We obtained verbal consent from the village leaders who helped to identify and list households with at least one member aged 60 years and above. We used the lists to randomly select the planned sample of ten households from each village. Thus, a total of 480 households were drawn for interviews.

This study was conceptualized basing on World Health Organization Quality of Life (WHOQOL-BREF) and World Health Organization Quality of Life (WHOQOL-OLD) instruments<sup>18,19</sup>. The WHOQOL-BREF consists of 26 questions, 24 of which are divided into four domains: physical health, mental health, social relationships, and environment. This study adapted with modifications the questions concerning physical health dimension of quality of life. The items under this dimension include activities of daily living, mobility status, energy and fatigue;

**Table 1. Selected study areas.**

Region	Selected district	Sub-county	Selected villages		
Central	Kayunga	Busana	Bugadu		
			Kawuku		
			Busaana		
			Namirembe		
		Kitimbwa	Wabwoko		
			Kitimbwa		
			Kyelima		
			Nongo		
			.Nazigo	Kiteredde	
			Bukamba		
		Eastern	Bugiri	Iwemba	Waliko
					Nambobi
					Kazimba
					Nabyunu
Kapyang	Bugubo				
	Muyemu				
	Bukaye				
Nabukalu	Bugodo				
	Bulalo				
	Bukazito				
Northern	Otuke	Orum	Ochokoimaki		
			Amunga		
			Ogwar		
			Camukoki		
			Ogor	Olet	
				Awei	
		Adwari	Alei		
			Ojany		
			Abworoyere		
			Ecamoweno		
			Okwongo west		
			Onger		
Western	Kabale	Bubare	Nyamiyaga		
			Muchahi		
			Kitumbezi		
			Kashaki		
			Nyamweru	Bigungiro	
		Keru			
		Rwakaruma			
		Hamurwa	Kagoye		
			Hakaburara		
			Rwamuguru		
			Muruhita		
	Kamuterere				

body pain and sleep<sup>20</sup>. The WHOQOL-OLD<sup>18</sup> comprises 24 items (rated on a 5-point Likert-type scale), divided into 6 facets namely; sensory abilities; autonomy; past, present, and future activities; social participation; death and dying; and intimacy. We adapted with modification questions about social participation such as; sufficient number of activities to perform each day, satisfaction with one's use of time, social activities and participation in community activities. We also considered intimacy with items such as; feeling a sense of companionship in life, experiencing love, and having opportunities to love and be loved. Full questionnaire used for this study is available as [Supplementary File 1](#).

Ethical clearance for the study was granted by National HIV/AIDS research committee (NARC, Ref: ARC 190), Uganda National Council for Science and Technology (UNCST, Ref: SS 4167) and Office of the President of the Republic of Uganda (Ref: ADM 194/212/01). While collecting data, verbal informed consent was obtained from all respondents prior to the interviews and they were assured of utmost confidentiality. The consent was verbal because the respondents were not comfortable with writing due to old age. All information were given in local languages (Rukiga, Langi, Luganda and Lusoga).

The dependent variable is quality of life formed from the three latent constructs (social participation, physical health and intimacy). For each latent construct, three categorical responses were generated (good, fair and poor). These responses were summed up for each older person to generate corresponding categorical responses for quality of life. Physical health covered 5 areas namely, activities of daily living, mobility difficulties, sleep, body pain and fatigue; social participation covered 3 areas such as satisfied with usage of time, social activities, enough physical activity to do daily and participate in family and community; and intimacy covered 3 areas such sense of companionship, opportunity to be loved and sexual activity<sup>18</sup>.

Data were analyzed at univariate, bivariate and multivariate levels using *STATA* software (version 15). Due to the complex nature of the sampling design, sampling weights were calculated to correct imperfections resulting from selection of units with unequal probabilities and ensure representativeness of the results. At univariate level, a basic description of the respondents is done. At bivariate level, chi-square tests were performed to examine the association between the dependent and independent variables. At multivariate level, we employed factor analysis (FA), which is part of multivariate analysis technique. Therefore, using different indicators including physical health, intimacy and social participation which measure slightly different aspects of quality of life would not be very practicable in analyzing the factors that determine the quality of life. However, high correlation among these indicators could help to produce a lower number of latent variables that fit common patterns in the data. The (FA) was employed to identify variables that factor well together and with notable loading magnitude in absolute terms. Based on the number of factors extracted, an index for the identified factors was calculated through linear combination between

observed and factor loadings. Bartlett test of sphericity and the Kaiser-Meyer-Olkin (KMO) criterion were performed to verify whether indicators of each category shared a common core. The Bartlett test was used to estimate the probability that the correlation matrix is zero, implying that all the variables are uncorrelated, while the KMO was used to indicate the extent to which variables had common feature to warrant factor analysis. In the **Supplementary Table 1**, KMO scores above 0.4 (threshold scores) were acceptable; scores above 0.9 were exceptional<sup>21</sup>. In this study, the analysis yielded a KMO value of 0.814, while the Bartlett test yielded  $\chi^2_{253} = 7057.335$  ( $p=0.000$ ), signifying the data's adequacy for factor analysis. The number of factors to retain was determined based on the eigenvalue criteria and the scree plot (**Supplementary Figure 1**).

The outcome variable (QOL) was generated through an index generated from an aggregation of factor analysis scores for the three latent constructs: physical health, social participation and intimacy. Using STATA's tertile grouping technique, three categorical responses were automatically generated with the first group indicating higher values, the second group indicated medium values while the smallest group was a representation of the lowest values. The first group was labelled 'good' quality of life, the second group was labelled 'fair' quality of life while the third (last) group was labelled 'poor' quality of life. The ordered logistic regression model was used for the final analysis owing to the rating of people's quality of life whereby, some individuals are expected to be better off or worse off than others. The strengths of the relationships were reported as odds ratios. The p-value was used to determine whether the relationship was significant or not depending on the level of significance which was fixed at 0.05.

**Results**

**Descriptive characteristics of older persons**

Results in **Table 2** show that over half (51%) of the respondents were age 60–69 years and majority (57%) were females. Over half (51%) were married. Regional representation ranged from 21% for Northern to 27% for the central region. The large majority (54%) had no formal education, primary (40%) and as expected, tertiary came last at 3%. Over one-third (38%) of the respondents were either affiliated to the Anglican or Catholic faith.

**Association between older persons' quality of life and selected demographic and socio-economic factors**

**Table 3** presents chi-square test results for the association between quality of life and selected demographic and socio-economic factors. Age of the respondents, sex, marital status, ownership of a radio set, control over household assets, living arrangement, HIV sero status, healthcare taker during sickness and fuel type were not significantly associated with quality of life. Western region had the largest proportion of respondents with poor quality of life (52%;  $p<0.001$ ), tertiary education (44%,  $p=0.006$ ), residing in semi-permanent houses (43%;  $p=0.036$ ), distance of 0–05Km to the nearest health center (52%;  $<0.001$ ), using protected well/spring (51%;  $p<0.001$ ). Furthermore, quality of life was poorer among older persons who were using other sources of energy for lighting like torch and candle

**Table 2. Percent distribution of respondents by selected socio-demographic characteristics.**

Variable	Number	Percent (%)
Age		
60 – 69	462	50.7
70 – 79	290	31.8
80+	160	17.5
Sex		
Male	395	43.3
Female	517	56.7
Marital status		
Married	461	50.6
Widowed	361	39.5
Divorced/Separated	90	9.9
Region		
Central	248	27.2
East	237	25.9
North	190	20.8
West	237	25.9
Education level		
No education	495	54.3
Primary	363	39.8
Secondary	31	3.4
Tertiary	23	2.5
Religion		
Catholic	342	37.5
Anglican	350	38.4
Muslim	118	12.9
Pentecostal	71	7.8
SDA	20	2.2
Other	11	1.2

(48%;  $p<0.001$ ) and those who were using covered pit latrine (39%;  $p=0.012$ ).

**Multivariate results**

**Table 4** presents the results of the ordered logistic regression model of factors influencing quality of life of older persons. Controlling for other variables, region of residence, type of house, ownership of a radio, control over household assets and HIV sero status predicted quality of life. Region is a predictor of older persons' quality of life. Compared to older persons from central region, the likelihood of good quality of life decreased among those from northern (OR=0.39; CI=0.224-0.711) and western regions (OR=0.33; CI=0.185-0.594). We also find that the type of house older person resides in as well as ownership of a radio as important predictors of their quality of life. Compared to older persons staying in semi-permanent houses, the odds of good quality of life increased (OR=2.04; CI=1.391-3.002) among those residing in permanent houses. The odds further increased (OR=1.73; CI=1.246-2.390) among those who possessed a radio compared

**Table 3.** Association between older persons' quality of life and selected demographic and socio-economic factors.

Variable	Observations (n = 912)	Perceived quality of life			$\chi^2$	p-value
		Poor	Fair	Good		
<b>Age of the respondent</b>						
60 – 69	462	37.9	49.4	12.7		
70 – 79	290	36.9	48.6	14.5	2.3	0.688
80 +	160	31.9	53.8	14.4		
<b>Sex</b>						
Male	395	36.7	49.4	13.9		
Female	517	36.3	50.3	13.4	0.1	0.951
<b>Region</b>						
Central	248	29.4	54.0	16.6		
East	237	24.1	58.2	17.7	53.8	<b>&lt;0.001</b>
North	190	42.1	43.7	14.2		
West	237	51.9	42.2	5.9		
<b>Education level of the respondent</b>						
No education	495	31.3	52.3	16.4		
Primary	363	43.3	46.6	10.1		
Secondary	31	35.4	58.1	6.5	18.1	<b>0.006</b>
Tertiary	23	43.5	39.1	17.4		
<b>Marital status of the respondent</b>						
Married	461	38.8	48.8	12.4		
Widowed	361	34.6	50.7	14.7	2.8	0.589
Divorced	90	32.2	52.2	15.6		
<b>Type of house respondent resides in</b>						
Permanent	223	34.5	53.8	11.7		
Semi-permanent	320	42.8	44.1	13.1	10.3	<b>0.036</b>
Temporary	369	32.3	52.6	15.1		
<b>Household's radio set ownership</b>						
Yes	479	36.5	50.3	13.2	0.2	0.913
No	433	36.5	49.4	14.1		
<b>Control over household assets</b>						
Self	693	36.5	49.5	14.0		
Spouse	132	36.4	48.5	15.1		
Children	87	36.7	55.2	8.1	2.85	0.583
<b>Living arrangement</b>						
Alone	80	33.8	46.2	20.0		
Spouse only	22	54.5	40.9	4.6	11.2	0.083
Spouse & children	133	44.3	45.1	10.5		
Children & grandchildren	677	34.7	51.6	13.7		
<b>Whether respondent has HIV/AIDS</b>						
Yes	28	46.4	50.0	3.6		
No	854	37.0	49.2	13.8	2.8	0.252

Variable	Observations (n = 912)	Perceived quality of life			$\chi^2$	p-value
		Poor	Fair	Good		
<b>Distance to the nearest health center</b>						
0 – 0.5 Km	170	52.3	40.0	7.7		
1 –2 Km	426	36.6	50.0	13.4	30.3	<b>&lt;0.001</b>
> 2 Km	309	27.8	55.0	17.2		
<b>Healthcare taker during sickness</b>						
Spouse	308	40.2	48.1	11.7		
Children	377	36.6	48.0	15.4	11.8	0.066
Grandchildren	91	24.3	64.8	10.9		
Others	136	36.0	49.3	14.7		
<b>Water source for the household</b>						
Borehole/Piped water	585	34.5	52.0	13.5		
Protected well/spring	183	50.8	38.8	10.4	24.4	<b>&lt;0.001</b>
Unprotected source	144	26.4	55.6	18.0		
<b>Fuel type for the household</b>						
Firewood	871	35.9	50.1	14.0		
Charcoal	41	48.8	46.3	4.9	4.3	0.118
<b>Source of energy for the household</b>						
Electricity	121	47.9	43.8	8.3		
Tadooba	590	30.2	53.4	16.4	32.5	<b>&lt;0.001</b>
Others	201	48.2	43.3	8.5		
<b>Type of Toilet for the household</b>						
Covered pit latrine	699	39.2	47.6	13.2		
Uncovered pit latrine	165	27.9	59.4	12.7	12.9	<b>0.012</b>
Bush	48	27.1	50.0	22.9		

$\chi^2$ =Pearson Chi square test

to those who did not. Older persons whose household assets were controlled by their spouses (OR=2.06; CI=1.032-4.107) were more likely to have good quality of life relative to those whose assets were controlled by their children. Being HIV positive was associated with poor quality of life (OR=0.45; CI=0.220-0.928) among older persons relative to being HIV negative.

## Discussion

Age of the respondents, sex, education level, marital status of the OPs, living arrangement, distance to the nearest health facility, water source, fuel type, source of energy and type of toilet facility did not predict the quality of life of older persons in rural Uganda. Concerning region, the poor quality of life for older persons in northern Uganda could perhaps be linked to the protracted war that economically crippled the region. This finding is consistent with previous studies<sup>11,22-25</sup> which show that the quality of life of older persons is influenced by living in a safe, resource rich and desirable environment with. In western Uganda particularly Kigezi sub-region where data for this study were

collected, poor quality of older persons is in consonance with studies such as Uganda National Household Survey<sup>26</sup> which indicates that the region suffers from a shortage of basic necessities such as inadequate food production.

The increase in odds of good quality of life for the older persons residing in permanent houses imply a better standard of living. Previous studies<sup>27-32</sup> show that older persons whose households are of high economic status are associated with high quality of life.

Owning a radio set increased the odds of good quality of life. It could be noted that radios just like other household assets such as mobile phones and television not only disseminate health information, they also help to entertain OPs and keep them mentally pre-occupied and less lonely. Previous studies indicate that media apparatus entertain older persons and help to resolve loneliness and associated consequences like stress which is detrimental to the quality of life<sup>8</sup>. Similarly, previous studies in Canada and Norway<sup>22</sup>, Uganda<sup>11</sup> and other countries<sup>23-25,33,34</sup> found

**Table 4. Predictors of older persons' quality of life.**

Variable	Odds ratio	95% CI	p-value
<b>Age of the respondent (rc=60–69)</b>			
70 – 79	1.073	[0.755-1.525]	0.695
80 – 89	1.000	[0.636-1.573]	1.000
<b>Sex of the respondent (rc=female)</b>			
Male	1.259	[0.876-1.811]	0.213
<b>Region (rc=central)</b>			
East	1.025	[0.684-1.536]	0.906
North	0.399	[0.224-0.711]	<b>0.002</b>
West	0.332	[0.185-0.594]	<b>&lt;0.001</b>
<b>Education level (rc=tertiary)</b>			
No education	0.819	[0.221-3.031]	0.765
Primary	0.538	[0.146-1.984]	0.352
Secondary	0.489	[0.111-2.165]	0.346
<b>Marital status (rc=married)</b>			
Widowed	1.382	[0.895-2.132]	0.144
Divorced/separated	1.356	[0.783-2.348]	0.277
<b>Type of house (rc= semi-permanent)</b>			
permanent	2.043	[1.391-3.002]	<b>&lt;0.001</b>
Temporary	0.832	[0.558-1.241]	0.368
<b>Radio set ownership (rc=no)</b>			
Yes	1.726	[1.246-2.390]	<b>0.001</b>
<b>Control over household assets (rc=children)</b>			
Self	1.426	[0.857-2.374]	0.172
Spouse	2.059	[1.032-4.107]	<b>0.040</b>
<b>Living arrangement (rc=alone)</b>			
Spouse only	0.795	[0.238-2.655]	0.709
Spouse & Children	1.459	[0.697-3.056]	0.316
Children & Grandchildren	0.997	[0.565-1.763]	0.994
<b>Has HIV/AIDS (rc=no)</b>			
Yes	0.452	[0.220-0.928]	<b>0.031</b>
<b>Distance to the nearest health center (rc= &gt;2km)</b>			
0–0.5Km	0.644	[0.407-1.021]	0.061
1–2 Km	0.987	[0.706-1.378]	0.937
<b>Water source (rc= borehole/piped water)</b>			
Protected well/spring	0.747	[0.442-1.263]	0.276
Unprotected source	1.558	[0.960-2.529]	0.073
<b>Fuel type (rc=firewood)</b>			
Charcoal	0.556	[0.263-1.176]	0.124
<b>Source of energy (rc=electricity)</b>			
Tadooba	1.180	[0.715-1.949]	0.517
Others	0.707	[0.386-1.296]	0.263
<b>Type of toilet facility (rc=covered pit latrine)</b>			
Uncovered pit latrine	0.846	[0.568-1.264]	0.417
Bush	1.049	[0.498-2.207]	0.900

rc =reference category



that conducive environmental conditions characterized by easy access to information is good for healthy living of older persons.

Spousal control over household assets predicted good quality of life of older persons. It could be suggested that unlike children who could probably migrate to urban areas perhaps after selling off their family resources, the spouses of older persons could offer appropriate care which enhanced their partners' quality of life. Our finding is in conformity with other studies in China<sup>35</sup> and other countries<sup>36</sup> which show that social support from their spouses stimulate OPs quality of life and improved longevity.

As expected, a positive HIV sero status was associated with poor quality of life. This finding is in conformity with previous studies which show that HIV/AIDS affects the health of the older persons and increases later life mortality<sup>37-40</sup>

### Limitations

Our study was intended to bridge the knowledge gap regarding the quality of life of older persons in Uganda. However, one major methodological limitation of this study is that the authors were unable to take anthropometric measurements, which could have enriched the results, due to limited funding. Furthermore, we did not interview the respondents who were ill. The exclusion of those who were ill could have potentially biased the results. The ill OPs were those reported to be in critical condition that would not enable them to participate in an interview.

### Conclusions and policy implications

Older persons' quality of life was associated with the geographical setting, quality of shelter, resource control and health status. Interventions point to meeting basic needs of shelter, information and health needs of OPs. Policy intervention should also focus on deepening universal and equal access to information by older persons through subsidizing radio prices. This will encourage older persons to own the radios which would avail them with health information from health programmes and minimize loneliness through entrainment. Intervention in strengthening policies focusing on the older persons against

HIV/AIDS pandemic should be fast-tracked through initiating adult safe sex education and improved access to Anti-Retroviral drugs especially for those who are already infected. The vulnerability of older persons in terms of access and control of resources calls for policy makers to strengthen economic strengthening strategies with a view of improving self-reliance of older persons. Furthermore, Uganda government's intervention to mitigate regional disparities in quality of life of OPs should put special attention to northern and western regions where older persons' quality of life is poor.

### Data availability

The data underlying this study is available from Open Science Framework: Dataset 1. Predictors of quality of life of older persons in rural Uganda: A cross sectional study <https://doi.org/10.17605/osf.io/vfb4w><sup>41</sup>

This dataset is available CC0 1.0 Public domain dedication.

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### Grant information

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*The funders had no role in study design, data collection and analysis, decision to publish or preparation of this manuscript*

### Supplementary material

Supplementary Table 1: Summary of rotated factor loadings against indicators (n = 912).

[Click here to access the data.](#)

Supplementary Figure 1: Screeplot of eigenvalues that determined the retention of latent constructs.

[Click here to access the data.](#)

Supplementary File 1: Questionnaire.

[Click here to access the data.](#)

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# Open Peer Review

Current Peer Review Status:



## Version 2

Reviewer Report 19 February 2019

<https://doi.org/10.21956/aasopenres.13995.r26762>

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### Robert G Cumming

School of Public Health, University of Sydney, Camperdown, NSW, Australia

This is a good piece of research on quality of life of older people in rural Uganda. However, I think it could be improved.

A statistician needs to check the section concerned with Factor Analysis and the construction of the final 3-level quality of life variable. I think it is probably ok but, because it is fundamental to the validity of the paper, it should be reviewed by an expert.

Other issues:

1. There are too many abbreviations. What does SAGE stand for? No need to use "OP" for older people or "FA" for factor analysis. Better to spell out in full.
2. In a cross-sectional study, it is better say "associated with" rather than "predict".
3. "Population ageing" means an increase in the proportion of the population above a certain age (usually 60). While it is true that population ageing is occurring rapidly in developing countries in Asia and the Americas, it is not true in sub-Saharan Africa. Yes, the absolute number of older people is increasing very rapidly in sub-Saharan Africa but, because the fertility rate is still very high, the proportion of older people will remain relatively low for many years into the future.
4. What was the participation rate? How many people were excluded because they were too ill?
5. How many questions related to quality of life were in the final study questionnaire? The two WHO questionnaires have a total of 50 questions (26+24) but I assume that not all were used in this study.
6. To my knowledge, the WHOQOL instruments are usually used to construct a score between 0 and 100. Can the authors please comment on why they did not use this approach?
7. The sentence at the foot of column 1 on page 4 that begins "Western region .." is confusing. It reads as if Western region had the highest proportion with tertiary education, residing in semi-permanent homes (etc) but I think the authors mean that people with tertiary education/residing in semi-permanent homes (etc) were more likely to have poor quality of life.
8. Some of the results in table 3 are surprising and merit discussion. For example, those living alone were much more likely to have good quality of life than those living with a spouse. It also seemed that the further you live from a health centre, the better the quality life. Those using firewood for fuel

had better quality of life than those using charcoal. Also surprising that those with tertiary education had poorer quality of life.

**Is the work clearly and accurately presented and does it cite the current literature?**

Yes

**Is the study design appropriate and is the work technically sound?**

Yes

**Are sufficient details of methods and analysis provided to allow replication by others?**

Yes

**If applicable, is the statistical analysis and its interpretation appropriate?**

I cannot comment. A qualified statistician is required.

**Are all the source data underlying the results available to ensure full reproducibility?**

Yes

**Are the conclusions drawn adequately supported by the results?**

Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** I am an epidemiologist with experience conducting research on health problems of older people. While most of my research has been in Australia, I have also been involved in research in developing countries in Asia and sub-Saharan Africa.

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.**

Reviewer Report 03 December 2018

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**Rose Nathan**

Ifakara Health Institute (IHI), Dar es Salaam, Tanzania

The study evaluated factors that predict Quality of life of older persons in rural Uganda using cross-sectional survey data from four regions. Considering the epidemiologic and demographic transitions happening in most sub-Saharan African countries including the aging population; this subject is timely and useful for informing policies. Indeed studies have shown that perceived quality of health is a predictor or associated to subsequent mortality in adults<sup>1</sup>.

Introduction cited relevant literature on the subject and knowledge gap to be addressed by the current study is clearly stated. Aim of the study is clear.

The study appropriately adopted World Health Organization Quality of Life (WHOQoL) tool to measure quality of life and suitable statistical methods were applied to determine predictors of quality of life.

Results are clearly presented in a logical flow consistent with the analytical approach and the aim of the study.

Discussion fairly subjected the results in the light of existing literature. However, it is rather surprising that age did not appear as a significant predictor of quality of life. A study across several countries (lower and middle income), age appeared consistently as a predictor of quality of life<sup>[2]</sup>.

Conclusion is reasonably drawn from the findings.

#### *A minor comment*

I would propose to move the first sentence in the discussion to the end of the discussion (variables that did not show statistical significance as predictors of quality of life).

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**Is the work clearly and accurately presented and does it cite the current literature?**

Yes

**Is the study design appropriate and is the work technically sound?**

Yes

**Are sufficient details of methods and analysis provided to allow replication by others?**

Yes

**If applicable, is the statistical analysis and its interpretation appropriate?**

Yes

**Are all the source data underlying the results available to ensure full reproducibility?**

Yes

**Are the conclusions drawn adequately supported by the results?**

Yes

**Competing Interests:** No competing interests were disclosed.

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.**

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## Version 1

Reviewer Report 04 September 2018

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### Rose Nathan

Ifakara Health Institute (IHI), Dar es Salaam, Tanzania

The study evaluated factors that predict Quality of life of older persons in rural Uganda using cross-sectional survey data from four regions. Data was collected using the WHO-QOL instrument with some modifications. Considering the epidemiological and demographic changes happening in most sub-Saharan African countries including the raising population of the aged, this subject is timely and useful for informing policies.

**Methods:** A more comprehensive description of the data weighting and description as to how data analysis accounted for the weighted data due the sampling scheme (multi-stage, cluster) is useful to convince audience that the results are credible.

**Results:** While results showed significantly higher odds of good quality of life for OPs residing in permanent houses, implying a better standard of living; other household parameters that are considered to reflect standard of living showed inverse relationship to quality of life among the OPs. Such indicators included electricity as source of energy, borehole/piped water as source of water and type of toilet (covered pit latrine). Need to revisit this or provide some explanation to these seemingly contradictory results.

Add confidence intervals to the ORs.

**Discussion:** It is worth mentioning in the discussion variables that showed negative association with quality of life or failed to show a significant association contrary to empirical knowledge documented by several other studies. On this list are: distance to health facility, age of the participant and marital status.

**Limitation:** Exclusion of those who were ill could have potentially biased the results.

**Is the work clearly and accurately presented and does it cite the current literature?**

Yes

**Is the study design appropriate and is the work technically sound?**

Partly

**Are sufficient details of methods and analysis provided to allow replication by others?**

Partly

**If applicable, is the statistical analysis and its interpretation appropriate?**

I cannot comment. A qualified statistician is required.

**Are all the source data underlying the results available to ensure full reproducibility?**

Partly

**Are the conclusions drawn adequately supported by the results?**

Yes

**Competing Interests:** No competing interests were disclosed.

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.**

Reviewer Report 23 August 2018

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**Zarina Nahar Kabir** 

Karolinska Institute, Stockholm, Sweden

The research focuses on an important group of population, the elderly population, who are largely ignored in research and policy making in low-income countries. The study investigated the factors associated with quality of life of older persons in the different regions of Uganda. In order to assess quality of life, the instrument developed by WHO has been used in a modified version. Some specific comments are given below:

**Introduction:** It is stated that that older persons in Uganda experience various challenges including loneliness, poor housing and financial challenges but there are no relevant references to corroborate this statement.

**Methods:** Those who were "ill" were excluded from the study. Two questions arise from this. Firstly, how was being "ill" defined? Secondly, it is highly likely that exclusion of this group will introduce bias in the results by affecting the outcome. If data is available on health or morbidity status of the sample, in addition to HIV/AIDS, this should be included in the analysis and the results presented. If the data is not available, it is important to discuss the consequences in the limitations of the study.

It is not clear if the districts and villages were randomly selected.

I advise the authors to present the 95% Confidence Interval for the Odds Ratios presented in Table 4.

There is some repetition in the description of the dependent/outcome variable. This should be avoided.

Conclusions and policy implications: The recommendation of interventions to focus on older persons' HIV/AIDS "pandemic" based on the limited information and weak association presented in the study is far-fetched. Researchers need to be cautious when suggesting interventions if the results may merit further investigation due to weak associations and/or omission of important factors such as morbidity status in the current study.

Language review: I suggest that the manuscript goes through a language review.

**Is the work clearly and accurately presented and does it cite the current literature?**

Yes

**Is the study design appropriate and is the work technically sound?**

Partly

**Are sufficient details of methods and analysis provided to allow replication by others?**

Partly

**If applicable, is the statistical analysis and its interpretation appropriate?**

I cannot comment. A qualified statistician is required.

**Are all the source data underlying the results available to ensure full reproducibility?**

Partly

**Are the conclusions drawn adequately supported by the results?**

Partly

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Gerontology, Global Health, Public Health, Quality of Life, Social determinants of health

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.**

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