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Ann Bowling, Paul Stenner

► **To cite this version:**

Ann Bowling, Paul Stenner. Which measure of quality of life performs best in older age - the OPQOL, CASPE-19 or WHOQOL-OLD?. *Journal of Epidemiology and Community Health*, 2010, 65 (3), pp.273. 10.1136/jech.2009.087668 . hal-00567054

HAL Id: hal-00567054

<https://hal.science/hal-00567054>

Submitted on 18 Feb 2011

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Ann Shorter opqol casp whoqol MS ID#: JECH/2009/087668

Abstract: 247 words; 24 pages; text: 3217; references 15; tables x 5. Supplementary files of: Appendices x2, Tables x4

**Which measure of quality of life performs best in older age?
A comparison of the OPQOL, CASP-19, WHOQOL-OLD**

Ann Bowling BSc, MSc, PhD, FFPH Professor of health services research

Department of Primary Care and Population Sciences

University College London

Hampstead Campus

London NW3 2PF

Tel: 0207 830 2239; fax: 0207 794 1224; email: a.bowling@ucl.ac.uk

Paul Stenner, BSc, MSc, PhD

Professor of Psychology

School of Applied Social Sciences

University of Brighton

Sussex

p.stenner@brighton.ac.uk

Correspondence to: Professor A Bowling at address above

Key words: quality of life, ageing, psychometric, reliability, validity

Running head: Quality of life measurement

Abstract

Background: Most measures of quality of life (QoL) are based on 'expert' opinions. This paper describes a new measure of QoL in older age, the Older People's QoL Questionnaire (OPQOL), which is unique in being derived from the views of lay people, cross-checked against theoretical models for assessment of comprehensiveness. Its performance was assessed cross-sectionally and longitudinally. It was compared with two existing QoL measures in the cross-sectional studies in order to identify the optimal measure for use with older populations.

Methods: Analyses of the performance of the OPQOL were based on three surveys of older people living at home in Britain in 2007-8: one population survey of people aged 65+ ; one focused enumeration survey of ethnically diverse older people aged 65+ ; one follow-up of a population survey of people aged 65+ at baseline in 1999/2000.

Measures: QoL (OPQOL, CASP-19, WHOQOL-OLD), health, social and socio-economic circumstances. The CASP-19 and WHOQOL-OLD were not administered to the longitudinal sample in order to reduce respondent burden.

Results: Psychometric tests were applied to each QoL measure. The OPQOL, CASP-19 and WHOQOL-OLD performed well with the cross-sectional samples. Only the OPQOL met criteria for internal consistency in the Ethnibus samples.

Conclusion: The OPQOL is of potential value in the outcome assessment of health and social interventions which can have a multidimensional impact on people's lives. Further research is needed to examine whether differences by ethnicity reflect real differences in QoL, methodological issues, variations in expectations or cultural differences in reporting.

What is already known: Increasing numbers of older people, higher expectations for 'a good life', and demands for health and social care, have led to international interest in the enhancement, and measurement, of quality of life (QoL) in older age.

QoL is a subjective concept, yet most measures of QoL are based primarily or partly on 'expert' opinions.

What this paper adds: This paper focuses on the testing of a new measure of QoL, the Older People's QoL Questionnaire (OPQOL), which was derived entirely from the views of older people in Britain, cross-checked against theoretical models for comprehensiveness.

The OPQOL performed well in three samples of older people in Britain, one of which comprised people from ethnic minority groups. It is of potential value in the outcome assessment of health and social interventions, which can have a multidimensional impact on people's lives.

Policy implications:

Health and social care interventions increasingly aim for improvement of quality of later life as an end-point. Their impact can be multi-faceted and, as such, their evaluation necessitates the use of a multi-dimensional measure of quality of life, and one which also has social relevance.

The Older People's Quality of Life Questionnaire (OPQOL) is of potential value in descriptive and evaluative research. The research reported here supports its use in older populations in Britain. It awaits testing in other countries, and with different ethnic minority population groups.

Background

QoL has become a commonly used endpoint in the evaluation of multi-sector public policy, including health, social, community and environmental policy actions [1]. For policy outcomes to be measured with any validity, measures of QoL need to have social, as well as policy, relevance, to be meaningful to people's lives, and to be carefully conceptualised and constructed

Lawton [2-6] developed a popularly cited quadripartite concept of QoL, proposing that the 'good life' (QoL) may be represented by behavioural and social competence (health, cognition, time use, social behaviour), perceptions of QoL (subjective evaluation of each domain of life), psychological well-being (mental health, cognitive judgements of life satisfaction, positive-negative emotions) and the external, objective, physical environment (housing, economic indicators). However, there is no consensus about its conceptual definition or measurement [7], and most investigators have based their concepts on experts' opinions rather than the perspectives of lay people. This has the consequence that there is little empirical data on the extent to which the items included in measurement scales have any relevance to people. Thus it is increasingly important to develop a multidimensional model and measure of quality of life, for use in both descriptive and evaluative multi-sector policy research, which reflects the views of the population concerned, with cross sectional and longitudinal applicability. Elicitation of people's own views of QoL in this process is particularly important because QoL is a subjective concept.

What are older people's views of QoL? Survey and qualitative research with people aged 65+, living at home in Britain, reported that the central planks of QoL which were emphasised by respondents were psychological well-being and positive outlook, having health and functioning, social relationships, leisure activities, neighbourhood resources, adequate financial circumstances and independence. [7-10] This research led to the development of the Older People's Quality of Life Questionnaire (OPQOL), which is unique in being derived from the views of a representative sample of older people, cross-checked against theoretical models for assessment comprehensiveness.

Methods

The aim was to analyse the performance of the OPQOL and compare it with two existing, widely used measures of QoL: the CASP-19 (Control, Autonomy, Self-realisation, Pleasure - 19 items) [11], and the WHOQOL-OLD (World Health Organization measure of QoL in older age - 24 items [12, 13]. The analyses were based on three national surveys of people aged 65+, living at home in Britain. Two of these three surveys were cross-sectional, and the third was longitudinal (See WEB ONLY Appendix 1):

i) Ethnibus survey of people aged 65+ responding to two waves of the national Ethnibus Surveys, (<http://www.ethnibus.com>) in 2008. This is a rolling face-to-face interview survey with adults aged 16+, living at home, based on focused enumeration, stratified random sampling of postcodes in Britain, and statistically robust sampling of people in common ethnic minority groups in Britain; the response rate was 70% (n=400).

ii) ONS survey of people aged 65+ responding to two waves of the Office for National Statistics (ONS) national Omnibus Survey (<http://www.statistics.gov.uk>) in 2008. This is a rolling face-to-face interview survey with adults aged 16+, living at home, based on a stratified random sample of postcodes across Britain; the response rate was 61% (n=589).

iii) QoL follow-up survey in 2007-8, of people living at home in Britain, aged 65+ at baseline, who had responded to four ONS national Omnibus interview surveys. These were based on stratified random samples of postcodes across Britain during 1999/2000; response was 77% (n=999) at baseline and 58% among survivors (n=287) at 2007-8 follow-up. The QoL follow-up survey is included here as the longitudinal design provided the opportunity to test the causal model of the OPQOL, as well as a willing sample for test-retest reliability assessment.

[WEB ONLY Appendix 1 here](#)

Prior to administration in the surveys reported here, the items in the OPQOL were pre-tested with 179 volunteers from a previous QoL follow-up survey wave (in 2006). Statistical tests of reliability and validity were applied. Following amendments, it was further assessed for face and content validity with three focus groups of older people. Two versions of the OPQOL resulted from these processes, consisting of 32- and 35-items (See WEB ONLY Appendix 2).

[WEB ONLY Appendix 2 here](#)

Measures

The OPQOL was administered in all three surveys. The CASP-19 [11] and the WHOQOL-OLD [12, 13] were administered in the two face-to-face interview surveys only; it would have been too cognitively burdensome to have included all three scales in the postal, self-administration mode. WEB ONLY Appendix 2 displays the OPQOL, summarises its development, and briefly summarises the CASP-19 and WHOQOL-OLD.

Independent self-ratings of global QoL, and of its domains, were included in the questionnaire in order to distinguish between the constituents of, and influences on, QoL [14]. Also included were standard socio-demographic items, self-rated active ageing, items measuring health and psycho-social circumstances. [7] Ethnic status was measured using a standard item about ethnic identity in the UK. The group labelled as Black Caribbean also included small numbers of people who described themselves as Black, Black African, and Black British. The item used would not necessarily be applicable to populations in other countries, because it reflects close connections between New Commonwealth countries and ethnic minority groups in the UK. [15]

Statistical analysis

Descriptive analyses included frequencies, chi-square tests, and Spearman's rho correlations. Tests of scale reliability were applied in order to assess the extent to

which scale items measure the same construct, with freedom from random error (internal consistency). Reliability tests applied to the QoL scales included Cronbach's alpha test of homogeneity. This is the strength of the association between each scale item and the full scale, item-item and item-total correlations. Test-retest reliability of the stability of the newly developed OPQOL was assessed by mailing a second copy of the questionnaire to a random sub-sample of 50 follow-up QoL Survey respondents, four weeks after return of the first questionnaire (response rate: 76%/38).

Criterion (concurrent) validity is the independent corroboration that the scale is measuring what it intends to measure. This can only be measured by proxy with subjective measures, as there is no gold standard. Proxy variables used here included independent self-ratings of QoL overall and of QoL domains (health, social relationships, independence/control over life/freedom, home and neighbourhood, psychological/emotional well-being, financial circumstances, social and leisure activities). Construct (convergent and discriminant) validity requires corroboration that scales measure the underlying construct they purport to measure. This was tested by assessing Spearman's rho correlations between the QoL scales and similar variables (for convergent validity that the scale should correlate with similar or hypothesised variables) and dissimilar variables (for discriminant validity that there should be low correlations between scales and variables not expected to be associated).

Multiple regression was used to assess validity further by examining the ability of theoretically relevant variables to predict total QoL scores. A hierarchical approach was used, with independent variables entered in their theoretical order of importance. Statistical significance was set at $P < 0.05$. The variables entered did not correlate by more than 0.732; tests for multicollinearity were satisfied. Socio-demographic variables were entered to adjust for their effects.

Results

Characteristics of samples

Just over half of each sample comprised women (52%/207 Ethnibus, 55%/324 ONS, 54%/154 QoL follow-up). While most Ethnibus respondents were aged 65<75 (91%/363), just over half of ONS Omnibus (55%/326), and less than a fifth of QoL follow-up respondents (17%/47), were aged 65<75. Thirty eight per cent (152) of the Ethnibus sample were Indian, 29% (117) were Pakistani, 22% (86) were Black Caribbean and 11% (45) were Chinese. Most, 94% (555) of the ONS Omnibus sample were white British; all QoL follow-up respondents were White British. In reflection of their younger age, more of the Ethnibus than other respondents were married or cohabiting (58%/230, 49%/285, 49%/138 respectively). Fewer Ethnibus than the other respondents were home owners (532%/208, 73%/429, 85%/239 respectively); and fewer lived alone (5%/19, 48%/286, 49%/137 respectively) (All differences were statistically significant at least at $p < 0.01$.) For detailed characteristics of the samples, see WEB ONLY Table 1

[WEB ONLY Table 1 here](#)

Distributions of samples on QoL scales

Few, 12%/70, of the ONS Omnibus sample, compared with more, 45%/113 of the older QoL follow-up sample, and 73%/290 of the Ethnibus sample were in the lowest two OPQOL categories (<119), indicating worse QoL (see WEB ONLY Table 2)

[WEB ONLY Table 2 here](#)

The Ethnibus and ONS cross-sectional samples only were administered the CASP-19 and WHOQOL-OLD. Consistent with the OPQOL findings, 23%/94 of Ethnibus respondents were in the worst two CASP-10 categories (<29), compared with 8%/43 of ONS respondents; 25%/100 of the Ethnibus sample fell in the worst two WHOQOL-OLD categories, compared with 15%/80 of the ONS respondents (see WEB ONLY Tables 3 and 4).

[WEB ONLY Tables 3 and 4 here](#)

Further analyses by total QoL scores and ethnicity in the Ethnibus sample showed that 58% (26) of Chinese people scored a good QoL with the OPQOL, compared with 28% (33) of Pakistani, 20% (31) of Indian, and 23% (31) of Black Caribbean people (Chi-square test 28.064, 2 degrees of freedom, $p < 0.001$) (caution: smaller numbers). The CASP-19 and WHOQOL-OLD total scores showed no differences by ethnicity. Differences by ethnicity were not analysed in the other samples due to their low numbers in ethnic minority groups.

Reliability

The reliability criterion for item-total correlations (the correlation of the item with the scale total with that item omitted) is that the item should correlate with the total scale by at least 0.20. With three exceptions, the 35 full OPQOL items met this criterion for all three samples (the exceptions were in the Ethnibus sample with items 10, 12, and 32; but as Cronbach's alpha was not improved by their removal, and they performed well in validity tests, they were retained). Six of the 19 CASP items failed to meet this criterion (Ethnibus: items 1, 2, 5, 17, 18; ONS: item 6). Fourteen of the 24 WHOQOL-OLD items failed this criterion in the Ethnibus sample only. As expected, all items correlated more highly with similar, than dissimilar, items in the scales.

Cronbach's alphas for the OPQOL in all three samples satisfied the $0.70 < \alpha < 0.90$ threshold for internal consistency: $\alpha = 0.748$ (Ethnibus survey), $\alpha = 0.876$ (ONS Omnibus survey), $\alpha = 0.901$ (QoL follow-up survey). The CASP-19 and the WHOQOL-OLD both satisfied the threshold for Cronbach's alpha in the ONS sample ($\alpha = 0.866$ and $\alpha = 0.849$ respectively), but neither met this in Ethnibus ($\alpha = 0.553$ and $\alpha = 0.415$ respectively) (see earlier, neither were administered in the QoL follow-up sample).

The four-week test-retest correlations, assessed among QoL follow-up survey respondents, ranged from moderate to high ($\rho = 0.403-0.782$). Lower correlations were explained by reported life changes in the intervening month, demonstrating the difficulties of test-retest exercises in older populations. Respondents' comments at follow-up about life changes in the last four weeks illustrate this:

'About four days ago the plaster was taken off my left hand so now I can go on buses again - my only means of regular transport apart from volunteer drivers, a few friends and taxis. Anyway it means I am free';

'My husband of nearly 60 years was told he has lung cancer so it has changed very much how I feel. We are trying to be as normal as possible but it's very hard;'

'My daughter and her young son have now left our home and acquired her own house. We miss them a lot;'

'My husband has just come home after spending another two weeks in hospital (suspected heart attack).'

Validity

In order to test the criterion (also known as concurrent) validity of the QoL scales, all respondents were asked to rate the 'QoL of their lives overall' and by area of life ('QoL domain'), using 5-point scales from 'Very good' to 'Very bad'. The criterion validity of all three QoL scales was indicated by their moderate to strong, significant correlations with global self-rated QoL: the Spearman's rho correlations for the OPQOL by self-rated QoL overall in each sample were: Ethnibus: -0.347; ONS: -0.602; QoL follow-up: -0.659. For the CASP, in the two cross-sectional samples, they were: Ethnibus: -0.273; ONS: -0.577; and for the WHOQOL-OLD, in the two cross-sectional samples, they were: Ethnibus: -0.128; ONS: -0.466. All correlations significant at least at $p < 0.01$, with the exception of WHOQOL-OLD in the Ethnibus sample which was $p < 0.05$. (Minus signs simply reflect opposite coding directions.)

The validity of the OPQOL was further supported by significant correlations between its sub-scales and the independent QoL domain ratings, in theoretically expected, similar directions [7] (e.g. OPQOL health and functioning sub-scale correlated with self-rated health: Spearman's rho: Ethnibus -0.122 ($p < 0.05$); ONS Omnibus -0.679 ($p < 0.01$); QoL Follow-up -0.713 ($p < 0.01$). There were no significant correlations with dissimilar pairs (e.g. health and religion), again as expected.

The CASP-19 Control and Autonomy sub-scales and the WHOQOL-OLD Autonomy sub-scale also correlated significantly, as expected in similar directions, with self-rated independence, control over life and freedom in the ONS sample (rho: -0.472, $p < 0.01$; (rho: -0.466, $p < 0.01$ respectively), but not in the Ethnibus sample. The WHOQOL-OLD Sensory abilities sub-scale correlated significantly, again as expected, with self-rated health in the ONS (rho: -0.322, $p < 0.01$), but not Ethnibus sample. The WHOQOL-OLD Intimacy sub-scale correlated significantly, also as expected, with the social relationships domain in the ONS sample (rho: -0.330, $p < 0.01$), but not in the Ethnibus sample.

In support of construct (convergent) validity, the OPQOL correlated moderately-strongly in the same direction, as hypothesised[7], with self-rated health status ('compared with others of same age') in each sample: OPQOL: Ethnibus -0.364; ONS -0.543; QoL follow-up -0.628;. The CASP-19 and WHOQOL-OLD correlations in the two cross-sectional samples were also in the same direction and significant,

although slightly weaker (CASP-19: Ethnibus -0.238; ONS -0.530; WHOQOL-OLD: Ethnibus -0.138; ONS -0.465; all $p < 0.01$). (Minus signs simply reflect different directions of coding.)

Multivariable analyses

Multivariable analyses were conducted with each sample in order to examine independent predictors of the OPQOL, CASP-19 and WHOQOL-OLD. For comparability, the same independent variables were entered into each model. On the basis of the literature, [7] optimum scores on each measure were hypothesised to be associated with optimum QoL: self-rated active aging; independent self-ratings of QoL domains; social activities and help from social network members; self-rated health status and physical functioning (ADL); age, sex, marital status and housing tenure. The QoL follow-up sample also provided an opportunity to test the causal model underpinning the OPQOL.

OPQOL

The cross-sectional model for the QoL follow-up sample was highly significant (see Table 1). Perceptions of ageing more actively, having optimal self-ratings of health, independence, home and neighbourhood, psychological well-being and finances, more social activities and female sex significantly, and independently, predicted optimal OPQOL scores. The amount of explained variance of OPQOL scores in the model was high at 77% (Adjusted R^2 0.774).

Table 1. Multiple regression of predictors of OPQOL: QoL follow-up sample (final model)		
Independent predictor variables	Unstandardised B	95% confidence interval (2-tailed t-test)
	Standardised Beta	P=
Block 1:		
Self-rated active ageing	-2.637 -0.184	-4.071- -1.203 (-3.626) 0.0001
Block 2:		
QoL domain self-ratings:		
QoL: health	-1.965 -0.122	-3.759- -0.172 (-2.162) 0.032
QoL social relationships	-1.341 -0.080	-2.988- 0.306 (-1.606) 0.110ns
QoL: independence, control over life, freedom	-1.669 -0.106	-3.194- -0.144 (-2.158) 0.032
QoL: home and neighbourhood	-2.108 -0.106	-3.660- -0.556 (-2.679) 0.008
QoL: psychological and emotional well-being	-3.258 -0.193	-4.768- -1.749 (-4.257) 0.0001
QoL: financial circumstances	-5.223 -0.273	-6.669- -3.777 (-7.124) 0.0001
QoL: leisure and social activities	-0.681 -0.043	-2.320- 0.957 (-0.820) 0.413ns
Block 3:		
Total number of different social activities done in last month (out of listed 8)	1.108 0.150	0.375- 1.842 (2.981) 0.003
Total number of relatives, friends, neighbours who would help with practical tasks	0.132 0.060	-0.032- 0.297 (1.586)

		0.114ns
Block 4:		
Self-rated health status, compared to others of same age	-0.562 -0.041	-2.141- 1.018 (-0.701) 0.484ns
ADL total score (sum of ability to: walk 400 yards, do heavy housework, shop/carry heavy bags, steps/stairs)	0.238 0.062	-0.166- 0.642 (1.163) 0.246ns
Block 5:		
Age	0.008 0.004	-0.157- 0.173 (0.095) 0.925ns
Sex	3.303 0.118	1.279- 5.328 (3.219) 0.002
Marital status	0.759 0.055	-0.250- 1.768 (1.484) 0.140ns
Housing tenure	-0.797 -0.053	-1.831- 0.237 (-1.520) 0.130ns
Constant	153.985	
R2	0.791	
Adjusted R2	0.774	
Anova F statistic; p=	45.794; 0.0001	

The OPQOL models in both the ONS and Ethnibus samples were also highly significant. Again, optimal ratings of active ageing, most self-rated QoL domains and also self-rated health status were significant in both samples. The model, explained 65% of the variance in OPQOL scores (Adjusted R²: 0.653) in the ONS sample and 43% (Adjusted R²: 0.430) in the Ethnibus sample (Table 2).

Table 2. Multiple regression of predictors of <u>OPQOL</u>: ONS Omnibus and Ethnibus samples (final models)				
Independent predictor variables	ONS Omnibus:		Ethnibus:	
	Unstandardised B Standardised Beta	95% confidence Interval (2-tailed t-test) P=	Unstandardised B Standardised Beta	95% confidence Interval (2-tailed t-test) P=
Block 1:				
Self-rated active ageing	-1.515 -0.103	-2.507- -0.523 (-3.000) 0.003	-1.652 -0.167	-2.464- 0.839 (-3.998) 0.0001
Block 2:				
QoL domain self-ratings:				
QoL: health	-1.531 -0.104	-2.756- -0.307 (-2.457) 0.014	-1.044 -0.085	-1.980- -0.109 (-2.194) 0.029
QoL social relationships	-1.503 -0.097	-2.577- -0.430 (-2.751) 0.006	-0.213 -0.017	-1.165- 0.739 (-0.439) 0.661ns
QoL: independence, control over life, freedom	-2.081 -0.133	-3.231- -0.931 (-3.556) 0.0001	-0.678 -0.055	-1.639- 0.284 (-1.386) 0.167ns
QoL: home and neighbourhood	-0.730 -0.040	-1.912- 0.451 (-1.214) 0.225ns	-3.013 -0.245	-4.022- -2.004 (-5.870) 0.0001
QoL: psychological and emotional well-being	-1.424 -0.084	-2.611- -0.237 (-2.356) 0.019	-2.033 -0.161	-3.078- -0.987 (-3.821) 0.0001
QoL: financial circumstances	-3.362 -0.207	-4.366- -2.358 (-6.577) 0.0001	-1.952 -0.158	-2.887- -0.016 (-4.103) 0.0001
QoL: leisure and social activities	-2.047 -0.146	-3.118- -0.977 (-3.757) 0.0001	-2.184 -0.191	-3.093- -1.275 (-4.723) 0.0001

Block 3:				
Total number of different social activities done in last month (out of listed 8)	0.843 0.112	0.335- 1.351 (3.259) 0.001	-0.401 -0.051	-1.012- 0.211 (-1.288) 0.198ns
Total number of relatives, friends, neighbours who would help with practical tasks	0.106 0.080	0.035- 0.177 (2.949) 0.003	-0.008 -0.005	-0.136- 0.120 (-0.125) 0.900ns
Block 4:				
Self-rated health status, compared to others of same age	-1.289 -0.100	-2.298- -0.279 (-2.507) 0.012	-2.443 -2.228	-3.445- -1.441 (-4.792) 0.0001
ADL total score (sum of ability to: walk 400 yards, do heavy housework, shop/carry heavy bags, steps/stairs)	-0.009 -0.003	-0.279- 0.260 (-0.069) 0.945ns	0.001 0.001	-0.276- 0.278 (0.007) 0.994ns
Block 5:				
Age	0.044 0.022	-0.073- 0.162 (0.742) 0.458ns	-0.209 -0.071	-0.428- 0.011 (-1.867) 0.063ns
Sex	0.612 0.021	-0.914- 2.139 (0.788) 0.431ns	0.055 0.003	-1.575- 1.686 (0.067) 0.947ns
Marital status	-0.341 -0.027	-1.046- 0.364 (-0.950) 0.342ns	0.182 0.014	-0.817- 1.181 (0.358) 0.721ns
Housing	-0.286	-1.060-	-0.632	-1.326-

tenure	-0.020	0.488 (-0.726) 0.468ns	-0.069	0.061 (-1.793) 0.074ns
Constant	159.694		176.681	
R2	0.663		0.453	
Adjusted R2	0.653		0.430	
Anova F statistic; p=	62.853; 0.0001		19.814; 0.001	

The variables included in the test of the model underpinning the OPQOL, in the QoL follow-up sample, were the baseline indicators which reflected the components chosen for the OPQOL domains (health and functional status, practical help received, social support and activities, perceived quality of neighbourhood, psychological outlook (GAP score for social comparisons and expectations; self-efficacy), plus standard socio-demographic indications to control for their effects.

This model explained 56% of the variance in OPQOL scores (Adjusted R²: 0.563). As number of different social activities was not significant in the model, a reduced model was conducted excluding this variable. Health status and number of diagnosed medical conditions, help and social support, perceptions of neighbourhood and feeling safe, social comparisons (comparing ones' financial and living circumstances with others who are worse off), feelings of self-efficacy and control, then explained 48% of the variance in OPQOL scores in expected directions (Adjusted R²: 0.481). The overall model was highly significant in general support of the OPQOL (see Table 3).

Table 3. Causal model underpinning OPQOL. Multiple regression of <u>baseline+ predictors of OPQOL</u> at follow-up++ : QoL follow-up sample (final model)		
Independent predictor variables	Unstandardised B Standardised Beta	95% confidence Interval (2-tailed t-test) P=
Final model 5:		
Block 1:		
Self-rated health compared with others of same age	-4.220 -0.318	-5.643- -2.798 (-5.846) 0.0001
No. of diagnosed medical conditions	-1.710 -0.136	-3.016- -0.404 (-2.579) 0.011
Block 2:		
No. of 5 listed areas can call for help and support with	6..368 0.132	1.837- 10.900 (2.769) 0.006
Married/cohabiting vs. single, widowed, divorced	-2.811 -0.097	-5.724- 0.103 (-1.901) 0.059ns
Block 3:		
Self-rating of neighbourhood score (quality, problems)	-3.176 -0.199	-4.665- -1.688 (-4.205) 0.0001
Feels safe walking alone day+/-night score	3.850 0.099	0.268- 7.433 (2.118) 0.035
Block 4:		
GAP score: social comparisons worse, same or better off than others	-7.440 -0.227	-10. 504- -4. 376 (-4.784) 0.0001
Self-efficacy score	-2.145 -0.155	-3.461- -0.829

		(-3.211) 0.002
Block 5:		
Age	-0.486 -0.221	-0.698- -0.274 (-4.510) 0.001
Sex	3.077 0.109	0.402- 5.751 (2.267) 0.024
Housing tenure: home owner/mortgage vs. rent/other	1.149 0.035	-1.999- 4.297 (0.719) 0.473ns
Constant	175.666	
R2	0.505	
Adjusted R2	0.481	
Anova F statistic; p=	21.629; 0.0001	

+ 1999/2000; ++ 2007/8

ns Not statistically significant at least the 0.05 level

CASP-19

The CASP-19 was assessed in the two ONS and Ethnibus samples. The amount of explained variance in CASP-19 scores in the ONS sample explained by the model was 57% (Adjusted R²: 0.568); the model was highly significant, and in expected directions. The variables which retained significance in the model were five of the domain ratings, health and functioning. In contrast, the CASP-19 model for the Ethnibus sample was weak: the amount of explained variance in CASP-19 scores was just 14% (Adjusted R²: 0.141), although the model was still significant. The variables which were significant were self-rated active ageing, and three of the seven QoL domain self-ratings, health status, but not physical functioning; see Table 4.

Table 4. Multiple regression of predictors of CASP-19:ONS OMNIBUS and Ethnibus (final models)

Independent predictor variables	ONS Omnibus		Ethnibus	
	Unstandardised B Standardised Beta	95% confidence interval (2-tailed t-test) P=	Unstandardised B Standardised Beta	95% confidence interval (2-tailed t-test) P=
Block 1:				
Self-rated active ageing	-0.532 -0.064	-1.157- 0.093 (-1.672) 0.095ns	-0.672 -0.143	-1.147- -0.197 (-2.782) 0.006
Block 2:				
QoL domain self-ratings:				
QoL: health	-0.683 -0.081	-1.455- 0.088 (-1.740) 0.082ns	-0.690 -0.118	-1.237- -0.143 (-2.478) 0.014
QoL social relationships	-0.693 -0.078	-1.369- -0.017 (-2.013) 0.045	0.182 0.031	-0.375- 0.738 (0.642) 0.522ns
QoL: independence, control over life, freedom	-1.236 -0.138	-1.960- -0.512 (-3.352) 0.001	-0.386 -0.065	-0.948- 0.176 (-1.351) 0.178ns
QoL: home and neighbourhood	0.039 0.004	-0.705- 0.784 (0.104) 0.917ns	-0.106 -0.018	-0.695- 0.484 (-0.352) 0.725ns
QoL: psychological and emotional well-being	-1.027 -0.106	-1.774- -0.279 (-2.697) 0.007	-0.659 -0.110	-1.270- -0.047 (-2.117) 0.035
QoL: financial circumstances	-0.920 -0.100	-1.553- -0.288 (-2.858) 0.004	-0.566 -0.096	-1.113- 0.020 (-2.036) 0.0420
QoL: leisure and social activities	-1.303 -0.162	-1.978- -0.629 (-3.796) 0.0001	-0.431 -0.079	-0.962- 0.101 (-1.593) 0.112ns

Block 3:				
Total number of different social activities done in last month (out of listed 8)	0.146 0.034	-0.174- 0.466 (0.896) 0.371ns	0.237 0.063	-0.121- 0.594 (1.301) 0.194ns
Total number of relatives, friends, neighbours who would help with practical tasks	0.028 0.037	-0.017- 0.072 (1.227) 0.220ns	-0.010 -0.013	-0.085- 0.064 (-0.274) 0.784ns
Block 4:				
Self-rated health status, compared to others of same age	-0.963 -0.131	-1.599- -0.327 (-2.975) 0.003	-0.692 -0.136	-1.278- -0.106 (-2.321) 0.021
ADL total score (sum of ability to: walk 400 yards, do heavy housework, shop/carry heavy bags, steps/stairs)	-0.289 -0.142	-0.458- -0.119 (-3.334) 0.001	-0.038 -0.027	-0.200- 0.124 (-0.460) 0.646ns
Block 5:				
Age	-0.053 -0.047	-0.127- 0.021 (-1.404) 0.161ns	-0.086 -0.062	-0.214- 0.043 (-1.313) 0.190ns
Sex	0.333 0.020	-0.629- 1.295 (0.680) 0.496ns	0.363 0.036	-0.590- 1.317 (0.749) 0.454ns
Marital status	0.189 0.026	-0.255- 0.633 (0.836) 0.403ns	-0.052 -0.008	-0.637- 0.532 (-0.176) 0.860ns
Block 6:				
Housing tenure	-0.030 -0.004	-0.518- 0.458 (-0.121) 0.904ns	0.440 -0.101	-0.846- -0.035 (-2.135) -0.033
Constant	61.749		51.095	
R2	0.581		0.175	
Adjusted R2	0.568		0.141	

Anova F statistic; P=	45.151; 0.0001		5.089; 0.001	
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WHOQOL-OLD

The WHOQOL-OLD was assessed in the ONS and Ethnibus samples. The amount of explained variance in WHOQOL-OLD scores in the ONS Omnibus survey was 45% (Adjusted R²: 0.448); the model was highly significant, again in expected directions. The significant variables were self-rated active ageing, three of the seven QoL domain ratings as well as the number of social activities and helpers; health status and housing tenure. However, the WHOQOL-OLD model for the Ethnibus sample was weak, although significant: the amount of explained variance in WHOQOL-OLD scores was just 5% (Adjusted R²: 0.048). The significant variables were three of the seven domain ratings, and number of social activities; see Table 5.

Table 5. Multiple regression of predictors of WHOQOL-OLD: ONS OMNIBUS and ETHNIBUS (final model)

Independent predictor variables	ONS Omnibus:		Ethnibus:	
	Unstandardised B	95% confidence interval	Unstandardised B	95% confidence interval
	Standardised Beta	2-tailed t-test P=	Standardised Beta	(2-tailed t-test) P=
Block 1:				
Self-rated active ageing	-1.272 -0.105	-2.325- -0.219 (-2.373) 0.018	-0.064 -0.011	-0.705- 0.578 (-0.195) 0.845ns
Block 2:				
QoL domain self-ratings:				
QoL: health	0.650 0.053	-0.650- 1.949 (0.982) 0.326ns	-0.496 -0.066	-1.235- 0.243 (-1.320) 0.187ns
QoL social relationships	-1.143 -0.089	-2.283- -0.004 (-1.971) 0.049ns	0.559 0.075	-0.192- 1.311 (1.463) 0.144ns
QoL: independence, control over life, freedom	-1.591 -0.123	-2.811- -0.370 (-2.561) 0.011	0.341 0.045	-0.418- 1.100 (0.884) 0.377ns
QoL: home and	-0.106 -0.007	-1.360- 1.148	-0.911 -0.121	-1.707- -0.114

neighbourhood		(-0.166) 0.868ns		(-2.247) 0.025
QoL: psychological and emotional well-being	-1.931 -0.138	-3.191- -0.671 (-3.012) 0.003	0.548 0.071	-0.278 -1.373 (1.304) 0.193ns
QoL: financial circumstances	-0.629 -0.047	-1.695- 0.437 (-1.159) 0.247	-0.244 -0.032	-0.982- 0.495 (-0.649) 0.517ns
QoL: leisure and social activities	-1.428 -0.123	-2.565- -0.292 (-2.469) 0.014	-0.823 -0.118	-1.540- -0.105 (-2.253) 0.025
Block 3:				
Total number of different social activities done in last month (out of listed 8)	0.561 0.090	0.021- 1.100 (2.042) 0.042	0.500 0.103	-0.017- 0.983 (2.036) 0.042
Total number of relatives, friends, neighbours who would help with practical tasks	0.089 0.081	0.014- 0.164 (2.319) 0.021	0.031 0.031	-0.071- 0.132 (0.594) 0.553ns
Block 4:				
Self-rated health status, compared to others of same age	-2.332 -2.220	-3.403- -1.260 (-4.275) 0.0001	-0.559 -0.085	-1.350- 0.232 (-1.389) 0.166ns
ADL total score (sum of ability to: walk 400 yards, do heavy housework, shop/carry heavy bags, steps/stairs)	0.115 0.039	-0.172- 0.401 (0.788) 0.431ns	-0.169 -0.092	-0.388- 0.050 (-1.515) 0.131ns
Block 5:				

Age	-0.078 -0.048	-0.203- 0.046 (-1.233) 0.218ns	-0.173 -0.097	-0.346- 0.001 (-1.957) 0.051ns
Sex	1.261 0.053	-0.360- 2.881 (1.529) 0.127ns	-0.402 -0.031	-1.689- 0.886 (-0.614) 0.540ns
Marital status	-0.703 -0.067	-1.451- 0.046 (-1.1.845) 0.066ns	0.099 0.012	-0.690- 0.888 (0.248) 0.804ns
Block 6:				
Housing tenure	-0.884 -0.075	-1.706- -0.062 (-2.114) 0.035	-0.406 -0.073	-0.953- 0.142 (-1.457) 0.146ns
Constant	115.284		100.058	
R2	0.466		0.087	
Adjusted R2	0.448		0.048	
Anova F statistic; P=	26.728 0.0001		2.270 0.004	

Conclusion

This paper described the psychometric performance of a QoL questionnaire, developed from the perspectives of older people themselves: the OPQOL. It was tested in two cross-sectional, and one longitudinal, surveys of older people across Britain. The longitudinal survey enabled the OPQOL to be tested in a dynamic, ageing population and an assessment of its underlying model, although its self-administration mode necessitated the assessment of the OPQOL only (and not the CASP-19 or WHOQOL) in this older sample.

The surveys used statistically robust sampling methods, and the response rates were fairly to very good. The characteristics of respondents to the ONS Omnibus and Ethnibus surveys (and the QoL survey at baseline) were comparable with population estimates from the last census. However, non-response is still a cause for concern. The QoL follow-up sample, by its longitudinal design, reflected a healthy survivor effect. Also, while the sampling approach of the Ethnibus survey was statistically robust, it was used focused enumeration. There is no other practical methodology for attempting to obtain representative samples of people in ethnic minority groups in national samples.

This study reported that Ethnibus respondents obtained poorer (worse) QOL scores than the other sample respondents, with the OPQOL, CASP-19 and WHOQOL-OLD. This is not unexpected given that people in ethnic minority groups are often more economically disadvantaged than the wider population [15]. Further research is needed to examine whether differences in QoL reflect real variations, methodology,

cultural variations in expectations or in reporting. Ethnic minority groups in Britain live in a wide range of different communities, and their diversity may also have affected responses in some way. Hence variations in QoL by ethnic group requires caution in interpretation. It should also be noted that the standard question for ethnic status which was used, largely reflected Britain's New Commonwealth groups, and may not be appropriate for use in other countries.

The OPQOL performed well in psychometric tests of reliability and validity. Multiple regression models supported its validity and underlying constructs.

Despite the Ethnibus sample's consistently worse QoL scores, compared with the other samples, the CASP-19 and WHOQOL-OLD did not meet all criteria for internal consistency (reliability) in the ethnically diverse Ethnibus sample. The CASP-19 and WHOQOL-OLD also had relatively large numbers of items that failed to meet the reliability criterion for item-total scale correlations; they frequently failed correlation tests for validity in the Ethnibus sample. This may have been due to this sample's ethnic diversity, or because the CASP-19 and WHOQOL-OLD were not sufficiently sensitive.

Health and social care interventions can have a multi-faceted impact on people's lives. The OPQOL is of potential value in descriptive and evaluative research. This research supports the use of the OPQOL in older populations in Britain. It awaits testing in other countries, and with different ethnic minority population groups. The OPQOL is currently being tested with older people living in Italy; initial results for cultural equivalence and understanding are positive (*personal communication, Dr Claudio Bilotta, University of Milan*).

Acknowledgements

Thanks are due to ONS Omnibus Survey and Ethnibus staff for mounting the Quality of Life and Active Ageing modules, and processing the data. Material from the ONS Omnibus Survey, made available through ONS, has been used with the permission of the Controller of The Stationery Office. I also thank Professor Steve Iliffe, Ms Kalpa Karachi, and Ethnifocus for organising focus groups to comment on the OPQOL questionnaire, members of the study advisory group, and Ms Corinne Ward for her administration of the QoL follow-up survey and data processing. Members of ONS Omnibus and Ethnibus who carried out the original analysis and collection of the data hold no responsibility for the further analysis and interpretation of them.

Name of the guarantor: AB. Ann Bowling had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the analyses.

Declaration of source of funding: The study was funded by the UK cross-research council New Dynamics of Ageing Programme; we are grateful for their support: New Dynamics of Ageing Research Programme; grant reference number: RES-352-25-0001. The sponsors played no role in the design, execution, analysis, interpretation and writing of the study.

Ethical committee consent: The 2007-8 study was granted ethnical committee consent to proceed by University College London Research Ethics Committee; the earlier QoL surveys were approved by the Office for National Statistics Ethics Committee and London MREC.

Competing and financial interests: none. All authors declare that they have nothing to declare and no financial interests.

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References

1. World Health Organization. *Active Ageing. A Policy Framework*. Geneva: WHO, 2002 (<http://www.who.int/hpr/ageing/ActiveAgeingPolicyFrame.pdf>).
2. Lawton MP. *Competence, environmental press and adaptation of older people*, in: MP. Lawton, PG. Windley & TO. Byerts (eds). *Aging and environment. Theoretical approaches*. New York: Springer, 1982: 33-59.
3. Lawton MP. Environment and other determinants of well-being in older people. *Gerontologist* 1983; 23: 349-357.
4. Lawton MP. The varieties of well-being. *Experimental Aging Research* 1983; 9: 65-72.
5. Lawton MP. *Background. A multidimensional view of quality of life in frail elders*, in: JE. Birren, J. Lubben, J. Rowe. & D. Deutchman (eds). *The concept and measurement of quality of life in the frail elderly*. San Diego: Academic Press, 1991: 4-27
6. Lawton MP. *Quality of life and affect in later life*, in: C. Magai, & S.H. McFadden, (eds). *Handbook of emotion, human development, and aging*. San Diego: CA Academic Press, 1996, 327-48.
7. Bowling A. *Ageing well. Quality of life in old age*. Maidenhead: Open University Press, 2005.
8. Bowling A, Bannister D, Sutton S, Evans, O. & Windsor J. A multidimensional model of QoL in older age. *Ageing and Mental Health* 2002; 6:355-371.
9. Bowling A. & Gabriel Z. An integrational model of quality of life in older age. A comparison of analytic and lay models of quality of life. *Social Indicators Research* 2004; 69:1-36.
10. Gabriel Z. & Bowling A. Perspectives on quality of life in older age: older people talking. *Ageing and Society* 2004; 24: 675-691.

11. Hyde M, Wiggins RD., Higgs P. & Blane D. A measure of quality of life in early old age: the theory, development and properties of a needs satisfaction model (CASP-19). *Ageing and Mental Health* 2003; 7:186-194.
12. Power M, Harper A, Bullinger M, and the WHO Quality of Life Group. The World health Organisation WHOQOL-100: tests of the universality of quality of life in 15 different cultural groups worldwide. *Health Psychology* 1999;18:495-505.
13. Power M, Quinn K, Schmidt S. and WHOQOL-OLD Group. Development of WHOQOL-OLD module. *Quality of Life Research* 2005; 14: 2197-2214.
14. Hagerty MR., Cummins RA, Ferriss AL, Land K, et al. Quality of life indexes for national policy: review and agenda for research. *Social Indicators Research* 2001; 55: 1096.
15. Nazroo J., Bajekal M. Blane D., Grewal I. Ethnic inequalities, in: A. Walker and CH.Hennesy (eds). *Growing older. Quality of life in old age*. Maidenhead: Open University Press, 2004, pp35-59.