

# Evaluating the Reliability of the Washington Group Short Set of Questions in Assessing the Well-being of Older Individuals in Malawi

By

Monica Jamali-Phiri

University of Malawi, Zomba, Malawi

Extended Abstract

## **Background:**

Sub-Saharan Africa is witnessing a burgeoning proportion of older individuals, despite being in the early stages of this demographic shift. According to the World Health Organization (WHO), the number of older persons in the region is expected to rise from 43 million in 2010 to 67 million by 2025 and a substantial 163 million by 2050 (Codjoe, 2021). This demographic transition underscores remarkable achievements in life expectancy and a decline in under-five mortality (Kimokoti and Hamer, 2008). However, amidst this demographic change, the well-being of older persons is largely overlooked in the region. Research on population aging in sub-Saharan Africa reveals a significant gap in addressing the health needs of the older population by regional governments. This shortfall is attributed to pervasive economic constraints, under-resourced health systems grappling with various priorities, and a lack of comprehensive data on patterns of ill health, disability, and access to care in older age groups (Aboderin, 2010; United Nations, 2016; Prynne and Kuper, 2019).

Acknowledging the pivotal role played by the elderly in economic and social development, policymakers are increasingly implementing targeted welfare interventions to enhance the well-being and economic security of this growing sub-population group (Nyasa, Mwakikunga and Chisati, 2019). A significant stride towards improving the well-being of older individuals is the incorporation of the Washington Group Short Set of Questions in Population and Housing Censuses. This set, based on the World Health Organization's International Classification of Functioning, Disability, and Health (ICF), serves as a conceptual framework (Madans, Loeb and Altman, 2011) covering six domains—cognition, mobility, self-care, communication, vision, and hearing—this measurement scale assesses functioning levels, catering to both the disability population and the elderly. This paper seeks to scrutinize the reliability of the scale in measuring the health or functioning status of older persons in Malawi. The anticipated results aim to contribute valuable insights for the development of interventions aimed at enhancing the health and well-being of older individuals in the region.

## **Methodology**

### **Data**

The study relies on data sourced from the 2018 Malawi Population and Housing Census to fulfil its objectives. Conducted from the 3rd to the 23rd of September 2018, this census marked the country's inaugural use of the Computer Assisted Personal Interview (CAPI) program (Kanyuka, 2018). The Washington Group Short Set of Questions, designed to assess functioning levels in seeing, hearing, walking or climbing, speaking, cognition, and self-care, was employed to collect information on the functional status of individuals aged 5 years and over during the census. Respondents provided responses on a continuous scale ranging from 1 (no difficulty) to 4 (cannot do/see/hear at

all) across the six domains. This dataset serves as a foundation for the paper's objective, evaluating the reliability of the Washington Group's measurement scale in capturing the health and functioning status of older persons in Malawi.

### Analytical approach

To assess the reliability of the Washington Group Short Set of Questions in gauging the health, well-being, or functional status of older individuals in Malawi, this study employs descriptive analysis and Cronbach's alpha test statistics. Descriptive analysis, following the methodology outlined by Fisher and Marshall (2009), examines data distributions and identifies associations among the six health domains and background characteristics of the older population (Fisher and Marshall, 2009). Additionally, the Cronbach's alpha test, as per the approach by Tavakol and Dennick (2011), is employed to evaluate the reliability or internal consistency of the six health domains in measuring the functional status of older persons in the country (Tavakol and Dennick, 2011). The Cronbach's alpha reliability coefficient ranges from 0 to 1, with a threshold of 0.7 considered acceptable for scale reliability. Results falling between 0.6 and 0.7 are deemed questionable, while those between 0.5 and 0.6 are considered poor. In the case of poor results, recommendations include adding more items to the measurement scale or assessing the scale's dimensionality through factor analysis (Trizano-Hermosilla and Alvarado, 2016).

It is noteworthy that for this study, older persons are defined as individuals aged 50 and above, deviating from the WHO definition of 60 and above. This distinction is rooted in Malawi's youthful population, characterized by a median age of 17 and a life expectancy of 64.3 years, indicating the country's early stage of population aging (Kanyuka, 2018)

### Results:

#### Reported levels of difficulty among the older population

Table 1 presents results obtained from the descriptive analysis of the six health domains of the Washington Group short set of questions. The results indicate that more than 40% of the elderly population in Malawi have difficulties in Mobility (i.e. some difficulty 36.5% and a lot of difficulty 6.4%), followed by difficulties seeing 25.5% (i.e. some difficulty 21.8% and a lot of difficulty 3.7%) and cognition (some difficulty 11.0% and a lot of difficulty 1.5%). Nevertheless, there is a significant proportion of older persons that reported difficulties in hearing 7.1% and self-care 3.9%. These results demonstrate that mobility is the most contributing factor for the poor health status of old persons in the country.

Table 1: Percent distribution of functional status of old people aged 50 and over in Malawi

Level of difficulty	Health domain					
	Vision	Hearing	mobility	Communication	Cognition	Self-care
No difficulty	73.6	91.3	56.0	95.3	86.8	94.5
Some difficulty	21.8	7.1	36.5	3.9	11.0	3.9
A lot of difficulty	3.7	1.4	6.4	0.6	1.5	1.0
cannot do at all	0.9	0.2	1.2	0.2	0.7	0.6
Total	100	100	100	100	100	100
Number	555,068	555,068	555,068	555,068	555,068	555,068

## Reliability of the health domains collected during population census

The findings in Table 2 reveal a weak correlation among the six domains of the Washington Group Short Set of Questions, evident in correlation coefficients consistently below 0.5 (column 2). Column 4 of the alpha scale illustrates the test scale for individual items and the overall scales. The overall test scale registers at 0.41, a figure nearing zero, suggesting the scale inadequately measures the functional or disability status of the older population. Notably, when assessing individual item alphas, removing the vision item enhances the scale from 0.41 to 0.47, increasing the likelihood of accepting the measurement scale as a functional status indicator. Columns 5, 6, and 7 present Cronbach's alpha results after excluding vision and hearing items. Column 5 reveals improved internal consistency, reflected in individual correlation coefficients surpassing 0.5 upon removing vision and hearing items. Column 7 further illustrates the enhancement of the measurement scale post removal, yielding a Cronbach's alpha of 0.50, closer to 1. However, the alpha score remains at 0.50, emphasizing the need for additional items to comprehensively measure the health status of older persons in Malawi.

**Table 2; Reliability test of the six domains of functioning status**

1	Cronbach's alpha with all 6 items			Cronbach's alpha after removing vision and hearing		
	2	3	4	5	6	7
Item	Item-test correlation	Item-rest correlation	alpha	Item-test correlation	Item-rest correlation	alpha
vision	0.36	0.03	0.47	x	x	x
hearing	0.46	0.15	0.40	x	x	x
mobility	0.47	0.15	0.40	0.58	0.21	0.49
communication	0.54	0.24	0.34	0.60	0.24	0.47
Intellectual	0.56	0.27	0.32	0.64	0.31	0.41
Self-care	0.63	0.36	0.26	0.71	0.41	0.31
Test scale			0.41			0.50

## Discussion/Conclusion

The findings reveal that over 40% of older individuals in Malawi encounter mobility challenges, with an additional 25.5% having trouble in seeing. However, the Cronbach's alpha test for the six items ( $\alpha=0.41$ ) suggests that the measurement scale is inadequate for accurately gauging the functional status of older persons. As a recommendation, this paper advocates for the incorporation of additional items into the measurement scale to enhance the precision of assessing the health status of older individuals.

## Key Reference

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## Appendix A

Demographic characteristics	Percent	Number
<b>Age-groups</b>		
50-54	16.4	91,211
55-59	14.9	82,570
60-64	13.3	74,025
65-69	15.8	87,912
70-74	11.8	65,290
75-75	11.3	62,782
80-84	6.8	37,563
85+	9.7	53,715
Total	100	555,068
<b>Sex</b>		
Male	39.9	221,419
Female	60.1	333,649
Total	100	555,068
<b>Residence</b>		
Urban	8.4	46626
Rural	91.6	508442
Total	100	555,068
<b>Wealth Index</b>		
Poorest	26.9	149,121
Poorest	18.3	101,691
Middle	17.3	96,272
Richer	19.2	106,382
Richest	18.3	101,602
Total	100	555,068
<b>Education attainment</b>		
Preschool/None	0.8	4,145
Primary	90.3	501,155
Secondary	7.1	39,133
University	1.1	5,955
Other tertiary	0.8	4,680
<b>Total</b>	<b>100</b>	<b>555,068</b>