Religion, spirituality, social support and quality of life: measurement and predictors CASP-12(v2) amongst older Ethiopians living in Addis Ababa

Kidist Hamren, Holendro Singh Chungkham & Martin Hyde

Routledge
Taylor & Francis Group

Religion, spirituality, social support and quality of life: measurement and predictors CASP-12 (v2) amongst older Ethiopians living in Addis Ababa

Kidist Hamren[a], Holendro Singh Chungkham[b] and Martin Hyde[b]*

[a]Department of Sociology, Stockholm University, Stockholm, Sweden; [b]Stress Research Institute, Stockholm University, Stockholm, Sweden

Objectives: As African populations begin to age developing accurate measures of quality of life (QoL) in later life for use on the continent is becoming imperative. This study evaluates the measurement and predictors of QoL amongst older Ethiopians.
Method: The data come from a multi-stage cluster sample of 214 people aged 55 and over living in Addis Ababa, Ethiopia. QoL was measured using the CASP-12(v2). Confirmatory factor analysis (CFA) was used to test the properties of the scale. The relationships between social support, religiosity/spirituality and socio-demographic factors on QoL were tested with linear regression analyses.
Results: The CASP subscales exhibited good internal reliability and the CFA provides reasonable support for an 11-item 4-factor model (CFI, 0.954; RMSEA 0.075). Multivariate regression analyses suggest that both religiousness/spirituality and social support have positive relationships with QoL.
Conclusion: Older people in Africa can often be socially isolated, marginalised and in extreme poverty. Yet few studies have looked at QoL more generally and there is no accepted gold standard measurement of QoL. Yet such a development would allow researchers to directly compare QoL and the determinants of QoL amongst older Africans and those elsewhere. The results show that a modified 11-item CASP is a meaningful measure of QoL for use with older Ethiopians. Both religiousness/spirituality and social support are positively associated with QoL and might be important buffers against deprivation.

Keywords: social support; quality of life/well-being; religion/spirituality

Introduction

Africa is undergoing rapid demographic changes and, although the population remains relatively youthful, the proportion of older persons has increased markedly over the past few decades and will continue to do so for the foreseeable future (United Nations, 2011). The speed and scale of this shift have profound implications for African countries and there are concerns that they will not be able to cope with the challenge of population. A recent report found that in 11 of the 15 African countries studied older people were much more likely to be living in poverty than other age groups (Global Ageing, 2013). The absence of pension systems in many African countries also means that older people are often forced to stay in employment until very late in life to secure an income. Literacy rates are also very low amongst older people, especially older women, which can increase the risk of becoming social excluded. A lack of infrastructure and a youth-oriented policy focus are seen to be responsible for the marginalised position of older people in Africa (Pillay & Maharaj, 2013).

The problems that beset older people in Africa as a whole are present to a greater or lesser extent in Ethiopia. Ethiopia is located in East Africa and has a population of 91,195,675. In the past decade, the country has enjoyed spectacular economic growth and has been labelled as one of world's fastest growing economies. Yet, according to Lwanga-Natel, Charles, and Rusinow (2011), despite this

the situation for older people remains dismal. Older people make up around 5% of the Ethiopian population and the majority of them have no form of secure income apart from what is provided by their own families or money earned from their own labour. Only 1.4% of the total population has access to a regular public sector pension. Hence, a great many older people live below the poverty line indefinitely. Furthermore, they are increasingly called upon to take care of children that have been orphaned by HIV/AIDS. Conversely there are only three institutional care services for older people in the country (Lwanga-Natel et al., 2011). More recently, the global increase in food and oil prices has had a negative impact on older people, with many eating only once a day, and has created tensions within families due to limited availability of food (HelpAge International, 2011). These factors, alone or in combination, pose a real threat to the quality of life (QoL) of older Ethiopians. Hence, the current study seeks to explore which factors are associated with good QoL amongst older Ethiopians living in Addis Ababa.

Quality of life in later life

QoL in later life has become a major global policy issue. The Madrid Plan of Action clearly identifies the promotion of well-being in later life as a key goal for national and international bodies. It goes on to note that 'the availability

of reliable information is indispensable in identifying emerging issues and adopting recommendations' (United Nations, 2002). This requires a common understanding and comparative measures of QoL in order to ensure that differences in QoL are not a product of methodological differences. Although talking more broadly about health-related QoL, Skevington (2002, p. 136) argues that cross-national measures are needed for the systematic monitoring of outcomes from multinational clinical trials, to enable comparisons to be made about QoL in different cultural or social groups and to provide theoretical insights into whether QoL is a universal or relativist concept. To this one can add that it is important to understand whether the factors that affect QoL in later life are the same in different countries. All of which has prompted an increasing interest in developing means to evaluate QoL that are specific to this age range (Herrman et al., 1993; Molzahn, Skevington, Kalfoss, & Makaroff, 2010; Peel, Bartlett, & Marshall, 2007; Skevington, 2002). There has also been move to develop broader approaches measuring QoL which take into consideration more recent approaches of active and positive aging instead of the former approach which focused mainly on physical aging and functional decline (Bowling, 2004, 2005a, 2005b).

Quality of life amongst older people in Africa

Despite the challenges that older Africans face relatively little is known about the factors that determine QoL in later life in Africa. Several writers argue that this is because many governments in the region do not see older people as a policy or research priority (Gureje, Kola, Afolabi, & Olley, 2008; Kyobutungi, Egondi, & Ezeh, 2010). Nonetheless, there is a small, but growing, body of research that has begun to identify the factors that shape QoL in later life in Africa. A relatively small study of older Nigerians in two local government areas in the southeast of the country found that those with higher levels of education and those with higher incomes had better QoL (Ibikunle et al., 2013). These findings are similar to those from two much larger Nigerian studies: one a rural area in the north-central region (Adebowale, Atte, & Ayeni, 2012) and the other comprising eight states from the southwest and north-central regions (Gureje et al., 2008). Both found that those in the more advantageous socio-economic positions had better QoL. In addition being older, being married, having children and getting support from children were associated with QoL in the rural area, whilst functional limitation, self-rated health and participation in community activities predicted good QoL in the wider study. These results are comparable to those from studies of older people living in the rural northeast of South Africa (Gomez-Olive, Thorogood, Clark, Kahn, & Tollman, 2010), older people in rural southern Tanzania (Mwanyangala et al., 2010) and older slum dwellers in Nairobi (Kyobutungi et al., 2010). In all three studies being older, having no or fewer years of education, being single and being in a low socio-economic position were associated with poorer QoL. Additionally, Mwanyangala and colleagues (2010) and Kyobutungi and

colleagues (2010) found that men had significantly higher levels of QoL than women.

To date, studies have been concentrated in a few countries on the continent, mainly Nigeria, and no research exists on the QoL of older Ethiopians. However, despite similarities between Ethiopia and other African countries, there are some important differences. Ethiopia is still one of the poorest countries in Africa with a GDP per capita roughly 10 times lower than South Africa. It has a different religious and ethnic mix, with a predominantly Orthodox Christian population compared to Protestants in Nigeria and South Africa and Catholics in Tanzania. It also has a relatively small Muslim population compared to Nigeria and Tanzania. Hence, studying QoL amongst older Ethiopians would allow researchers to see whether the same factors impact on QoL in different social and cultural contexts across Africa.

The CASP measure of QoL in cross-national research

The measure of QoL that was chosen for the present study was the CASP-12(v2) (Wiggins, Netuveli, Hyde, Higgs, & Blane, 2008). This scale is derived from an original 19-item scale which covers four inseparable and non-hierarchical life domains: Control, Autonomy, Self-Realisation and Pleasure (Hyde, Wiggins, Higgs, & Blane, 2003). It was designed to cover the positive and beneficial aspects of aging rather than just focus on the medical and social care issues that had traditionally been seen to typify ageing research (Higgs, Hyde, Wiggins, & Blane, 2003). It has a clear theoretical foundation and the assessment is independent from the factors that may influence QoL. It has proved to be a quick, effective, multidimensional instrument with generally good psychometric properties. The scale has been used in a number of national and cross-national studies in over 20 countries including the English Longitudinal Study of Ageing (ELSA) (Marmot, Banks, Blundell, Lessof, & Nazroo, 2003), the Survey of Health, Aging and Retirement in Europe (SHARE) (Börsch-Supan, 2005), the Health and Retirement Survey (HRS) (National Institute on Aging, 2007), the Health, Alcohol and Psychosocial factors in Eastern Europe (HAPIEE) (Pikhart et al., 2007), the British Household Panel Survey (Wiggins et al., 2008), the GAZEL study (Goldberg et al., 2007; Wahrendorf, Ribet, Zins, & Siegrist, 2008) and the CONSTANCE study (Zins et al., 2010). These qualities have made the CASP one of the key instruments to evaluate QoL amongst older people.

The measure has been shown to be associated with socio-economic position (Blane, Netuveli, & Bartley, 2007; Knesebeck, Wahrendorf, Hyde, & Siegrist, 2007; Netuveli, Wiggins, Hildon, Montgomery, & Blane, 2006; Wiggins, Higgs, Hyde, & Blane, 2004), financial difficulties (Zaninotto, Falaschetti, & Sacker, 2009), cognitive function (Llewellyn, Lang, Lang, & Huppert, 2008; Llewellyn, Lang, Langa, & Huppert, 2008), physiological status (Blane, Netuveli, & Montgomery, 2008; Zaninotto, Pierce, Breeze, de Oliveira, & Kumari, 2010) and engagement in socially productive activities (McMunn, Nazroo, Wahrendorf, Breeze, & Zaninotto, 2009; Siegrist & Wahrendorf, 2009; Siegrist, Wahrendorf, von dem

Knesebeck, Juerges, & Borsch-Supan, 2007; Wahrendorf et al., 2008; Wahrendorf & Siegrist, 2010).

Religion, spirituality and quality of life

In their review of the field, Peterson and Webb (2006) observe that religiosity and spirituality have often been side-lined in QoL research. However, although there are still relatively few studies that measure QoL directly, there is evidence that religiosity and spirituality have a positive impact on a broad definition of 'quality of life-...that is synonymous with other subjective concepts such as life satisfaction and wellbeing' (Sawatzky, Ratner, & Chiu, 2005, p. 158) or 'happiness' (Ferriss, 2002). In their meta-analysis of 51 studies, Sawatzky and colleagues (2005) estimated that spirituality had a moderate effect ($r = 0.34$) on QoL. Although the review covered all age groups, research that has focused just on older people has shown a similarly positive relationship between religious and spiritual participation and subjective well-being, greater life satisfaction, happiness, optimism, fewer depressive symptoms, reduced anxiety and better emotional adjustment (Ardelt, 2003; Ellison & Levin, 1998; Koenig & Larson, 2001; Stanley et al., 2011). Specifically, recent studies report that higher levels of religious engagement predict greater life satisfaction among older African Americans (Krause, 2004; Levin, Chatters, & Taylor, 1995), older adults with disabilities (Moberg, 2008), older adults in rural American (Yoon & Lee, 2007) and older Asian immigrants (Lee, 2007; Roh, Lee, & Yoon, 2013). Levin (2010) concludes that overall the empirical data support the protective effect of religious involvement for mental health and psychological distress. Similarly after assessing the relationship between spirituality and depression, anxiety and substance abuse, Koenig (2009, 2010) concluded that spiritual beliefs and practices seem to be linked with improved psychological well-being. Several writers argue that this is because religious involvement seems to minimise unsafe behaviours, buffers stress, provides social support and helps people to find meaning in life (Koenig, 2006; Levin et al., 1995; Worthington, Kurusu, McCollough, & Sandage, 1996).

However, the majority of studies on religiousness/spirituality and well-being have been conducted in Western countries and it is not clear whether the findings would be generalizable to other, non-western, societies. However, there are good reasons to assume that these could be applicable to Ethiopia as it has a relatively high level of religiosity and a predominately Christian population. For example, 76% of the population in Ethiopia are Christians compared to 78.5% in America (Central Statistical Agency and ICF International, 2012; Pew Forum, 2011). In addition, according to *The World Value Survey Cultural Map 2005−2008* both Ethiopia and the United States share many similar cultural values (Inglehart & Welzel, 2011).

Social support and quality of life in later life

There is also a large body of work on the impact of social support on well-being (Almedom, 2005; Ferlander, 2007;

McKenzie, Whitley, & Weich, 2002). According to Barrera and colleagues (1981, p. 435) social support comprises the 'various forms of aid and assistance supplied by family members, friends, neighbours and others'. Research conducted over the past few decades, across a wide range social contexts and cultures has demonstrated a strong relationship between social support, health and well-being across the lifespan, but especially in later life (Antonucci, Sherman, & Akiyama, 1996; Crimmins, Preston, & Cohen, 2011; Muckenhuber, Stronegger, & Freidl, 2013). Studies consistently show that that social support is positively associated with improved health, lower risk of chronic illness and better life satisfaction in older adults (Blixen & Kippes, 1999; Fernández−Ballesteros, 2002; Martinez-Martin et al., 2012; Nyqvist, Forsman, Giuntoli, & Cattan, 2013; Roh et al., 2013; Siedlecki, Salthouse, Oishi, & Jeswani, 2013; Yoon & Lee, 2007). Cohen and Wills (1985) argue that social support improves well-being through two different processes: the *buffering model* or the *main-effect model*. In the buffering model support affects well-being only, or primarily, for persons who experience stressful events. Conversely in the main-effect model social support has a beneficial effect irrespective of whether person is under stress. This could be because large social networks provide people with stable positive experiences, social benefits and roles. In addition, the integration of individuals in social networks could also help them during economic or legal problems which otherwise which would increase the risk of psychological or physical illness.

However, although this is a growing area of research, insufficient research has been done on the relationship between social support and well-being amongst older people in general (Norstrand, Glicksman, Lubben, & Kleban, 2012) or in Africa in particular (Ramlagan, Peltzer, & Phaswana-Mafuya, 2013). Yet, perhaps because of the lack of formal support, informal social support is an integral feature of Ethiopian culture and could provide a potential resource to improve QoL for older people. This is intertwined with religious teachings on how one should be kind and helpful to one's family, relatives and neighbours, as well as respecting elders. As a result, visiting the sick, attending funerals, etc., are all crucial Ethiopian norms. A person that does not share or who does not lend a hand during his neighbours' or family's times of need is scorned by the society. This is summed up by the popular Ethiopian saying, 'He who eats alone dies alone'.

Based on this previous research we hypothesise that both religiosity/spirituality and social support will have positive, independent effects on QoL amongst older Ethiopians living in Addis Ababa. However, we expect the strength of these associations to be moderated by socio-demographic factors, such as age, education and marital status, which will also impact independently on QoL.

Methods

The sample

Conducting survey research in Africa can be challenging (Casale, Lane, Sello, Kuo, & Cluver, 2013; Gachuhi &

Kiemo, 2005; Nchinda, 2002). The absence of easily accessible population lists, relatively low research capacity and limited resources all mean that pragmatic solutions are often required. In line with similar studies conducted in Africa (see Gutierrez, Tomas, Galiana, Sancho, & Cebria, 2013), a multi-stage cluster sample with probability quota sampling was used in this study. The population was first divided into geographic clusters based on the socioeconomic characteristics of the area. Four high-income districts, seven low-income districts and four middle-income districts were selected. Then the population was further divided into Orthodox, Protestant and Catholic Christian denominations. According to the Central Statistical Agency and ICF International (2012), 95.6% of older people living in Addis Ababa were Orthodox Christians, 3.5% Protestants and 0.9% were Catholics. The selection of respondents from the clusters was based on proportional quota sampling of these religious affiliations so that the sample approximately reflected the target population. In addition, to try to ensure that the sample was broadly representative of the wider population, non-proportional quota sampling of gender, age, education and income was implemented.

Individuals that looked like they might fulfil the study criteria were either approached on the streets or at their homes. They were informed about the aims of the study and asked if they would give their consent to be interviewed. In some instances a snowball sampling was implemented where individuals who took part in the study were asked if they knew other older individuals who met the criteria for inclusion.

The data were collected using a face-to-face, interviewer administered questionnaire. The questionnaire was translated from English to Amharic following the guidelines for Universal Translation (Baker et al., 2010). In addition, a highly respected Protestant Pastor who serves at Muluwongel Full Gospel Church advised on the translation of the questions. He was chosen because he had previously been an Orthodox Deacon before he converted to Protestantism, thus making him expert in more than one religion. Second, he has travelled throughout the Western world which is important for understanding the context in which the original questions were developed. Third, he is a highly educated individual who is fluent in English.

Ten to fifteen respondents were recruited from each cluster giving a total sample of 227 people. However, 6 of the questionnaires were incomplete and 7 were incorrectly filed at the start of the study and had to be discarded. The final sample consisted of 214 older Christian individuals. The sample is described in Table 1. The mean age of the group was 68 years with a range of 55−92. Just over half of the sample was female. The majority of the participants, 86%, were Orthodox, 13% Protestant and 1% Catholic. Fifty-six percent of the respondents were married, 30% widowed and around 7% were either never married or divorced. Around a third of the sample live with their spouse and no children, just under a third live with their spouse and children and around a quarter live with their children but without a spouse present. Nearly a quarter of the sample receives some sort of aid from their children.

Table 1. Socio-demographic characteristics of the sample (%).

	%
Female	51.40
Married	56.10
Never married	6.50
Divorced	7.50
Widowed	29.90
Orthodox	86.40
Protestant	12.60
Catholic	0.90
No education	42.50
Less than college education	28.50
College or university education	29.00
Own house/apartment with spouse no children	32.70
Own house/apartment with spouse and children	29.40
Own house/apartment with children no spouse	23.40
Own house/apartment alone	4.70
Other living arrangements	9.80
Receives no aid	73.40
Receives some aid	26.60
Sees children daily	71.50
Sees children at least once a week	10.50
Sees children at least once a year	7.00
Never sees children/does not have children	11.00

Overall there were very high levels of contact with children. Over 70% of the sample see their offspring daily whilst only 11% never see their children or have no children. Just under a quarter of the sample received a monthly income from pension. This ranged from $1.5 (28 birr) to $3217.50 (63,000 birr), with the average pension being $134 (2628 birr). Income from work was collected in bands. Around two-thirds of the sample still received an income from work. However, the modal value amongst those who received an income was less than $10 (200 birr) a month. For the purpose of further analyses this has been treated as a continuous measure.

Variables

Quality of life

QoL was measured using the CASP-12(v2) (Wiggins et al., 2008). This has 12-items, such as *My age prevents me from doing the things I would like to* and *I feel that the future looks good for me*, covering four domains of QoL: Control (three items), Autonomy (three items), Pleasure (three items) and Self-Realisation (three items). However, unlike the original formulation a fifth response option, 'Always', was added following recommendations by Sexton et al. (2013). Thus, response options range from Never (0) to Always (4). The CASP-12(v2) was translated word-for-word with little difficultly. The exception was the question *I feel that what happens to me is out of my control*, which could not be directly translated because the majority of Ethiopians are strong believers that whatever happens in their life is God's will, and it is possible that they would answer the question that they do not have control, which might be misleading. Thus, the question was

reformulated in a way that conveyed the intended meaning of the question.

To test the psychometric properties of the CASP-12 (v2), confirmatory factor analyses (CFAs) using structural equation models were carried for the whole sample. Descriptive statistics, including means, standard deviations, skewness and kurtosis for all the items included in the model, are presented in Appendix 1. Before commencing the CFA the internal consistencies of the factors were checked. Cronbach's alpha values were 0.67 for Control, 0.76 for Autonomy, 0.63 for Pleasure and 0.70 for Self-Realisation. Although the values for Control and Pleasure that are slightly lower than the usual cut-off values, the item-rest correlations did not suggest any improvement in removing some items from either of the factors. We, therefore, decided to retain all the 12 items for the structural equation model.

Various alternatives of CFA models were estimated using the data to examine the suitability of the CASP-12 (v2) for the data at hand. The results, in Appendix 2, show that the 12-item four-factor solution (Model-I) showed significant loadings for all the factors included in the model. However, this model resulted in a poor fit index with CFI = 0.917; RMSEA = 0.093.

At this stage the modification indices (MIs) from Model-I were examined to assess the lack of model adequacy. The analysis revealed that the item on *shortage of money* was responsible for poor fit of the model. This is similar to other studies (Sexton et al., 2013). Therefore, an alternative 11-item four-factor model (Model-II) was tested without the item. The model showed a good fit with a huge improvement over Model-I (CFI = 0.954, RMSEA = 0.075), as suggested by Brown (2006). Thus, Model-II was retained as the most plausible model of CASP for the small sample under study. The 11 items were then summed to create the CASP-11 scale where a high score represents good QoL.

Religiousness/spirituality

Following Zinnbauer and colleagues' (1999) argument that the terms religion and spirituality overlap to such a high degree that they be treated together as religion/spirituality, the Brief Multidimensional Measures of Religiousness/Spirituality (BMMRS) (Fetzer Institute & National Institute on Aging, 1999) was used to measure religiousness/spirituality in the current study. The scale covers a range of topics, with items such as *I find strength and comfort in my religion* and *The events in my life unfold according to a divine or greater plan*. The scale has demonstrated good reliability and validity amongst older adults (Bush et al., 2011). The BMMRS was translated into Amharic with very good item, semantic and conceptual equivalence. However, in the item that assesses individual private religious practices, listening to religious songs was also added as this is an important activity for the majority of Ethiopian Christians. The scale demonstrated good internal reliability ($\alpha = .87$) and a higher scores on BMMRS indicate greater religiousness/spirituality.

Social support

To measure social support, the Multidimensional Scale of Perceived Social Support (MSPSS) was used. This scale, developed by Zimet and colleagues (1998), assesses overall social support from family, friends and significant others. The scale consists of 12 questions with 4-point response format rating from 4 = *strongly agree* to 1 = *strongly disagree*. Higher scores indicate greater perceived social support. The scale has demonstrated good validity and reliability in a number of countries outside of the USA (Ng, Amer Siddiq, Aida, Zainal, & Koh, 2010; Wongpakaran, Wongpakaran, & Ruktrakul, 2011). The measure has also been validated in a Ugandan study (Nakigudde, Musisi, Ehnvall, Airaksinen, & Agren, 2009). This suggests that it is a valid instrument to use in an African context. However, there were some issues in translating the MSPSS. In Ethiopia, people do not usually name their significant other, i.e., husband or wife, when they are asked who provides social support. This is because they see their spouse as part of themselves and it is taken for granted that they will provide support. Thus, the questions were reformulated to refer to a 'very special person'. The items that measure social support from family were also reformulated to include support from the extended family as the word family in Ethiopia does not just refer to father, sister, mother and brother but also cousins, nephews, uncles, etc. The items that were designed to measure social support just from friends were changed to include neighbours too as they are a key source of social support in Ethiopia. The scale demonstrated good internal reliability ($\alpha = .92$) in the current study and a higher score indicates greater perceived levels of social support.

Socio-demographic characteristics

Age, sex, living arrangements and the frequency of social contact with children were asked about. Socio-economic position was measured using self-reported employment status, monthly income, literacy levels and highest level of education. Religious affiliation was also recorded.

Analysis

Following the assessment of the psychometric properties of the CASP scale, simple bivariate analyses were performed to examine possible differences in QoL, based on mean CASP-11 scores, across socio-demographic groups. Differences by gender and by receipt of aid were tested using *t*-tests for independent samples, whilst ANOVA were used for all other analyses. Following this bivariate Pearson's correlations were conducted between each of the continuous level measures, such as age and income. This was done to test the strength of association between both the explanatory variables and the CASP-11 scale as well as between the explanatory variables themselves, notably religiousness/spirituality and social support. Finally, multivariate linear regression analyses were performed to examine the independent impact of religiousness/spirituality, social support and socio-demographic factors on QoL after mutual adjustment.

Results

Table 2 shows the mean CASP-11 values for the sample as a whole and for different socio-demographic groups. Overall the scale exhibited a negative skew (skewness, -1.23) with a mean of 34.50 (s.d. 7.18) and a range of $6-44$. The analyses show that men had a statistically significant higher mean CASP score than women. Statistically significant results were also found for marital status. Those who were married had the highest mean score (36.56; s.d. 5.85) and those who were never married had the lowest score (29.36; s.d. 9.62). Amongst the different Christian denominations Protestants reported the highest mean scores (38.93; s.d. 4.15) followed by Catholics (36.50; s.d. 4.95) and Orthodox (33.84; s.d. 7.33). These differences were also statistically significant. In line with other studies in Africa those with the lowest education had the lowest QoL. There were also statistically significant differences in the CASP scores depending upon a person's living arrangements. Those who lived in their own house with their spouse and children had the highest CASP scores (36.32; s.d. 5.76) whilst those who lived alone in their own house or apartment or who did not live in their own house or apartment had the lowest scores. Those who received aid had a statistically significant higher mean CASP score than those who did not receive aid. Finally, those who saw their children, regardless of the frequency, all had similar mean CASP scores, around 35, which were much higher than those who did not see their children or who had no children.

Table 3 shows the results of the correlation analyses. Age is negatively associated with QoL, religiousness/spirituality and income from work. Conversely having more children and the amount of income received from work are both positively associated with QoL and social support. Both religiousness/spirituality ($r = 0.42$) and social support ($r = 0.44$) are positively and moderately associated with QoL. Religiousness/spirituality and social support are positively, but weakly, associated to one another ($r = 0.24$)

Table 4 shows the results of the regression analyses. Model 1 shows the unadjusted results for religiousness/spirituality. Model 2 shows the unadjusted results for perceived social support. Model 3 shows the results for religiousness/spirituality and perceived social support together. Model 4 shows the fully adjusted model including all socio-demographic covariates. Frequency of meeting with children was excluded from this model due to multicollinearity with number of children and living arrangements. In the unadjusted models, both religiousness/spirituality and social support are statistically significantly and positively associated with QoL. After mutually adjusting for one another, the strength of association for both is attenuated somewhat ($r = 0.33$ and 0.36, respectively). Nonetheless, both remain statistically significant. After adjusting for all potential confounders in the final model both religiousness/spirituality and social support remain statistically significantly associated with QoL. Amongst the other covariates only being Protestant is significantly associated with QoL. Overall the final model accounts for 31% of the variance in QoL. Fully adjusted analyses for the individual sub-domains (not shown) reveal that religiousness/spirituality is positive associated with Autonomy ($r = .175$; $p = .023$), Pleasure ($r = 327$; $p < .001$) and Self-Realisation ($r = 287$; $p < .001$), whereas perceived social support is positively associated with Control ($r = .381$; $p < .001$) but not the other sub-domains.

Discussion

As populations throughout Africa age, it is crucial that governments and NGOs across the continent ensure that older people can enjoy a good QoL. A key step towards realising this aim is the development of a robust measure of QoL. This will allow organisations to monitor the levels of QoL as people age as well as across different socio-demographic groups in later life. This study aimed to do this by (1) testing the psychometric properties of as well established measure of QoL, the CASP-12(v2), amongst older Ethiopians living in Addis Ababa and (2) investigating the factors that contribute to good QoL amongst this group.

Overall the results suggest that the CASP is a valid and effective tool for measuring QoL amongst older Ethiopians. In general, the sub-domains show good internal reliability and the CFAs provide reasonable support for an 11-item version of the scale for use with this population. However, there are a number of issues that are common to other validation studies of the CASP. Despite

Table 2. Mean values, standard deviations and tests for statistical significance for CASP-11 by socio-demographic groups.

	Mean	s.d	*p*
All	34.50	7.18	
Female	33.15	7.19	
Male	35.94	6.91	.004
Married	36.56	5.85	
Never married	29.36	9.62	
Divorced	30.63	7.41	
Widowed	32.75	7.52	<.001
Orthodox	33.84	7.33	
Protestant	38.93	4.15	
Catholic	36.50	4.95	.002
No education	31.76	7.40	
Less than college education	36.46	6.45	
College or university education	36.61	6.21	<.001
Own house/apartment with spouse no children	36.09	6.16	
Own house/apartment with spouse and children	36.32	5.76	
Own house/apartment with children no spouse	32.48	8.32	
Own house/apartment alone	30.70	5.91	
Other living arrangements	30.43	8.68	<.001
Receives no aid	33.55	7.56	
Receives some aid	37.12	5.20	<.001
Sees children daily	35.14	6.83	
Sees children at least once a week	35.57	4.57	
Sees children at least once a year	35.50	5.71	
Never sees children/does not have children	29.36	8.51	.003

Table 3. Bivariate correlations between CASP-11, age, number of children, religiousness/spirituality and social support.

	CASP-11	Age	Number of children	Religiosity/ spirituality	Perceived social support	Income from work
Age	**−0.21**					
Number of children	**0.21**	−0.03				
Religiousness/spirituality	**0.42**	**−0.17**	0.11			
Perceived social support	**0.44**	−0.12	**0.30**	**0.24**		
Income from work	**0.25**	**−0.24**	−0.06	0.06	**0.25**	
Pension income	0.02	0.01	−0.04	−0.09	0.07	**0.15**

Note: Figures in bold are significant values at $p < .05$ level.

the inclusion of a fifth response option, many of the items showed very skewed distributions. Some of this might be due to the mode in which the questionnaire was delivered. In other studies CASP has been included in a self-completion questionnaire. However, due to the high levels of illiteracy in this group it had to be administered by an interviewer in this study. Social desirability might lead people to give more positive assessments of their life in these face-to-face structured interviews. Notwithstanding this possibility though, the pattern is similar to that found elsewhere (Sexton et al., 2013) and suggests that the use of a fifth response option needs to be tested further.

The results of the regression analyses are in line with those found elsewhere and show that both religiousness/spirituality (Ellison, Boardman, Williams, & Jackson, 2001; Fetzer Institute & National Institute on Aging, 1999; Harold G. Koenig, 2010; Levin, 2010; Yoon, 2006; Yoon & Lee, 2007) and social support (Berkman, Glass, Brissette, & Seeman, 2000; Ferlander, 2007; Park, Roh, & Yeo, 2012; Roh et al., 2013; Yoon & Lee, 2007) are associated with higher levels of QoL. On the one hand, these findings are not remarkable. Ethiopia is a country with a strong social support network from family, relatives, neighbours and social guilds and there is a cultural expectation to support those around you. However, when one considers that more than half of the participants in this study were living in permanent poverty, this suggests that religious/spiritual beliefs and social support can buffer the impact of material deprivation on QoL. This suggests that organisations interested in securing good QoL in later life need to not only focus on material resources, such as food aid, but should also work with social and cultural institutions that provide social support and meaning for older people.

However, the study suffers from a number of limitations. The sample is relatively small and is not a proper probability sample. These issues are not unique to this study but are common problems when conducting survey research in Africa. Nonetheless, they raise a number of key concerns. The small sample size could lead to insufficient power to detect real effects on QoL. Hence, further studies with larger samples are required to fully test the models presented in the analyses. Nonetheless, the results suggest that when the effect size is sufficiently large, as is the case with both religiousness/spirituality and social support, the model is able to detect statistically significant associations. The use of a non-probability sample is also problematic. Despite the best efforts to ensure the sample-matched key characteristics of the population, one must be extremely cautious about generalising back to the wider population. The absence of easily accessible sample lists makes it very difficult to draw proper probability samples, which hinders survey research throughout Africa.

Table 4. Regression analyses for the relationship between religiousness/spirituality, perceived social support and socio-demographics and QoL (standardised beta coefficients).

	Model 1	Model 2	Model 3	Model 4
Religiousness/spirituality	**0.42**		**0.33**	**0.27**
Perceived social support		**0.44**	**0.36**	**0.27**
Age				−0.05
Male				
Female				−0.01
Married				
Never married				0.01
Divorced				0.02
Widowed				0.07
Orthodox				
Protestant				**0.14**
Catholic				0.03
No education				
Less than college education				0.03
College or University education				0.07
Own house/apartment with spouse no children				
Own house/apartment with spouse and children				−0.01
Own house/apartment with children no spouse				−0.15
Own house/apartment alone				−0.03
Other living arrangements				−0.10
Income from work				0.08
Pension income				0.01
Does not receive aid				
Receives aid				0.11
Number of children				0.06
Adjusted R^2	.171	.188	.285	.310

Note: Figures in bold are significant values at $p < .05$ level.

Hopefully as the national statistical agencies, in collaboration with NGOs, develop across the region, future studies will find it easier to draw such samples and conduct more rigorous survey research. However, the sample closely resembles the population in a number of key dimensions, such as religious affiliation, which suggests that the findings cannot be explained as the product of sampling bias. Finally, the absence of measures of health and/or functional limitation in the survey is a major oversight. Studies consistently show that these factors impact heavily on QoL amongst older people and it would have been useful to see the extent to which this was so for older Ethiopians. However, it is unlikely that including health measures in the model would have dramatically affected the relationship between either religiousness/spirituality and QoL or social support and QoL.

Nonetheless, these concerns notwithstanding, this study represents an important development in our understanding of the factors that influence QoL amongst older Ethiopians. As countries in Africa begin to undergo population ageing, it is important to anticipate the impact that this might have on the growing numbers of older people in the population. Hence, developing valid and reliable measures of QoL for use on the continent is crucial. This study demonstrates that the CASP scale is a viable instrument that can be used to monitor present and future levels of QoL in the older Ethiopian population. Hopefully researchers working elsewhere in Africa will be able to test the structure and utility of the CASP amongst older people in their countries to see if these findings are generalizable to the continent as a whole. Moreover, the study also contributes to the growing body of evidence that religiosity and spirituality are important factors for well-being in later life. The study shows that their meaning and impact on QoL are very similar even in very different cultural contexts. Overall the results suggest that organisations which are interested in securing good QoL for older people in Africa need to support and work with religious institutions and informal social networks as well as focus on alleviating material disadvantage.

Acknowledgements

References

Adebowale, S., Atte, O., & Ayeni, O. (2012). Elderly well-being in a rural community in North Central Nigeria, sub-Saharan Africa. *Public Health Research, 2*(4), 92−101. doi:10.5923/j.phr.20120204.05

Almedom, A.M. (2005). Social capital and mental health: An interdisciplinary review of primary evidence. *Social Science & Medicine, 61*(5), 943−964. doi:10.1016/j.socscimed.2004.12.025

Antonucci, T.C., Sherman, A.M., & Akiyama, H. (1996). Social networks, support, and integration. In J.E. Birren (Ed.), *Encyclopedia of gerontology* (pp. 505−515). San Diego, CA: Academic Press.

Ardelt, M. (2003). Effects of religion and purpose in life on elders' subjective well-being and attitudes toward death. *Journal of Religious Gerontology, 14*, 55−77.

Baker, D.L., Melnikow, J., Shoultz, J., Niederhauser, V., Diaz-Escamilla, R., & May Ying Ly, M. (2010). Translation of

health surveys using mixed methods. *Journal of Nursing Scholarship, 42*(4), 430−438.

Barrera, M., Sandler, I.N., & Ramsay, T.B. (1981). Preliminary development of a scale of social support − studies on college-students. *American Journal of Community Psychology, 9*(4), 435−447. doi:10.1007/bf00918174

Berkman, L.F., Glass, T., Brissette, I., & Seeman, T.E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine, 51*(6), 843−857.

Blane, D., Netuveli, G., & Bartley, M. (2007). Does quality of life at older ages vary with socio-economic position? *Sociology − The Journal of the British Sociological Association, 41*(4), 717−726. doi:10.1177/0038038507078927

Blane, D., Netuveli, G., & Montgomery, S.M. (2008). Quality of life, health and physiological status and change at older ages. *Social Science & Medicine, 66*(7), 1579−1587. doi:10.1016/j.socscimed.2007.12.021

Blixen, C.E., & Kippes, C. (1999). Depression, social support, and quality of life in older adults with osteoarthritis. *Image − The Journal of Nursing Scholarship, 31*(3), 221−226.

Börsch-Supan, A. (2005). *Health, ageing and retirement in Europe: First results from the Survey of Health, Ageing and Retirement in Europe: April 2005*. Mannheim: Mannheim Research Institute for the Economics of Aging (MEA).

Bowling, A. (2004). A taxonomy and overview of quality of life. In J. Brown, A. Bowling, & T. Flynn (Eds.), *Models of quality of life: A taxonomy, overview and systematic review of the literature* (pp. 6−77). Brussels: European Forum on Population Ageing Research.

Bowling, A. (2005a). *Ageing well: Quality of life in old age*. Milton Keynes: Open University Press.

Bowling, A. (2005b). *Measuring health: A review of quality of life measurement scales*. Milton Keynes: Open University Press.

Brown, T.A. (2006). *Confirmatory factor analysis for applied research*. New York: The Guilford Press.

Bush, A.L., Jameson, J.P., Barrera, T., Phillips, L.L., Lachner, N., Evans, G., ... Stanley, M.A. (2011). An evaluation of the brief multidimensional measure of religiousness/spirituality in older patients with prior depression or anxiety. *Mental Health, Religion & Culture, 15*(2), 191−203. doi:10.1080/13674676.2011.566263

Casale, M., Lane, T., Sello, L., Kuo, C., & Cluver, L. (2013). Conducting health survey research in a deep rural South African community: Challenges and adaptive strategies. *Health Research Policy and Systems, 11*, 14. doi:10.1186/1478-4505-11-14

Cohen, S., & Wills, T.A. (1985). Stress social support and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310−357.

Crimmins, E.M., Preston, S.H., & Cohen, B. (Eds.) (2011). The role of social networks and social integration. In *Explaining divergent levels of longevity in high-income countries* (pp. 83−95). Washington, DC: National Academies Press. Retrieved February 2, 2014, from http://www.ncbi.nlm.nih.gov/books/NBK62364/

Central Statistical Agency [Ethiopia] and ICF International. (2012). Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, MD: Central Statistical Agency and ICF International.

Ellison, C.G., Boardman, J.D., Williams, D.R., & Jackson, J.S. (2001). Religious involvement, stress, and mental health: Findings from the 1995 Detroit Area Study. *Social Forces, 80*(1), 215−249. doi:10.1353/sof.2001.0063

Ellison, C.G., & Levin, J.S. (1998). The religion-health connection: Evidence, theory, and future directions. *Health Education & Behavior, 25*(6), 700−720. doi:10.1177/109019819802500603

Ferlander, S. (2007). The importance of different forms of social capital for health. *Acta Sociologica, 50*(2), 115−128. doi:10.1177/0001699307077654

Fernández−Ballesteros, R. (2002). Social support and quality of life among older people in Spain. *Journal of Social Issues, 58*(4), 645−659. doi:10.1111/1540-4560.00282

Ferriss, A. (2002). Religion and the quality of life. *Journal of Happiness Studies, 3*(3), 199−215. doi:10.1023/a:1020684404438

Fetzer Institute, & National Institute on Aging. (1999). *Multidimensional measurement of religiousness/spirituality for use in health research: A report of the Fetzer Institute/National Institute on Aging Working Group*. Michigan: Fetzer Institute.

Gachuhi, J.M., & Kiemo, K. (2005). Research capacity on ageing in Africa: Limitations and ways forward. *Generations Review, 15*(2), 36−38.

Global Ageing. (2013). Ageing in Africa. Retrieved December 9, 2013, from http://www.global-ageing.eu/agafrica.html

Goldberg, M., Leclerc, A., Bonenfant, S., Chastang, J.F., Schmaus, A., Kaniewski, N., & Zins, M. (2007). Cohort profile: The GAZEL cohort study. *International Journal of Epidemiology, 36*(1), 32−39.

Gomez-Olive, F.X., Thorogood, M., Clark, B.D., Kahn, K., & Tollman, S.M. (2010). Assessing health and well-being among older people in rural South Africa. *Global Health Action, 3*, 23−35. doi:10.3402/gha.v3i0.2126

Gureje, O., Kola, L., Afolabi, E., & Olley, B.O. (2008). Determinants of quality of life of elderly Nigerians: Results from the Ibadan study of ageing. *African Journal of Medicine and Medical Sciences, 37*(3), 239−247.

Gutierrez, M., Tomas, J.M., Galiana, L., Sancho, P., & Cebria, M.A. (2013). Predicting life satisfaction of the Angolan elderly: A structural model. *Aging & Mental Health, 17*(1), 94−101. doi:10.1080/13607863.2012.702731

HelpAge International. (2011). Ageing in Africa (Vol. 35). Nairobi: HelpAge International.

Herrman, H., Metelko, Z., Szabo, S., Rajkumar, S., Kumar, S., Vanheck, G., . . . Kuyken, W. (1993). Study protocol for the world-health-organization project to develop a quality-of-life assessment instrument (WHQOL). *Quality of Life Research, 2*(2), 153−159.

Higgs, P., Hyde, M., Wiggins, R., & Blane, D. (2003). Researching quality of life in early old age: The importance of the sociological dimension. *Social Policy & Administration, 37*(3), 239−252. doi:10.1111/1467-9515.00336

Hyde, M., Wiggins, R.D., Higgs, P., & Blane, D.B. (2003). A measure of quality of life in early old age: The theory, development and properties of a needs satisfaction model (CASP-19). *Aging & Mental Health, 7*(3), 186−194. doi:10.1080/1360786031000101157

Ibikunle, P., Madueke, C., Maruf, F., Akosile, C., Ummunah, J., & Nwankwo, M. (2013). Selected socio-demographic variables and their effect on the quality of life of elderly individuals in a Southeast community of Nigeria. *Tropical Journal of Medical Research, 16*(1), 24−28.

Inglehart, R., & Welzel, C. (2011). The WVS cultural map of the world. Retrieved October 25, 2012, from http://pagines.uab.cat/seangolden/sites/pagines.uab.cat.seangolden/files/World%20Values%20Surveys%20maps%2020110606.pdf

Knesebeck, O.V., Wahrendorf, M., Hyde, M., & Siegrist, J. (2007). Socio-economic position and quality of life among older people in to European countries: Results of the SHARE study. *Ageing & Society, 27*, 269−284. doi:10.1017/s0144686×06005484

Koenig, H.G. (2006). Religion, spirituality and aging. *Aging & Mental Health, 10*(1), 1−3. doi:10.1080/13607860500308132

Koenig, H.G. (2009). Research on religion, spirituality, and mental health: A review. *Canadian Journal of Psychiatry, 54*(5), 283−291.

Koenig, H.G. (2010). Spirituality and mental health. *International Journal of Applied Psychoanalytic Studies, 7*(2), 116−122. doi:10.1002/aps.239

Koenig, H.G., & Larson, D.B. (2001). Religion and mental health: Evidence for an association. *International Review of Psychiatry, 13*(2), 67−78.

Krause, N. (2004). Common facets of religion, unique facets of religion, and life satisfaction among older African Americans. *Journals of Gerontology: Series B Psychological and Social Sciences, 59*(2), 109−117.

Kyobutungi, C., Egondi, T., & Ezeh, A. (2010). The health and well-being of older people in Nairobi's slums. *Global Health Action, 3*, 45−53. doi:10.3402/gha.v3i0.2138

Lee, E.O. (2007). Religion and spirituality as predictors of well-being among Chinese American and Korean American older adults. *Journal of Religion, Spirituality & Aging, 19*(3), 77−100.

Levin, J. (2010). Religion and mental health: Theory and research. *International Journal of Applied Psychoanalytic Studies, 7*(2), 102−115. doi:10.1002/aps.240

Levin, J.S., Chatters, L.M., & Taylor, R.J. (1995). Religious effects on health status and life satisfaction among black Americans. *Journals of Gerontology: Series B Psychological Science and Social Science, 50*(3), S154−S163.

Llewellyn, D.J., Lang, I., Lang, K., & Huppert, F. (2008). Psychological well-being is associated with higher levels of cognitive function. *International Journal of Psychology, 43*(3−4), 744−744.

Llewellyn, D.J., Lang, I.A., Langa, K.M., & Huppert, F.A. (2008). Cognitive function and psychological well-being: Findings from a population-based cohort. *Age and Ageing, 37*(6), 685−689. doi:10.1093/ageing/afn194

Lwanga-Natel, C., Charles, K., & Rusinow, A. (2011). Social protection for older people in the context of economic growth: The case for Ethiopia − issues, opportunities and choices. In M. Getu (Ed.), *People at risk: Towards a comprehensive social protection scheme in Ethiopia*. (pp. 21−37). Addis Ababa: ESSSWA.

Marmot, M.G., Banks, J., Blundell, R., Lessof, C., & Nazroo, J. (2003). *Health, wealth and lifestyles of the older population in England: The 2002 English longitudinal study of ageing*. London: Institute for Fiscal Studies.

Martinez-Martin, P., Prieto-Flores, M.-E., Forjaz, M., Fernandez-Mayoralas, G., Rojo-Perez, F., Rojo, J.-M., & Ayala, A. (2012). Components and determinants of quality of life in community-dwelling older adults. *European Journal of Ageing, 9*(3), 255−263. doi:10.1007/s10433-012-0232-x

McKenzie, K., Whitley, R., & Weich, S. (2002). *Social capital and mental health*. London: Jessica Kingsley.

McMunn, A., Nazroo, J., Wahrendorf, M., Breeze, E., & Zaninotto, P. (2009). Participation in socially-productive activities, reciprocity and wellbeing in later life: Baseline results in England. *Ageing & Society, 29*, 765−782. doi:10.1017/s0144686×08008350

Moberg, D.O. (2008). Disabilities, spirituality, and well-being in late life: Research foundations for study and practice. *Journal of Religion, Spirituality & Aging, 20*(4), 313−340.

Molzahn, A., Skevington, S.M., Kalfoss, M., & Makaroff, K.S. (2010). The importance of facets of quality of life to older adults: An international investigation. *Quality of Life Research, 19*(2), 293−298. doi:10.1007/s11136-009-9579-7

Muckenhuber, J., Stronegger, W.J., & Freidl, W. (2013). Social capital affects the health of older people more strongly than that of younger people. *Ageing & Society, 33*, 853−870. doi:10.1017/s0144686×12000219

Mwanyangala, M.A., Mayombana, C., Urassa, H., Charles, J., Mahutanga, C., Abdullah, S., & Nathan, R. (2010). Health status and quality of life among older adults in rural Tanzania. *Global Health Action, 3*, 36−44. doi:10.3402/gha.v3i0.2142

Nakigudde, J., Musisi, S., Ehnvall, A., Airaksinen, E., & Agren, H. (2009). Adaptation of the multidimensional scale of perceived social support in a Ugandan setting. *African Health Science, 9*(Suppl 1), S35−S41.

National Institute on Aging. (2007). *Growing Older in America: The Health and Retirement Study*. Bethesda, MD: NIA.

Nchinda, T.C. (2002). Research capacity strengthening in the South. *Social Science & Medicine, 54*(11), 1699−1711.

Netuveli, G., Wiggins, R.D., Hildon, Z., Montgomery, S.M., & Blane, D. (2006). Quality of life at older ages: Evidence from the English longitudinal study of aging (wave 1). *Journal of Epidemiology and Community Health, 60*(4), 357−363. doi:10.1136/jech.2005.040071

Ng, C.G., Amer Siddiq, A.N., Aida, S.A., Zainal, N.Z., & Koh, O.H. (2010). Validation of the Malay version of the multidimensional scale of perceived social support (MSPSS-M) among a group of medical students in Faculty of Medicine, University Malaya. *Asian Journal of Psychiatry, 3*(1), 3−6. doi:10.1016/j.ajp.2009.12.001

Norstrand, J.A., Glicksman, A., Lubben, J., & Kleban, M. (2012). The role of the social environment on physical and mental health of older adults. *Journal of Housing for the Elderly, 26*(1−3), 290−307. doi:10.1080/02763893.2012.651382

Nyqvist, F., Forsman, A.K., Giuntoli, G., & Cattan, M. (2013). Social capital as a resource for mental well-being in older people: A systematic review. *Aging & Mental Health, 17*(4), 394−410. doi:10.1080/13607863.2012.742490

Park, J., Roh, S., & Yeo, Y. (2012). Religiosity, social support, and life satisfaction among elderly Korean immigrants. *Gerontologist, 52*(5), 641−649. doi:10.1093/geront/gnr103

Peel, N.M., Bartlett, H.P., & Marshall, A.L. (2007). Measuring quality of life in older people: Reliability and validity of WHOQOL-OLD. *Australasian Journal on Ageing, 26*(4), 162−167. doi:10.1111/j.1741-6612.2007.00249.x

Peterson, M., & Webb, D. (2006). Religion and spirituality in quality of life studies. *Applied Research in Quality of Life, 1*(1), 107−116. doi:10.1007/s11482-006-9006-y

Pew Forum. (2011). Global Christianity − a report on the size and distribution of the world's Christian population. Washington, DC: Pew Research Center's Forum on Religion & Public Life. Retrieved January 1, 2013, from http://pewforum.org/Christian/Global-Christianity-worlds-christian-population.aspx

Pikhart, H., Nicholson, A., Pajak, A., Malyutina, S., Kubinova, R., Peasey, A., ... Marmot, M. (2007). Life-course social status and quality of life in early old age in Eastern Europe: The HAPIEE study. *European Journal of Public Health, 17*, 120−120.

Pillay, N.K., & Maharaj, P. (2013). Population Ageing in Africa. In P. Maharaj (Ed.), *Aging and health in Africa, international perspectives on aging* (pp. 11−51). New York, NY: Springer Science.

Ramlagan, S., Peltzer, K., & Phaswana-Mafuya, N. (2013). Social capital and health among older adults in South Africa. *BMC Geriatrics, 13*(1), 1−11. doi:10.1186/1471-2318-13-100

Roh, S., Lee, K.H., & Yoon, D.P. (2013). General well-being of Korean immigrant elders: The significance of religiousness/spirituality and social support. *Journal of Social Service Research, 39*(4), 483−497. doi:10.1080/01488376.2012.709451

Sawatzky, R., Ratner, P., & Chiu, L. (2005). A Meta-analysis of the relationship between spirituality and quality of life. *Social Indicators Research, 72*(2), 153−188. doi:10.1007/s11205-004-5577-x

Sexton, E., King-Kallimanis, B., Conroy, R., & Hickey, A. (2013). Psychometric evaluation of the CASP-19 quality of life scale in an older Irish cohort. *Quality of Life Research, 22*(9), 2549−2559. doi:10.1007/s11136-013-0388-7

Siedlecki, K., Salthouse, T., Oishi, S., & Jeswani, S. (2013). The relationship between social support and subjective well-being across age. *Social Indicators Research, 117*(2), 561−576. doi:10.1007/s11205-013-0361-4

Siegrist, J., & Wahrendorf, M. (2009). Participation in socially productive activities and quality of life in early old age: Findings from SHARE. *Journal of European Social Policy, 19*(4), 317−326. doi:10.1177/1350506809341513

Siegrist, J., Wahrendorf, M., von dem Knesebeck, O., Juerges, H., & Borsch-Supan, A. (2007). Quality of work, well-being, and intended early retirement of older employees − baseline results from the SHARE study. *European Journal of Public Health, 17*(1), 62−68. doi:10.1093/eurpub/ckl084

Skevington, S.M. (2002). Advancing cross-cultural research on quality of life: Observations drawn from the WHOQOL development. *Quality of Life Research, 11*(2), 135−144.

Stanley, M.A., Bush, A.L., Camp, M.E., Jameson, J.P., Phillips, L.L., Barber, C.R., ... Cully, J.A. (2011). Older adults' preferences for religion/spirituality in treatment for anxiety and depression. *Aging & Mental Health, 15*(3), 334−343. doi:10.1080/13607863.2010.519326

United Nations. (2002). *Report of the second world assembly on ageing*. New York, NY: Author.

United Nations. (2011). *World population prospects: The 2010 revision*. New York, NY: Department of Economic and Social Affairs, Population Division.

Wahrendorf, M., Ribet, C., Zins, M., & Siegrist, J. (2008). Social productivity and depressive symptoms in early old age-results from the GAZEL study. *Aging & Mental Health, 12*(3), 310−316. doi:10.1080/13607860802120805

Wahrendorf, M., & Siegrist, J. (2010). Are changes in productive activities of older people associated with changes in their well-being? Results of a longitudinal European study. *European Journal of Ageing, 7*(2), 59−68. doi:10.1007/s10433-010-0154-4

Wiggins, R.D., Higgs, P.F.D., Hyde, M., & Blane, D.B. (2004). Quality of life in the third age: Key predictors of the CASP-19 measure. *Ageing & Society, 24*, 693−708. doi:10.1017/s0144686×04002284

Wiggins, R.D., Netuveli, G., Hyde, M., Higgs, P., & Blane, D. (2008). The evaluation of a self-enumerated scale of quality of life (CASP-19) in the context of research on ageing: A combination of exploratory and confirmatory approaches. *Social Indicators Research, 89*(1), 61−77. doi:10.1007/s11205-007-9220-5

Wongpakaran, T., Wongpakaran, N., & Ruktrakul, R. (2011). Reliability and validity of the multidimensional scale of perceived social support (MSPSS): Thai Version. *Clinical Practice and Epidemiology in Mental Health, 7*, 161−166. doi:10.2174/1745017901107010161

Worthington, E.L., Kurusu, T.A., McCollough, M.E., & Sandage, S.J. (1996). Empirical research on religion and psychotherapeutic processes and outcomes: A 10-year review and research prospectus. *Psychological Bulletin, 119*(3), 448−487.

Yoon, D.P. (2006). Factors affecting subjective well-being or rural elderly individuals: The importance of spirituality, religiousness, and social support. *Journal of Religion & Spirituality in Social Work, 25*, 59−75.

Yoon, D.P., & Lee, E.K.O. (2007). The impact of religiousness, spirituality, and social support on psychological well-being among older adults in rural areas. *Journal of Gerontological Social Work, 48*, 281−298.

Zaninotto, P., Falaschetti, E., & Sacker, A. (2009). Age trajectories of quality of life among older adults: Results from the English longitudinal study of ageing. *Quality of Life Research, 18*(10), 1301−1309. doi:10.1007/s11136-009-9543-6

Zaninotto, P., Pierce, M., Breeze, E., de Oliveira, C., & Kumari, M. (2010). BMI and waist circumference as predictors of well-being in older adults: Findings from the English longitudinal study of ageing. *Obesity, 18*(10), 1981−1987. doi:10.1038/oby.2009.497

Zimet, G., Dahlem, N., Zimet S, & Farley, G. (1998). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*(1), 30−41.

Zinnbauer, B.J., Pargament, K.I., & Scott, A.B. (1999). The emerging meanings of religiousness and spirituality: Problems and prospects. *Journal of Personality, 67*(6), 889−919. doi:10.1111/1467-6494.00077

Zins, M., Bonenfant, S., Carton, M., Coeuret-Pellicer, M., Gueguen, A., Gourmelen, J., ... Goldberg, M. (2010). The CONSTANCES cohort: An open epidemiological laboratory. *BMC Public Health, 10*. doi:10.1186/1471-2458-10-479

Appendix 1. Descriptive statistics for each CASP item: percentage of the sample who give each response option, means, standard deviations, skewness and kurtosis (*items reverse coded).

		Never (%)	Not often (%)	Sometimes (%)	Often (%)	Always (%)	Mean	Std. deviation	Skewness	Kurtosis
C1*	My age prevents me from doing the things I would like to	60,70	5,10	12,60	12,10	9,30	3,96	1,44	−0,94	−0,69
C2*	I feel that what happens to me is out of my control	64,50	10,30	10,70	6,50	7,90	4,17	1,31	−1,36	0,48
C3*	I feel left out of things	71,50	5,10	10,30	5,60	7,50	4,28	1,28	−1,55	0,99
A1	I can do the things that I want to do	4,70	6,10	27,60	28,50	33,20	2,21	1,11	0,68	−0,13
A2	I feel that I can please myself what I can do	1,40	3,30	14,00	30,80	50,50	1,74	0,92	1,24	1,25
A3*	Shortage of money stops me from doing the things that I want to do	24,80	8,40	28,50	14,50	23,80	2,96	1,48	0,09	−1,30
P1	I look forward to each day	1,90	1,40	10,30	20,60	65,90	1,53	0,88	1,88	3,61
P2	I feel that my life has meaning	1,90	0,90	9,30	21,00	66,80	1,50	0,85	2,00	4,32
P3	I enjoy the things that I do	0,90	0,50	12,10	26,20	60,30	1,56	0,80	1,48	2,32
SR1	I feel full of energy these days	7,90	9,30	36,40	26,20	20,10	2,59	1,15	0,37	−0,42
SR2	I feel that life is full of opportunities	4,70	4,70	25,20	26,60	38,80	2,10	1,12	0,83	0,07
SR3	I feel that the future looks good for me	2,30	3,30	15,40	17,80	61,20	1,68	1,00	1,44	1,43

Appendix 2: Standardised loadings (λ_i), measurement errors (δ_i), factor correlations (φ_{ij}), composite reliability (ρ_{cr}) and fit indices from competing CFA models of the CASP-12 questionnaire.

	Model-I		Model-II	
Items of constructs	λ_i	δ_i	λ_i	δ_i
Control (CTL)				
a. *my age prevents*[†]	0.85*	0.28	0.83*	0.31
b. *out of my control*[†]	0.79*	0.38	0.82*	0.33
c. *left out of things*[†]	0.57*	0.67	0.55*	0.69
Composite reliability for CTL	0.69 (0.58, 0.76)		0.69 (0.60, 0.75)	
Autonomy (AUT)				
d. *I can do things*	0.64*	0.59	0.63*	0.60
e. *I can please myself*	0.60*	0.64	0.61*	0.63
f. *shortage of money*[†]	0.37*	0.86	−	−
Composite reliability for AUT	0.75 (0.68, 0.78)		0.76 (0.69, 0.77)	
Self-Realisation (SER)				
g. *full of energy*	0.65*	0.58	0.65*	0.58
h. *life is full of opportunities*	0.74*	0.45	0.73*	0.46
i. *future looks good*	0.71*	0.50	0.72*	0.49
Composite reliability for SER	0.70 (0.60, 0.77)		0.70 (0.60, 0.77)	
Pleasure (PLS)				
j. *forward to each day*	0.65*	0.58	0.65*	0.57
k. *life has meaning*	0.87*	0.25	0.86*	0.25
l. *enjoy the things*	0.64*	0.60	0.64*	0.59
Composite reliability for PLS	0.64 (0.62, 0.67)		0.65 (0.62, 0.67)	

Items of constructs	Model-I		Model-II	
	λ_i	δ_i	λ_i	δ_i
Factor correlations (φ_{ij})				
CTL, AUT	0.89 (0.79, 0.95)		0.85 (0.74, 0.96)	
CTL, SER	0.67 (0.57, 0.77)		0.67 (0.57, 0.77)	
CTL, PLS	0.61 (0.50, 0.71)		0.61 (0.51, 0.71)	
AUT, SER	0.84 (0.74, 0.94)		0.85 (0.75, 0.94)	
AUT, PLS	0.84 (0.73, 0.95)		0.91 (0.80, 0.96)	
SER, PLS	0.82 (0.73, 0.92)		0.82 (0.73, 0.92)	
Goodness of fit indices[#]				
CFI	0.917		0.954	
RMSEA (90% CI)	0.093 (0.075, 0.111)		0.075 (0.053, 0.097)	
Chi-square(df)	136.3[*](48)		222.8(49)	
Chi-square difference(df), p	−		32.2(1), <0.01	

[*]$p < 0.05$; [#]scaled for non-normality; figures in parentheses are 95% confidence intervals for estimates; [†]reverse coded items.