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The MVQOLI successfully captured quality of life in African palliative care: a factor analysis

Lucy Selman[a,*], Richard J. Siegert[a], Irene J. Higginson[a], Godfrey Agupio[b], Natalya Dinat[c], Julia Downing[d], Liz Gwyther[e], Thandi Mashao[f], Keletso Mmoledi[c], Tony Moll[g], Lydia Mpanga Sebuyira[h], Barbara Ikin[i], Richard Harding[a]

[a]*Department of Palliative Care, Policy and Rehabilitation, Cicely Saunders Institute, King's College London, Bessemer Road, Denmark Hill, London SE5 9PJ, UK*

[b]*Hospice Africa Uganda, Kampala, Uganda*

[c]*Division of Palliative Care, University of the Witwatersrand, Pimville, Soweto 1808, Johannesburg, Gauteng, South Africa*

[d]*African Palliative Care Association, Kampala, Uganda*

[e]*Hospice Palliative Care Association of South Africa, Cape Town, South Africa*

[f]*Palliative Medicine Unit, University of Cape Town, Faculty of Health Sciences, University of Cape Town, OBSERVATORY 7925, Cape Town, South Africa*

[g]*Philanjalo, Church of Scotland Hospital, Tugela Ferry, 3010 Kwazulu-Natal, South Africa*

[h]*Infectious Diseases Institute, Faculty of Medicine, Makerere University, Kampala, Uganda*

[i]*Msunduzi Hospice, Pietermaritzburg 3201, South Africa*

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Abstract

Objective: To examine the factor structure of the Missoula Vitas Quality of Life Index (MVQOLI) in palliative care patients in South Africa and Uganda and to assess the tool's appropriateness for measuring quality of life (QOL) in this context.

Study Design and Setting: Cross-sectional survey using the MVQOLI, a 26-item QOL measure containing five subscales (*Function*, *Symptoms*, *Interpersonal*, *Well being*, and *Transcendent*), in five palliative care services in South Africa and Uganda.

Results: Two hundred eighty-five patients were recruited; mean age was 40.1 years; 197 (69.1%) were female; primary diagnoses were human immunodeficiency virus infection (80.7%) and cancer (17.9%). A five-factor solution, accounting for 55% of variance, presented the best model of fit. The factors corresponded relatively closely to the original subscales, with only 4 of the 20 items not loading on the factor corresponding to the appropriate subscale. Internal consistency was high ($\alpha = 0.83$).

Conclusion: We found evidence of five factors underpinning the MVQOLI in a large sample of South African and Ugandan palliative care patients. The five factors corresponded reasonably well to the original subscales, suggesting that it is a promising measure for use in this population. However, further testing of its psychometric properties, comprehensibility, and scoring require further research in sub-Saharan Africa.

Keywords: Factor analysis; Quality of life; Measurement; Africa; Outcome measure; Palliative care

1. Introduction

The burden of progressive life-limiting disease in sub-Saharan Africa is reflected in the epidemiology of human immunodeficiency virus (HIV) infection [1,2] and cancer [3]. In 2007, there were 22.5 million people living with HIV infection in sub-Saharan Africa; 1.7 million adults and children became infected with HIV; and 1.6 million died of AIDS [1]. Cancer and other noncommunicable diseases are also becoming urgent public health issues in Africa. Approximately one in five deaths in sub-Saharan Africa is because of cancer; in females, the lifetime risk of dying from cancer in Africa is almost double the risk in developed countries [4]. Rates of other progressive non-malignant diseases are largely unknown.

Palliative care is an essential component of health services in sub-Saharan Africa, and significant advances have been achieved in service provision, despite considerable difficulties [5–9]. In particular, South Africa and Uganda offer examples of successful provision of palliative care, with inroads made in morphine legislation and models of

* Corresponding author. Tel: +44-20-7848-5566; fax: +44-20-7848-5517.

E-mail address: lucy.selman@kcl.ac.uk (L. Selman).

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What is new?

- An exploratory factor analysis of the Missoula Vitas Quality of Life Index (MVQOLI) in a large sample of South African and Ugandan palliative care patients found a five-factor solution that corresponded reasonably well to the original MVQOLI subscales and high internal consistency ($\alpha = 0.83$).
- The MVQOLI appears to have acceptable construct validity in this population, despite the fact that the only previous factor analysis of the MVQOLI (in a US population) found no clear interpretable structure.
- Subject to further psychometric testing, the MVQOLI may be an appropriate measure for monitoring and describing patient outcomes in sub-Saharan African palliative care settings.
- Given the lack of quality of life measures validated in African palliative care populations and the dearth of evidence in this area, the factor structure reported here can contribute toward generating outcome evidence and guiding future research.

home-based care [10–12]. However, there is very little evidence from Africa for the effectiveness of palliative care on patient outcomes, a common problem in developing countries, where health systems research is underfunded [13,14]. A primary reason for this dearth of evidence is the lack of appropriate and validated outcome tools [5], among other logistical and methodological challenges in this setting and population [15].

The need for appropriate locally validated outcome tools has been identified by palliative care clinicians and researchers in Africa [9,16]. In particular, multidimensional quality of life (QOL) measures are urgently needed to inform service development and provision and to evaluate service models and interventions.

The only QOL measure tested in a relevant African population is the Missoula Vitas Quality of Life Index (MVQOLI), a 26-item QOL measure with a global QOL item and five subscales (Symptoms, Function, Interpersonal, Well being, and Transcendent). Namisango et al. [17] conducted a validation study of a modified version of the tool (MVQOLI-M) in a sample of advanced AIDS patients ($N = 200$) in Uganda. In the Ugandan tool, a number of minor changes were made after review by content experts (e.g., ''Things I like to do'' are called ''hobbies'' in the MVQOLI-M; connection to ''all things'' is changed to ''a concept larger than and outside the self, for example, to God or a supernatural being;'' in the single item QOL question, ''worse possible'' and ''best possible'' options are termed ''very poor'' and ''very good''). Adequate test–retest reliability ($r = 0.6$) and internal consistency ($\alpha = 0.85$) were reported. However, the study authors did not test the construct validity of the tool using factor analytic techniques but adopted the five subscale structure proposed by the tool developers [18].

The original MVQOLI was developed in the United States by Byock and Merriman to measure adaptation to and integration of physical and functional decline as well as attainment of tasks of life completion and life closure in advanced disease [18,19]. Byock and Merriman [18] examined the psychometric properties of the MVQOLI with a sample of 257 patients from 10 community-based hospices and report satisfactory full-scale internal consistency (Cronbach $\alpha = 0.77$). The authors found support for the construct validity of the MVQOLI by correlating the tool scores with ''convergent and divergent constructs'' ([18], p239). Specifically, they noted strong correlation with the Multidimensional QOL Scale-Cancer 2 [20,21] ($r = 0.63$), moderate correlations with the single-item global rating of QOL ($r = 0.43$), and low correlations with the Karnofsky Performance Scale ($r = 0.19$). However, the MVQOLI was designed for use in clinical care and was not studied comprehensively as an outcome measure. In particular, despite not examining the structure of the tool using factor analysis, the authors grouped items into subscales as if there were five factors present.

Subsequently, Schwartz et al. [22] conducted what we understand to be the first and only factor analysis of the MVQOLI to date, testing a revised version of the tool (MVQOLI-R) among patients in the United States with either progressive, chronic, and life-threatening illness or a prognosis between 6 weeks and 3 years. The authors of the study abbreviated the measure by omitting the ''importance'' items associated with each subscale (see Data collection for more details on the tool) and simplified the scoring protocol. They found that the a priori subscales were not well supported by the factor analytic results, noting that ''the highest loading items within each factor were not items that were hypothesized to load together'' ([22], p127). They commented that the results of the factor analysis therefore ''did not support the theoretical structure of the instrument'' (p127). Similarly, contra Byock and Merriman, the internal consistency analyses did not support the unidimensionality of the construct. The authors concluded that the MVQOLI-R did not have the appropriate properties for outcomes research in patients with advanced illness, despite evidence of clinical utility [22]. However, the data of Schwartz et al. ([22], p128, Table 3) were characterized by highly skewed responses (i.e., floor or ceiling effects) on several of the individual items of the MVQOLI. For example, of the 20 items they included in their factor analysis, 11 items had more than 50% of their sample scoring at one extreme of the Likert scale (i.e., 50% scored a 1 or 50% scored a 5 on the 1–5 scale) and a further seven items had 40% scoring at one extreme end of the scale. Because factor analysis works on the interitem correlation matrix, this sample of responses with such attenuated variance is unlikely to reveal any relationships among the items.