Factors associated with self- and informant ratings of quality of life, wellbeing and life satisfaction in people with mild-to-moderate dementia: Results from the Improving the experience of Dementia and Enhancing Active Life (IDEAL) programme

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Abstract

Background

A large number of studies have explored factors related to self- and informant ratings of quality of life in people with dementia but many studies have had relatively small sample sizes and mainly focused on health conditions and dementia symptoms. The aim of this study is to compare self- and informant-rated quality of life, life satisfaction and wellbeing, and investigate the relationships of the two different rating methods with various social, psychological and health factors, using a large cohort study of community-dwelling people with dementia and carers in Great Britain.

Methods

This study included 1283 dyads of people with mild-to-moderate dementia and their primary carers in the Improving the experience of Dementia and Enhancing Active Life (IDEAL) study. Multivariate modelling was used to investigate associations of self- and informant-rated quality of life, life satisfaction and wellbeing with factors in five domains: psychological characteristics and health; social location; capitals, assets and resources; physical fitness and health; and managing everyday life with dementia.

Results

People with dementia rated their quality of life, life satisfaction and wellbeing more highly than did the informants. Despite these differences, the two approaches had similar relationships with social, psychological and physical health factors in the five domains.

Conclusions

Although self- and informant ratings differ, they display similar results when focusing on factors associated with quality of life, life satisfaction and wellbeing. Either self- or informant ratings may offer a reasonable source of information about people with dementia in terms of understanding associated factors.

Keywords

Dementia; Measurement methods; Wellbeing; Quality of life; Life satisfaction

Key points

- This study compared self- and informant ratings of quality of life, life satisfaction and wellbeing and their associations with factors in psychological, social and physical health domains.
- Scores for self-rated quality of life, life satisfaction and wellbeing were higher than informant ratings in people with mild-to-moderate dementia. These differences can affect identification of those with 'poor' living well scores in clinical practice and research.
- Factors related to self-rated quality of life, life satisfaction and wellbeing were also associated with informant ratings. When examining the impacts of associated factors, either self or informant ratings may offer a reasonable source of information about people with dementia.

Introduction

Although many people with dementia can report meaningful ratings on measures of the ability to 'live well' with the condition, such as quality of life, life satisfaction and wellbeing [1,2], the informant-rated approach, which asks family or professional carers to rate the quality of life of people with dementia, has been widely used in research and clinical practice [3]. Nevertheless, discrepancies between self- and informant-rated scores have been reported, with informant ratings more negative than self-ratings [3-10]. Such differences may potentially compromise the ability to evaluate the experience of people with dementia and identify relevant cut-offs for clinical significance if ratings are obtained from only one perspective. However, this issue might not affect the validity of studies aiming to investigate factors related to living well with dementia. It remains to be established whether self- and informant ratings of living well measures have similar relationships with the relevant factors. If this is the case, either approach could provide valid information.

A recent review summarised the findings from 174 articles focusing on self-ratings of quality of life by people with dementia and 185 articles on informant-ratings [3]. Ninety-four articles included both types of ratings and reported variation in the factors associated with self- and informant-rated quality of life measures [3]. These studies tend to have relatively small sample sizes or assess a limited number of sociodemographic factors (such as age, gender,

education), health conditions (depression, anxiety, comorbidity) and dementia symptoms (neuropsychiatric symptoms, functional ability). These factors were highly-correlated and did not cover all aspects of psychological and social health that support people with dementia to cope with challenges, participate in social life and develop capability to live well with the condition [11,12]. To address the limitations of statistical power and explore associations with a wider range of factors, the aim of this study was to compare self- and informant ratings of quality of life, life satisfaction and wellbeing (here described collectively as measures of 'living well' with the condition) and investigate whether these two ratings had similar associations with various psychological, social and physical health factors. This was done using the Improving the experience of Dementia and Enhancing Active Life (IDEAL) study, a large cohort study of people with mild-to-moderate dementia and their carers in England, Scotland and Wales. This study built on the previous IDEAL findings reporting on factors associated with subjective perceptions of living well [2]. The same analytical approach was applied to identify factors related to self- and informant-rated quality of life, life satisfaction and wellbeing.

Methods

Study population

The IDEAL programme, a longitudinal cohort study of community-dwelling people with

dementia (N=1547) and respective carers (N=1283) in Great Britain, was established to identify social, psychological and economic factors that support people to live well with dementia and inform evidence-based policies and clinical practices aimed at preventing disability, maintaining independence and wellbeing and reducing caregiving, economic and societal impacts of dementia [13,14]. The recruitment was based on a network of 29 National Health Service sites across England, Scotland and Wales between July 2014 and August 2016. All participants were required to have a clinical diagnosis of dementia and a Mini-Mental State Examination (MMSE) score≥15 on entry to the study. Those who were not able to provide informed consent were excluded from recruitment. For each person with dementia, a carer who provided practical or emotional unpaid support was also recruited where possible. For those who agreed to take part, trained researchers visited participants at home and implemented standardised questionnaires at baseline and two follow-up interviews 12 and 24 months later. The study was approved by the Wales Research Ethics Committee 5 (reference:13/WA/0405) and the Ethics Committee of the School of Psychology, Bangor University (reference:2014–11684). The study is registered with the UK Clinical Research Network, registration number 16593. This analysis focused on the 1283 dyads of people with dementia and carers, allowing comparison of self- and informant ratings of living well measures and other factors.

Measurements

For each person with dementia, self-rated living well measures included three main aspects: quality of life, assessed using the Quality of Life in Alzheimer's Disease scale (QoL-AD; score range=13-52) [15]; life satisfaction, assessed using the Satisfaction with Life Scale (SwLS; range=5-35) [16]; and wellbeing, assessed using the World Health Organization- Five Well-being Index (WHO-5; range=0-100) [17]. Informant-rated versions of these measures were completed by the carers.

Measurement of factors potentially associated with living well included five latent constructs established in a previous IDEAL study [2]: psychological characteristics and psychological health; social location; capitals, assets and resources; physical fitness and health; and managing everyday life with dementia. A list of measures in these five constructs is provided in Supplementary Table S1. A sub-set of these measures had parallel ratings made by both the person with dementia and the carer where appropriate.

Covariates included age, sex, dementia subtype and relationship between the person with dementia and carer. Dementia subtypes included Alzheimer’s disease (AD), vascular dementia (VaD), mixed AD and VaD, frontotemporal dementia, Parkinson’s disease dementia, dementia with Lewy bodies and other/unspecified dementias. The relationship between the person with

dementia and carer was categorised into two types: spouse/partner and other (family or friends).

Analytical strategy

To examine differences between self- and informant-rated living well measures, Bland-Altman plots were used to calculate distributions of mean differences (self-ratings minus informant ratings) and 95% limits of agreement, which indicate the range of 95% differences between the two approaches.

The relationships between factors in the five domains and the self- and informant-rated living well measures were investigated using multivariate models, which allow all three living well measures to be fitted as dependent variables. Four types of multivariable models were implemented: (*a*) self-rated living well measures and self-rated factors; (*b*) informant-rated living well measures and self-rated factors; (*c*) informant-rated living well measures and informant-rated factors; and (*d*) informant-rated living well measures and self- and informant-rated factors. Earlier IDEAL analyses have built a comprehensive 'living well' model for people with dementia based on the associations identified in all self-rated measures (Model *a*) [2]. This study further investigated informant-rated living well measures and their associations with various self- (Model *b*) and informant-rated factors (Model *c*) and compared

these findings with results from Model *a*. To examine whether self- and informant-rated factors had independent relationships with informant-rated living well measures, all self- and informant-rated factors were fitted in one model where appropriate (Model *d*). All variables within each construct were fitted in one model adjusting for age, sex, dementia subtypes and the relationship between the person with dementia and carer. Given that multiple testing could be an important issue here, three selection criteria were applied to determine factors related to living well measures. A variable was selected if it achieved statistical significance (p-value<0.05) based on the Wald test, had a meaningful effect size (QoL-AD>1.5 or SwLS>1.5 or WHO-5>5.0) based on the literature [18-20] and showed a potential 'dose-response relationship' (i.e. monotonically increasing or decreasing effect sizes across levels) with at least one of the outcomes. These criteria considered statistical significance as well as the direction and strength of associations and were also used in the previous IDEAL work [2]. All analyses were based on the IDEAL dataset version 2.0 and conducted using Stata 14.2 [21].

Results

The median age of people with dementia was 77 (range=43−98 years) and 58.9% were men (Table 1). The most frequently-represented dementia subtypes were AD (56%), VaD (11%) and mixed AD and VaD (21%). Most carers (81%) were spouses/partners. Around half of the

participants had received the diagnosis within the previous year and less than 2% had received the diagnosis over five years ago.

People with dementia generally reported higher scores on living well measures compared to the informant ratings made by their carers (Table 2). Mean differences and 95% limits of agreement were 3.3 (-9.3, 15.8) for QoL-AD; 5.6 (-8.9, 20.2) for SwLS; and 11.8 (-32.8, 56.4) for WHO-5. There was no consistent pattern of differences across demographic and clinical subgroups.

Table 3 summarises factors related to self- and informant-rated living well measures based on Model *a*–*d*. 'NA' denotes unavailable results as some factors could only be measured by either self- and informant-ratings. More detailed modelling results are provided in Supplementary Tables S2.1-S2.4. A summary for each construct is provided below:

(1) Psychological characteristics and psychological health: Apart from life events, factors in this construct could only be measured using self-ratings. Self-rated living well measures were associated with seven factors in this construct (Model *a*). Of these seven factors, neuroticism, loneliness, depression and negative attitudes to ageing also had negative associations with informant-rated living well measures (Model *b*).

(2) Social location: Community status was only measured using self-ratings while social comparison measures were rated by both people with dementia and carers. Self-rated status in the community was related to both self- (Model *a*) and informant-rated living well measures (Model *b*). The social comparison measures rated by people with dementia and carers were associated with both self- and informant-rated living well measures (Model *a*−*c*) and had independent relationships with informant-rated living well scores (Model *d*).

(3) Capitals, assets and resources: In this construct, social networks and cultural capital were the only two factors rated by both people with dementia and carers. Self-rated living well measures were associated with four self-rated factors, including local trust, civic participation, social networks and cultural capital (Model *a*). Of these four self-rated factors, only cultural capital was associated with informant-rated living well measures (Model *b*). An additional self-rated factor, personal relations, had a positive association with informant-rated living well measures in Model *b*. Both self- and informant ratings of cultural capital showed associations with informant-rated living well measures in individual models (Model *b* and *c*). When including all self- and informant ratings, only self-rated personal relations and informant-rated cultural capital were related to informant-rated living well measures (Model *d*).

(4) Physical fitness and health: Several factors in this construct were measured by both self- and informant ratings. Self-rated eyesight, hearing and health status had negative relationships with both self- (Model *a*) and informant-rated living well measures (Model *b*). Informant-rated measures of physical activity and falls were associated with informant-rated living well measures but not self-ratings (Model *c*). Compared to self-rated measures, informant-rated sleep quality and appetite had stronger associations with informant-rated living well (Model *d*).

(5) Managing everyday life with dementia: Both self- and informant-rated functional ability and dependence were related to self- and informant-rated living well measures (Model *a*−*c*). Neuropsychiatric symptoms were only rated by carers and were associated with informant-rated living well measures (Model *c*). All informant-rated factors in this construct were associated with informant-rated living well measures (Model *d*).

Discussion

Based on a large cohort study of community-dwelling people with dementia and their carers, this study compared associations of self- and informant-rated quality of life, life satisfaction and wellbeing with factors across five domains. Informant-rated living well scores were lower than self-rated scores; despite these differences, the relationships between factors and living

well measures were relatively consistent between the two approaches.

This study found that the mean score for self-rated quality of life was higher than the mean score for informant ratings. Several studies have emphasised discrepancies between self- and informant ratings [3-10]. Both ratings have value when investigating living well measures in people with dementia, but as with many other score-based metrics, both should be recognised as imperfect measures containing measurement errors. The findings also raise the possibility that people with dementia experience a higher quality of life than is thought to be the case by their respective carers. Alternatively, people with dementia might rate their experiences higher than is actually the case, or the carers might be doing the converse. It is important to understand whether self- or informant-ratings have been used when attempting to define those with 'poor' living well scores in clinical practice and research. Nevertheless, a main finding is that when considering factors which might affect the ability to live well with dementia, discrepancy between self- and informant-rated scores need not be a concern as the relative differences remained similar across both approaches.

The results of this study correspond to a French study of 574 community-dwelling people with Alzheimer's disease and their carers where self- and informant-rated quality of life had consistent associations with functional ability, depression and caregiver burden [4]. In contrast,

studies focusing on people with dementia in residential care facilities or as hospital outpatients have reported differential relationships between self-rated quality of life, informant ratings by carers and some health factors such as cognitive function, weight, and pain [22,23]. The different findings might be related to the different recruitment contexts of study populations and involvement of formal carers. Severity of dementia and health status might influence the consistency of associations in self- and informant ratings.

A small number of factors had different associations with self- and informant ratings of living well measures. Some of the self-rated factors in the 'psychological characteristics and psychological health' and the 'capitals, assets and resources' domains were only associated with self-rated living well measures. In the 'physical fitness and health' and the 'managing everyday life with dementia' domains, informant-rated factors, such as physical activity and falls, were related to informant-rated living well measures but not self-ratings. Compared to psychological and social factors, physical health conditions and dementia symptoms were more likely to be observed by informants and therefore had stronger associations with informant-rated living well measures.

The strength of this study lies in including a wide range of social, psychological and physical health factors and eliciting responses from a large number of community-dwelling people

with dementia and their carers. However, there are some limitations. The IDEAL study only included people with mild-to-moderate dementia at the baseline interview so the results might not generalise to those with severe dementia. Longitudinal data from IDEAL will allow us to examine whether the consistency of associations in self- and informant-rated living well measures changes with the progression of dementia [13,14]. Informant ratings were not available for some measures of psychological factors and social status as it is difficult to obtain informant ratings for subjective psychological experiences. Self-ratings could be sensitive to individual conditions. For example, dementia symptoms such as impairments in memory, attention and language might increase measurement errors in self-rated measures. Future research may explore response variation across individuals with different symptoms. Extensive regression modelling in this study could lead to high false positive rates. To address this issue, the selection criteria were determined on the basis of both statistical significance and effect sizes.

Conclusions

The findings of this study suggest that self- and informant ratings are not equivalent when investigating levels of quality of life, life satisfaction and wellbeing. These differences can be crucial when defining those with 'poor' living well scores in clinical practice and research. However, both approaches can provide useful information for research examining factors

associated with these living well measures. Our findings suggest that for researchers planning to examine factors related to living well with dementia, either self- or informant ratings offer a reasonable indication of quality of life, life satisfaction and wellbeing in people with mild-to-moderate dementia.

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Tables

Table 1: Means and standard deviations of self- and informant-rated living well measures across age, sex, dementia subtypes and relationship between person with dementia and carer

	N (%)	QoL-AD		SwLS		WHO-5	
		Self	Informant	Self	Informant	Self	Informant
Age							
≥80	482 (37.6)	37.2 (5.5)	33.6 (5.5)	27.3 (5.5)	21.7 (6.9)	64.2 (18.7)	49.0 (20.1)
75-79	306 (23.9)	37.3 (5.8)	33.6 (5.8)	26.9 (5.7)	20.4 (7.0)	61.5 (19.9)	49.2 (19.7)
70-74	232 (18.1)	36.9 (5.9)	34.1 (6.1)	26.0 (5.8)	20.6 (6.7)	59.2 (20.9)	51.2 (21.0)
65-69	160 (12.5)	36.2 (6.8)	33.8 (6.1)	25.7 (6.4)	20.6 (7.0)	58.3 (21.4)	51.0 (21.2)
<65	103 (8.0)	35.5 (6.8)	32.8 (6.3)	24.1 (6.9)	18.9 (7.0)	58.5 (25.8)	47.4 (22.0)
Sex							
Men	755 (58.9)	36.8 (6.0)	33.5 (5.8)	26.5 (5.9)	20.7 (6.9)	62.0 (20.0)	49.3 (20.2)
Women	528 (41.1)	37.1 (5.9)	33.9 (5.9)	26.5 (5.9)	21.1 (6.9)	60.6 (21.2)	49.9 (20.9)
Dementia subtypes							
AD	715 (55.7)	37.7 (5.5)	34.1 (5.7)	27.3 (5.5)	21.4 (6.8)	64.2 (19.5)	51.9 (20.1)
VaD	142 (11.1)	35.9 (6.5)	32.5 (6.3)	25.6 (6.3)	19.6 (7.2)	58.6 (21.2)	45.9 (20.9)
Mixed AD/VaD	263 (20.5)	36.3 (5.9)	33.8 (6.0)	26.3 (5.9)	21.5 (6.9)	59.8 (21.0)	48.9 (20.4)
FTD	45 (3.5)	38.7 (5.4)	33.1 (5.9)	25.7 (5.9)	21.7 (6.6)	61.0 (20.5)	49.7 (19.4)
PDD	43 (3.4)	33.1 (5.7)	32.1 (4.8)	22.0 (6.8)	16.8 (5.8)	47.9 (20.4)	42.1 (19.1)
DLB	43 (3.4)	33.0 (6.3)	31.4 (5.7)	23.7 (5.2)	17.3 (7.4)	50.7 (17.8)	38.8 (18.3)
Unspecified	32 (2.5)	34.7 (8.1)	31.3 (6.8)	26.2 (7.6)	18.2 (6.3)	58.5 (24.8)	43.2 (24.4)
Relationship between person with dementia and carer							
Spouse/partner	1039 (81.0)	37.1 (6.0)	33.9 (5.8)	26.7 (5.9)	21.0 (6.9)	61.9 (20.5)	50.9 (20.4)
Other	244 (19.0)	36.1 (5.8)	32.3 (5.9)	25.6 (5.7)	20.4 (6.8)	59.6 (20.4)	43.8 (19.7)

Note: AD: Alzheimer's disease; VaD: vascular dementia; FTD: fronto-temporal dementia; PDD: Parkinson's disease dementia; DLB: dementia with Lewy bodies; QoL-AD: Quality of Life in Alzheimer's Disease scale; SwLS: Satisfaction with Life Scale; WHO-5: World Health Organization-Five Well-Being Index.

Table 2: Mean differences (self-ratings minus informant-ratings) and standard deviations for three living well measures by demographic factors

	QoL-AD (N=1075)	SwLS (N=1204)	WHO5 (N=1220)
Overall	3.3 (6.3)	5.6 (7.3)	11.8 (22.3)
Age			
80+	3.7 (6.2)	5.6 (7.2)	15.2 (22.4)
75-79	3.6 (6.2)	6.4 (7.5)	11.8 (21.8)
70-74	2.5 (6.2)	5.4 (6.9)	7.9 (21.7)
65-69	2.5 (7.0)	5.0 (7.4)	7.9 (22.6)
<65	3.1 (5.9)	5.0 (7.7)	11.4 (22.2)
Sex			
Men	3.2 (6.4)	5.9 (7.3)	12.5 (22.4)
Women	3.3 (6.1)	5.3 (7.3)	10.7 (22.3)
Dementia subtypes			
AD	3.5 (6.1)	5.9 (7.2)	12.3 (22.4)
VD	3.1 (6.3)	5.9 (7.3)	12.8 (21.7)
Mixed AD/VD	2.9 (6.5)	4.9 (7.1)	11.0 (22.1)
FTD	6.1 (7.4)	3.2 (7.4)	10.4 (24.4)
PDD	1.2 (6.0)	5.3 (8.8)	5.5 (21.9)
DLB	0.7 (7.1)	6.6 (7.7)	10.7 (23.1)
Other/unspecified	2.6 (5.2)	7.5 (7.2)	14.5 (21.5)
Relationship between person with dementia and carer			
Spouse/partner	3.1 (6.2)	5.7 (7.3)	10.9 (22.3)
Other	4.0 (6.8)	5.2 (7.2)	15.6 (22.0)

Note: AD: Alzheimer's disease; VaD: vascular dementia; FTD: fronto-temporal dementia; PDD: Parkinson's disease dementia; DLB: dementia with Lewy bodies; QoL-AD: Quality of Life in Alzheimer's Disease scale; SwLS: Satisfaction with Life Scale; WHO-5: World Health Organization-Five Well-Being Index.

Table 3: Summary of associations between self- and informant-rated living well measures (LW) and other factors

	Model *a*: Self-rated LW + Self-rated factors	**Model *b*:** Informant-rated LW + Self-rated factors	**Model *c*:** Informant-rated LW + Informant-rated factors	**Model *d*:** Informant-rated LW + Self- and informant-rated factors
Psychological characteristics & psychological health				
Personality neuroticism [s]	-	-	NA	-
Loneliness [s]	-	-	NA	-
Depression [s]	-	-	NA	-
Attitudes toward own ageing [s]	+	+	NA	+
Optimism [s]	+		NA	
Self-esteem [s]	+		NA	
Subjective age [s]	+		NA	
Social location				
Social comparison [s/i]	+	+	+	+ [s][i]
Community status [s]	+	+	NA	+
Physical fitness & health				
Poor eyesight [s]	-	-	NA	-
Poor hearing [s]	-	-	NA	-
Poor self-rated health [s]	-	-	NA	-
Changes in olfaction [s]	-		NA	
Poor appetite [s/i]	-	-	-	- [i]
Poor sleep [s/i]	-		-	- [i]
Low physical activity[s/i]			-	- [i]
Falls [s/i]			-	- [i]
Capitals, assets & resources				
Low local trust [s]	-		NA	
Low civic participation [s]	-		NA	
Personal relations [s]		+	NA	+
Low social network [s/i]	-			
Cultural capital [s/i]	+	+	+	+ [i]
Managing everyday life with dementia				
Functional ability [s/i]	-	-	-	- [i]
Dependence [s/i]	-	-	-	- [i]
Neuropsychiatric symptoms [i]	NA	NA	-	-

Note: +: Positive associations with living well measures; -: negative associations with living well measures; NA: not available; [s]: self-rated; [i]: informant-rated; [s/i]: both self- and informant-rated measures were included

Factors associated with self- and informant ratings of quality of life, wellbeing and life satisfaction in people with mild-to-moderate dementia: Results from the Improving the experience of Dementia and Enhancing Active Life (IDEAL) programme

Supplementary materials

S1 Summary of measures

Factors potentially associated with living well were grouped into five constructs: capitals, assets and resources, social locations, psychological characteristics and health, physical fitness and health and managing everyday life with dementia. Corresponding self- and informant-rated measures in these five constructs are summarised in Table S1.

Table S1: Summary of self- and informant-rated variables in the five constructs

Concepts	Self-rated measures	Informant-rated measures
Capitals, assets and resources		
Personal relations	Office for National Statistics Social Capital Scale [1]	
Reciprocity and local trust	Office for National Statistics Social Capital Scale [1]	
Social participation	Office for National Statistics Social Capital Scale [1]	
Civic participation	Office for National Statistics Social Capital Scale [1]	
Social network	Lubben Social Network Scale-6 [2]	Lubben Social Network Scale-6 [2]
Social capital	Resource Generator-UK [3]	
Education	Highest level of education achieved	
Cultural capital	Questions from Cultural Capital and Social Exclusion Survey [4]	Questions from Cultural Capital and Social Exclusion Survey [4]
Income	Income adjusted for household size	
Social location		
Social class	Social class based on occupations [5]	
Social comparison	Single item	Single item
Social status	MacArthur Scale of Subjective Social Status (social ladder) [6]	
Community status	MacArthur Scale of Subjective Social Status (community ladder) [6]	
Psychological characteristics and psychological health		
Personality	Mini-IPIP [7]	
Religion	Single item [8]	
Spirituality	Single item	
Optimism	Life Orientation Test – Revised [9]	
Self-esteem	Rosenberg Self-Esteem Scale [10]	
	Single item [11]	
Continuity of sense of self	Single item	
Self-acceptance	Ryff Scales of Psychological Well-Being self-acceptance subscale [12,13]	
Loneliness	De Jong Gierveld Loneliness Scale [14]	

	Single item	
Experience of stigma	4-item modified Stigma Impact Scale [15,16]	
Stressful life events	10-item modified Social Readjustment Rating Scale [17]	10-item modified Social Readjustment Rating Scale [17]
Depression	Geriatric Depression Scale-10 [18]	
Attitudes toward own ageing	Philadelphia Geriatric Center Morale Scale [19]	
Subjective age	Single question	
Physical fitness and health		
Physical activity	General Practice Physical Activity Questionnaire (GPPAQ) [20]	General Practice Physical Activity Questionnaire (GPPAQ) [20]
Smoking	Current smoker/former smoker/never smoker	
Alcohol consumption	Currently does/does not consume alcohol	
Co-morbid conditions	Charlson Comorbidity Index [21,22]	
Falls	Number of falls in the past year [13]	Number of falls in the past year [13]
Sleep quality	Single item	Single item
Eyesight	Single item [13]	
Hearing	Single item [13]	
Appetite	Short Nutritional Assessment Questionnaire (SNAQ) [23]	Single item
Change in gustation	Single item [24]	
Change in olfaction	Single item [24]	
Self-rated health	Single item [25]	
Managing everyday life with dementia		
Cognition	Addenbrooke's Cognitive Examination – III [26]	
Functional ability	Functional Assessment Questionnaire amended 11-item version [27,28]	Functional Assessment Questionnaire amended 11-item version [27,28]
Dependence	Dependence Scale [29]	Dependence Scale [29]
Neuropsychiatric symptoms		Neuropsychiatric Inventory Questionnaire [30]
Decision-making involvement		Decision-making Involvement Scale [31]

S2 Results of multivariate modelling

S2.1 Self-rated living well and self-rated factors

Table S2.1 reports results of self-rated living well and self-rated factors by the five constructs. All estimates were adjusted for age, sex, dementia subtypes and relationship between person with dementia and carer.

Table S2.1: Self-rated living well and self-rated factors

	QoL-AD	SwLS	WHO-5	p-value
Capitals, assets and resources				
Personal relations				
Q1 (ref.)	-	-	-	0.73
Q2	0.31 (-0.91, 1.53)	0.44 (-0.86, 1.73)	0.36 (-4.17, 4.89)	
Q3	0.90 (-0.46, 2.26)	0.58 (-0.87, 2.02)	-1.09 (-6.14, 3.96)	
Q4	0.52 (-0.89, 1.93)	0.39 (-1.10, 1.89)	0.86 (-4.38, 6.10)	
Social network				
Not isolated (ref.)	-	-	-	<0.001
Isolated	-2.26 (-3.28, -1.23)	-1.25 (-2.34, -0.16)	-4.19 (-7.99, -0.40)	
Resource generator				
Continuous score	-0.05 (-0.16, 0.07)	-0.11 (-0.23, 0.01)	-0.08 (-0.50, 0.34)	0.33
Social participation				
0 (ref.)	-	-	-	0.38
1	0.08 (-1.26, 1.41)	-0.12 (-1.53, 1.30)	-1.61 (-6.56, 3.34)	
2+	1.18 (-0.02, 2.39)	0.01 (-1.27, 1.29)	1.70 (-2.77, 6.17)	
Civic participation				
High (ref.)	-	-	-	0.02
Low	-1.72 (-2.89, -0.54)	-1.82 (-3.07, -0.57)	-4.72 (-9.10, -0.35)	
Local trust				
Likely (ref.)	-	-	-	0.01
Other	-1.65 (-2.71, -0.60)	-0.98 (-2.10, 0.14)	-5.98 (-9.90, -2.06)	
Willingness to help				
Strongly agree (ref.)	-	-	-	0.90
Slightly agree	-0.18 (-1.19, 0.84)	0.10 (-0.98, 1.17)	-1.11 (-4.87, 2.64)	
Not agree	0.25 (-1.35, 1.86)	-0.18 (-1.88, 1.53)	-2.25 (-8.21, 3.72)	
Education				
No qualification (ref.)	-	-	-	0.88
GCSE/equivalent	0.23 (-1.07, 1.54)	-0.16 (-1.55, 1.23)	-1.16 (-6.00, 3.69)	
A level/equivalent	0.45 (-0.66, 1.55)	0.31 (-0.86, 1.49)	1.71 (-2.40, 5.81)	
College	0.19 (-1.19, 1.57)	-0.62 (-2.09, 0.84)	0.29 (-4.84, 5.41)	
Cultural capitals				
Q1 (ref.)	-	-	-	0.09
Q2	1.06 (-0.18, 2.29)	0.28 (-1.03, 1.59)	3.31 (-1.26, 7.89)	
Q3	1.49 (0.26, 2.71)	0.94 (-0.36, 2.24)	4.37 (-0.17, 8.91)	
Q4	2.55 (1.15, 3.94)	0.92 (-0.56, 2.41)	6.61 (1.43, 11.79)	
Income				
Q1 (ref.)	-	-	-	0.30
Q2	0.30 (-0.90, 1.50)	0.19 (-1.09, 1.47)	0.17 (-4.29, 4.63)	
Q3	1.14 (-0.13, 2.41)	0.52 (-0.86, 1.87)	0.59 (-4.13, 5.31)	
Q4	1.49 (0.14, 2.83)	0.15 (-2.09, 1.58)	0.62 (-4.38, 5.62)	
Social location				
Social class				
I/II (ref.)	-	-	-	0.16

III-NM	0.68 (-0.22, 1.57)	0.24 (-0.68, 1.16)	-0.50 (-3.73, 2.73)	
III-M	-0.33 (-1.18, 0.53)	0.50 (-0.38, 1.38)	-1.57 (-4.67, 1.54)	
IV/V/VI	-0.66 (-1.71, 0.39)	0.06 (-1.01, 1.14)	-1.63 (-5.43, 2.17)	
Social comparison				
Ordinal	1.74 (1.39, 2.08)	1.41 (1.06, 1.77)	5.70 (4.46, 6.95)	<0.001
Societal ladder				
Ordinal	1.00 (0.48, 1.52)	0.40 (-0.13, 0.94)	1.15 (-0.73, 3.04)	0.001
Community ladder				
Ordinal	1.25 (0.79, 1.71)	0.91 (0.43, 1.38)	3.52 (1.84, 5.20)	<0.001
Psychological characteristics & health				
Personality				
Extraversion	-0.01 (-0.09, 0.07)	0.03 (-0.07, 0.12)	-0.30 (-0.62, 0.02)	0.20
Agreeableness	-0.03 (-0.15, 0.08)	-0.09 (-0.22, 0.04)	-0.14 (-0.59, 0.30)	0.58
Conscientiousness	0.10 (0.00, 0.20)	0.04 (-0.08, 0.16)	0.32 (-0.08, 0.71)	0.22
Neuroticism	-0.04 (-0.14, 0.06)	-0.03 (-0.14, 0.09)	-0.78 (-1.16, -0.39)	0.001
Intellect	0.07 (-0.03, 0.17)	-0.10 (-0.21, 0.01)	0.07 (-0.31, 0.45)	0.08
Religion				
Slightly important (ref.)	-	-	-	0.19
Moderate	0.94 (0.07, 1.81)	0.94 (-0.05, 1.93)	1.15 (-2.18, 4.49)	
Important	0.78 (-0.06, 1.62)	0.76 (-0.19, 1.72)	2.35 (-0.87, 5.57)	
Spirituality				
Slightly important (ref.)	-	-	-	0.51
Moderate	0.26 (-0.61, 1.13)	-0.30 (-1.29, 0.69)	1.26 (-2.08, 4.59)	
Important	-0.55 (-1.43, 0.33)	-0.82 (-1.82, 0.18)	-0.49 (-3.86, 2.88)	
Optimism				
Continuous score	0.23 (0.12, 0.34)	0.25 (0.12, 0.37)	0.27 (-0.15, 0.68)	<0.001
Self-esteem (single item)				
Disagree (ref.)	-	-	-	0.01
Neutral	0.25 (-0.60, 1.10)	0.32 (-0.65, 1.29)	2.04 (-1.23, 5.30)	
Agree	-0.05 (-0.91, 0.80)	0.56 (-0.42, 1.53)	4.08 (0.81, 7.36)	
Strongly agree	1.57 (0.24, 2.90)	2.29 (0.77, 3.81)	6.39 (1.28, 11.50)	
Self-esteem (Rosenberg)				
Q1 (ref.)	-	-	-	0.55
Q2	-0.21 (-1.10, 0.67)	-0.26 (-1.26, 0.75)	-1.20 (-4.58, 2.18)	
Q3	-0.10 (-1.38, 1.19)	-0.20 (-1.66, 1.26)	-4.16 (-9.09, 0.77)	
Q4	0.41 (-0.75, 1.57)	-0.12 (-1.45, 1.20)	1.38 (-3.08, 5.84)	
Sense of self				
Strongly agree (ref.)	-	-	-	0.001
Agree	-0.01 (-0.94, 0.92)	0.03 (-1.03, 1.09)	1.41 (-2.16, 4.98)	
Neutral	-0.91 (-2.43, 0.60)	-1.02 (-2.74, 0.71)	-2.52 (-8.32, 3.29)	
Disagree	-0.23 (-1.34, 0.88)	-1.91 (-3.17, -0.64)	-2.04 (-6.32, 2.23)	
Strongly disagree	-3.83 (-6.42, -1.24)	-2.78 (-5.73, 0.17)	-3.71 (-13.65, 6.23)	
Self-acceptance				
Q1 (ref.)	-	-	-	0.001
Q2	0.84 (-0.04, 1.71)	1.49 (0.49, 2.49)	5.66 (2.30, 9.02)	
Q3	0.65 (-0.27, 1.57)	1.39 (0.34, 2.44)	3.95 (0.42, 7.49)	
Q4	1.51 (0.49, 2.53)	2.37 (1.21, 3.54)	4.61 (0.69, 8.54)	
Self-efficacy				
Q1 (ref.)	-	-	-	0.29
Q2	0.40 (-0.42, 1.23)	0.35 (-0.59, 1.30)	2.91 (-0.26, 6.08)	
Q3	0.34 (-0.57, 1.24)	0.31 (-0.72, 1.34)	2.21 (-1.26, 5.67)	
Q4	0.88 (-0.07, 1.82)	1.04 (-0.04, 2.12)	5.44 (1.81, 9.08)	
Loneliness: scale				
Not lonely (ref.)	-	-	-	0.01
Lonely	-0.69 (-1.37, -0.02)	-1.16 (-1.93, -0.39)	-1.20 (-3.79, 1.38)	
Loneliness: single item				
No/more or less (ref.)	-	-	-	0.01

Yes	-1.21 (-2.38, -0.04)	-0.98 (-2.32, 0.35)	-7.08 (-11.57, -2.58)	
Stigma				
<8 (ref.)	-	-	-	0.07
8	-0.20 (-0.89, 0.48)	0.04 (-0.74, 0.83)	1.40 (-1.23, 4.04)	
>8	-1.28 (-2.14, -0.43)	-0.31 (-1.29, 0.66)	-0.18 (-3.46, 3.09)	
Life events [s]				
None (ref.)	-	-	-	0.003
T1	-0.04 (-0.83, 0.75)	0.59 (-0.31, 1.49)	-2.73 (-5.77, 0.30)	
T2	-0.14 (-1.08, 0.80)	-1.76 (-2.83, -0.69)	-1.36 (-4.96, 2.25)	
T3	-0.88 (-1.73, -0.03)	-0.79 (-1.76, 0.18)	-3.13 (-6.40, 0.13)	
Depression				
No (ref.)	-	-	-	<0.001
Yes	-2.80 (-3.65, -1.95)	-1.95 (-2.92, -0.99)	-9.69 (-12.93, -6.44)	
Attitudes toward own ageing				
Continuous score	1.00 (0.77, 1.24)	0.70 (0.44, 0.96)	3.07 (2.19, 3.96)	<0.001
Subjective age				
Continuous score	0.58 (0.16, 0.99)	0.69 (0.22, 1.16)	-0.47 (-2.05, 3.96)	<0.001
Physical fitness & health				
Physical activity				
Inactive (ref.)	-	-	-	0.003
Moderately inactive	-1.36 (-2.59, -0.12)	-1.82 (-3.21, -0.42)	-2.68 (-7.16, 1.81)	
Moderately active	0.36 (-0.60, 1.32)	-1.38 (-2.46, -0.29)	0.30 (-3.18, 3.79)	
Active	1.25 (0.22, 2.27)	0.27 (-0.89, 1.42)	1.54 (-2.17, 5.24)	
Smoking				
Never (ref.)	-	-	-	0.28
Ex-smoker	-0.55 (-1.16, 0.07)	-0.15 (-0.85, 0.54)	-1.16 (-3.40, 1.08)	
Current smoker	-1.42 (-2.79, -0.06)	-1.44 (-2.98, 0.10)	-2.86 (-7.80, 2.08)	
Drinking alcohol				
No (ref.)	-	-	-	0.75
Yes	0.26 (-0.36, 0.87)	0.00 (-0.69, 0.70)	-0.22 (-2.45, 2.01)	
Co-morbidity score [s]				
1-2 (ref.)	-	-	-	0.52
3-4	-0.50 (-1.26, 0.26)	0.09 (-0.76, 0.95)	-2.28 (-5.03, 0.47)	
5+	-0.31 (-1.05, 0.43)	-0.15 (-0.99, 0.69)	-1.82 (-4.52, 0.88)	
Falls				
0 (ref.)	-	-	-	0.006
1	-0.78 (-1.62, 0.07)	-0.97 (-1.93, -0.02)	-2.51 (-5.58, 0.56)	
2+	-1.40 (-2.11, -0.68)	-0.55 (-1.36, 0.25)	-2.75 (-5.34, -0.15)	
Poor sleep				
Ordinal variable	-0.91 (-1.21, -0.61)	-0.67 (-1.01, -0.33)	-4.55 (-5.64, -3.46)	<0.001
Poor eyesight				
Ordinal variable	-0.56 (-0.87, -0.24)	-0.23 (-0.58, 0.13)	-1.51 (-2.66, -0.36)	0.004
Poor hearing				
Ordinal variable	-0.63 (-0.93, -0.33)	-0.15 (-0.49, 0.19)	-1.74 (-2.84, -0.64)	<0.001
Poor diet (SNAQ)				
No (ref.)	-	-	-	0.002
Yes	-1.52 (-2.44, -0.61)	-1.15 (-2.18, -0.13)	-5.88 (-9.44, -2.36)	
Change in gustation				
No (ref.)	-	-	-	0.21
Yes	-0.70 (-1.59, 0.19)	-0.78 (-1.78, 0.22)	0.04 (-3.19, 3.27)	
Change in olfaction				
No (ref.)	-	-	-	0.01
Yes	-1.13 (-2.11, -0.16)	-0.76 (-1.86, 0.34)	-5.90 (-9.44, -2.36)	
Self-rated health				
Excellent/very good (ref.)	-	-	-	<0.001
Good	-1.89 (-2.63, -1.15)	-0.66 (-1.50, 0.17)	-2.52 (-5.21, 0.18)	
Fair	-3.77 (-4.68, -2.87)	-2.09 (-3.11, -1.07)	-9.84 (-13.12, -6.57)	

Poor/very poor	-5.04 (-6.21, -3.88)	-3.58 (-4.89, -2.27)	-13.73 (-17.96, -9.51)	
Managing everyday life with dementia				
Cognition (ACE-III)				
Q1 (ref.)	-	-	-	0.04
Q2	0.45 (-0.51, 1.41)	0.30 (-0.69, 1.28)	-1.52 (-4.92, 1.88)	
Q3	0.02 (-0.95, 0.99)	-0.19 (-1.19, 0.80)	-3.65 (-7.07, -0.22)	
Q4	-0.57 (-1.59, 0.45)	-0.65 (-1.70, 0.40)	-6.20 (-9.81, -2.58)	
Functional ability				
None (ref.)	-	-	-	0.02
Q1	-2.22 (-3.56, -0.89)	-0.69 (-2.07, 0.68)	-5.13 (-9.86, -0.39)	
Q2	-2.47 (-3.85, -1.08)	-1.48 (-2.90, -0.05)	-5.55 (-10.46, -0.63)	
Q3	-2.89 (-4.37, -1.41)	-0.88 (-2.40, 0.64)	-6.76 (-12.00, -1.52)	
Q4	-3.27 (-4.88, -1.67)	-1.63 (-3.27, 0.02)	-8.33 (-14.01, -2.65)	
Dependence				
Q1 (ref.)	-	-	-	<0.001
Q2	-1.21 (-2.19, -0.23)	-0.93 (-1.93, 0.08)	-4.61 (-8.08, -1.13)	
Q3	-2.15 (-3.22, -1.08)	-1.55 (-2.65, -0.45)	-6.78 (-10.57, -2.99)	
Q4	-4.57 (-5.85, -3.29)	-2.38 (-3.70, -1.07)	-15.92 (-20.46, -11.38)	

S2.2 Informant-rated living well and self-rated factors

Table S2.2 reports the associations between informant-rated living well measures and self-rated factors adjusting for age, sex, dementia subtypes and relationship between person with dementia and carer.

Table S2.2: Informant-rated living well and self-rated factors

	QoL-AD	SwLS	WHO-5	p-value
Capitals, assets and resources				
Personal relations				
Q1 (ref.)	-	-	-	<0.001
Q2	1.67 (0.40, 2.94)	1.34 (-0.17, 2.85)	3.13 (-1.49, 7.74)	
Q3	3.27 (1.85, 4.70)	1.77 (0.08, 3.47)	5.80 (0.62, 10.98)	
Q4	2.84 (1.37, 4.30)	1.92 (0.18, 3.66)	3.32 (-1.99, 8.63)	
Social network				
Not isolated (ref.)	-	-	-	0.56
Isolated	0.07 (-1.01, 1.15)	0.65 (-0.64, 1.93)	1.82 (-2.12, 5.76)	
Resource generator				
Continuous score	-0.05 (-0.17, 0.07)	-0.11 (-0.24, 0.03)	-0.22 (-0.65, 0.21)	0.50
Social participation				
0 (ref.)	-	-	-	0.78
1	-0.18 (-1.56, 1.19)	0.42 (-1.21, 2.06)	-1.34 (-6.33, 3.65)	
2+	0.66 (-0.64, 1.97)	0.41 (-1.14, 1.97)	2.70 (-2.04, 7.45)	
Civic participation				
High (ref.)	-	-	-	0.33
Low	-0.94 (-2.19, 0.31)	-1.05 (-2.53, 0.44)	-4.11 (-8.65, 0.42)	
Local trust				
Likely (ref.)	-	-	-	0.85
Other	0.04 (-1.07, 1.15)	-0.47 (-1.79, 0.85)	0.03 (-4.02, 4.07)	
Willingness to help				
Strongly agree (ref.)	-	-	-	0.40
Slightly agree	0.36 (-0.71, 1.44)	0.35 (-0.92, 1.63)	0.31 (-3.59, 4.21)	
Not agree	-0.44 (-2.12, 1.23)	1.31 (-0.68, 3.29)	2.11 (-3.97, 8.18)	
Education				
No qualification (ref.)	-	-	-	0.98
GCSE/equivalent	0.07 (-1.31, 1.45)	-0.22 (-1.86, 1.42)	1.01 (-4.00, 6.02)	
A level/equivalent	0.30 (-0.87, 1.47)	-0.13 (-1.52, 1.27)	2.37 (-1.89, 6.64)	
College	-0.06 (-1.52, 1.39)	-0.37 (-2.10, 1.36)	0.00 (-5.29, 5.28)	
Cultural capitals				
Q1 (ref.)	-	-	-	0.04
Q2	0.71 (-0.59, 2.01)	0.24 (-1.30, 1.78)	3.33 (-1.39, 8.05)	
Q3	0.82 (-0.48, 2.13)	0.69 (-0.86, 2.24)	1.20 (-3.55, 5.94)	
Q4	1.70 (0.23, 3.17)	0.88 (-0.86, 2.63)	8.60 (3.26, 13.94)	
Income				
Q1 (ref.)	-	-	-	<0.001
Q2	1.30 (0.01, 2.59)	-0.77 (-2.30, 0.76)	4.40 (-0.29, 9.08)	
Q3	1.03 (-0.32, 2.38)	-1.76 (-3.36, -0.16)	2.55 (-2.36, 7.45)	
Q4	1.85 (0.39, 3.31)	-1.56 (-3.30,0.17)	7.83 (2.52, 13.13)	
Social location				

Social class				
I/II (ref.)	-	-	-	0.07
III-NM	-0.36 (-1.33, 0.61)	-0.11 (-1.27, 1.04)	-2.90 (-6.27, 0.48)	
III-M	-0.63 (-1.57, 0.30)	0.99 (-0.13, 2.11)	-1.74 (-5.00, 1.53)	
IV/V/VI	-0.71 (-1.85, 0.43)	0.37 (-1.00, 1.73)	-2.94 (-6.91, 1.04)	
Social comparison [s]				
Ordinal	1.08 (0.71, 1.46)	1.09 (0.65, 1.54)	3.89 (2.59, 5.19)	<0.001
Societal ladder				
Ordinal	0.22 (-0.35, 0.78)	0.68 (0.00, 1.36)	0.04 (-1.94, 2.02)	0.13
Community ladder				
Ordinal	0.85 (0.34, 1.35)	0.30 (-0.30, 0.90)	2.62 (0.87, 4.37)	0.005
Psychological characteristics & health				
Personality				
Extraversion	-0.01 (-0.13, 0.10)	0.03 (-0.10, 0.17)	-0.04 (-0.45, 0.36)	0.92
Agreeableness	-0.01 (-0.17, 0.15)	-0.32 (-0.51, -0.14)	-0.02 (-0.57, 0.54)	0.002
Conscientiousness	0.06 (-0.08, 0.21)	-0.10 (-0.27, 0.06)	0.11 (-0.38, 0.61)	0.24
Neuroticism	-0.04 (-0.18, 0.10)	0.00 (-0.16, 0.16)	-0.74 (-1.23, -0.26)	0.002
Intellect	0.02 (-0.12, 0.16)	0.03 (-0.13, 0.19)	-0.08 (-0.56, 0.40)	0.84
Religion				
Slightly important (ref.)	-	-	-	0.95
Moderate	0.68 (-0.53, 1.89)	0.62 (-0.79, 2.03)	2.14 (-2.04, 6.31)	
Important	0.33 (-0.83, 1.49)	0.37 (-0.98, 1.72)	1.51 (-2.48, 5.50)	
Spirituality				
Slightly important (ref.)	-	-	-	0.56
Moderate	0.14 (-1.05, 1.34)	-0.17 (-1.57, 1.22)	-0.56 (-4.68, 3.55)	
Important	-0.74 (-1.93, 0.46)	-0.22 (-1.61, 1.17)	-3.93 (-8.04, 0.18)	
Optimism				
Continuous score	0.06 (-0.10, 0.21)	0.01 (-0.17, 0.19)	0.09 (-0.44, 0.62)	0.89
Self-esteem (single item)				
Disagree (ref.)	-	-	-	0.18
Neutral	0.28 (-0.94, 1.50)	-0.47 (-1.89, 0.94)	1.09 (-3.11, 5.28)	
Agree	-0.79 (-2.01, 0.42)	-0.61 (-2.02, 0.80)	-1.70 (-5.87, 2.47)	
Strongly agree	0.86 (-1.02, 2.73)	0.79 (-1.40, 2.98)	6.18 (-0.29, 12.65)	
Self-esteem (Rosenberg)				
Q1 (ref.)	-	-	-	0.09
Q2	0.09 (-1.14, 1.32)	0.28 (-1.16, 1.71)	-0.80 (-5.04, 3.44)	
Q3	0.61 (-1.22, 2.44)	0.62 (-1.51, 2.75)	-4.34 (-10.65, 1.97)	
Q4	-0.02 (-1.63, 1.59)	-0.54 (-2.42, 1.33)	0.99 (-4.56, 6.54)	
Sense of self				
Strongly agree (ref.)	-	-	-	0.63
Agree	-0.80 (-2.12, 0.52)	-0.18 (-1,72, 1.35)	0.85 (-3.69, 5.39)	
Neutral	-1.36 (-3.48, 0.77)	-1.76 (-4.23, 0.71)	0.68 (-6.64, 8.00)	
Disagree	-0.73 (-2.29, 0.83)	-0.90 (-2.72, 0.92)	0.57 (-4.81, 5.94)	
Strongly disagree	-2.10 (-5.53, 1.32)	-1.81 (-5.80, 2.19)	-5.32 (-17.13, 6.49)	
Self-acceptance				
Q1 (ref.)	-	-	-	0.09
Q2	1.08 (-0.17, 2.33)	1.18 (-0.27, 2.63)	3.74 (-0.56, 8.04)	
Q3	0.72 (-0.58, 2.01)	1.48 (-0.03, 2.99)	2.27 (-2.19, 6.74)	
Q4	1.49 (0.04, 2.94)	2.77 (1.08, 4.46)	2.73 (-2.27, 7.73)	
Self-efficacy				
Q1 (ref.)	-	-	-	0.05
Q2	-0.42 (-1.59, 0.74)	1.57 (0.21, 2.93)	0.27 (-3.75, 4.29)	
Q3	-1.00 (-2.25, 0.26)	1.51 (0.05, 2.97)	-1.41 (-5.72, 2.90)	
Q4	-0.11 (-1.44, 1.21)	1.97 (0.43, 3.52)	-0.02 (-4.58, 4.54)	
Loneliness: scale				
Not lonely (ref.)	-	-	-	0.61
Lonely	0.16 (-0.78, 1.10)	0.55 (-0.54, 1.64)	1.70 (-1.53, 4.93)	
Loneliness: single item				

No/more or less (ref.)	-	-	-	
Yes	-2.03 (-3.70, -0.35)	-1.77 (-3.73, 0.18)	-6.16 (-11.93, -0.38)	0.09
Stigma				
<8 (ref.)	-	-	-	0.14
8	0.38 (-0.60, 1.36)	0.39 (-0.76, 1.53)	3.08 (-0.30, 6.46)	
>8	-1.01 (-2.20, 0.17)	-0.37 (-1.75, 1.01)	-1.95 (-6.03, 2.14)	
Life events [s]				
None (ref.)	-	-	-	0.27
T1	0.86 (-0.24, 1.95)	-0.08 (-1.36, 1.20)	1.42 (-2.36, 5.19)	
T2	1.50 (0.18, 2.83)	0.53 (-1.01, 2.07)	3.38 (-1.18, 7.94)	
T3	0.85 (-0.36, 2.06)	-0.58 (-1.99, 0.82)	-0.29 (-4.45, 3.87)	
Depression				
No (ref.)	-	-	-	0.03
Yes	-1.26 (-2.46, -0.06)	-1.34 (-2.74, 0.06)	-6.11 (-10.25, -1.97)	
Attitudes toward own ageing				
Continuous score	0.54 (0.21, 0.87)	0.71 (0.33, 1.09)	2.31 (1.19, 3.43)	<0.001
Subjective age				
Continuous score	0.06 (-0.52, 0.63)	-0.10 (-0.77, 0.57)	-0.27 (-2.26, 1.71)	0.93
Physical fitness and health				
Physical activity [s]				
Inactive (ref.)	-	-	-	0.04
Moderately inactive	0.36 (-1.15, 1.87)	0.97 (-0.85, 2.79)	0.93 (-4.26, 6.12)	
Moderately active	0.60 (-0.57, 1.77)	-0.53 (-1.94, 0.87)	3.01 (-1.01, 7.04)	
Active	1.09 (-0.17, 2.35)	-0.01 (-1.53, 1.51)	6.65 (2.31, 10.99)	
Smoking [s]				
Never (ref.)	-	-	-	0.84
Ex-smoker	0.11 (-0.64, 0.86)	-0.04 (-0.94, 0.87)	0.83 (-1.74, 3.41)	
Current smoker	-1.02 (-2.68, 0.65)	-0.40 (-2.41, 1.61)	-0.95 (-6.68, 4.79)	
Drinking alcohol [s]				
No (ref.)	-	-	-	0.01
Yes	1.11 (0.37, 1.85)	0.26 (-0.62, 1.15)	1.31 (-1.22, 3.85)	
Co-morbidity score [s]				
1-2 (ref.)	-	-	-	0.04
3-4	-0.75 (-1.67, 0.16)	-0.90 (-2.01, 0.21)	-4.16 (-7.33, -0.99)	
5+	-1.21 (-2.13, -0.30)	-0.53 (-1.63, 0.58)	-2.56 (-5.71, 0.59)	
Falls [s]				
0 (ref.)	-	-	-	0.26
1	-0.42 (-1.44, 0.61)	-0.65 (-1.89, 0.59)	0.14 (-3.39, 3.67)	
2+	-0.67 (-1.53. 0.20)	-1.15 (-2.19, -0.11)	-2.87 (-5.84, 0.10)	
Poor sleep [s]				
Ordinal variable	-0.07 (-0.44, 0.29)	-0.27 (-0.71, 0.17)	-1.41 (-2.66, -0.16)	0.05
Poor eyesight [s]				
Ordinal variable	-0.65 (-1.04, -0.27)	-0.55 (-1.01, -0.08)	-1.19 (-2.52, 0.14)	0.006
Poor hearing [s]				
Ordinal variable	-0.02 (-0.38, 0.34)	-0.05 (-0.49, 0.38)	-1.68 (-2.93, -0.44)	0.004
Poor diet (SNAQ) [s]				
No (ref.)	-	-	-	0.01
Yes	-1.21 (-2.30, -0.12)	0.09 (-1.22, 1.41)	-5.12 (-8.87, -1.37)	
Change in gustation [s]				
No (ref.)	-	-	-	0.33
Yes	0.13 (-0.95, 1.20)	-0.84 (-2.13, 0.46)	0.91 (-2.79, 4.60)	
Change in olfaction [s]				
No (ref.)	-	-	-	0.77
Yes	-0.52 (-1.70, 0.65)	-0.50 (-1.91, 0.92)	-2.13 (-6.18, 1.91)	
Self-rated health [s]				
Excellent/very good (ref.)	-	-	-	0.02
Good	-1.02 (-1.92, -0.12)	-0.36 (-1.45, 0.73)	-1.19 (-4.30, 1.91)	
Fair	-2.00 (-3.11, -0.89)	-1.42 (-2.76, -0.09)	-4.80 (-8.60, -0.99)	

Poor/very poor	-2.30 (-3.70, -0.90)	-1.71 (-3.39, -0.02)	-7.33 (-12.14, -2.51)	
Managing everyday life with dementia				
Cognition (ACE-III)				
Q1 (ref.)	-	-	-	0.31
Q2	-0.19 (-1.15, 0.77)	-0.41 (-1.57, 0.75)	-0.86 (-4.26, 2.54)	
Q3	0.60 (-0.38, 1.58)	0.13 (-1.05, 1.31)	0.13 (-3.34, 3.61)	
Q4	0.85 (-0.19, 1.89)	-0.42 (-1.67, 0.84)	0.09 (-3.58, 3.77)	
Functional ability				
None (ref.)	-	-	-	0.003
Q1	-1.90 (-3.25, -0.56)	-1.95 (-3.57, -0.33)	-6.41 (-11.16, -1.66)	
Q2	-1.52 (-2.92, -0.12)	-2.79 (-4.48, -1.10)	-6.69 (-11.65, -1.73)	
Q3	-2.38 (-3.87, -0.90)	-2.87 (-4.66, -1.08)	-9.22 (-14.47, -3.98)	
Q4	-3.08 (-4.69, -1.47)	-3.85 (-5.79, -1.91)	-12.95 (-18.64, -7.26)	
Dependence				
Q1 (ref.)	-	-	-	0.008
Q2	-0.21 (-1.21, 0.80)	-0.39 (-1.60, 0.83)	-0.44 (-4.00, 3.12)	
Q3	-1.51 (-2.61, -0.41)	-1.29 (-2.62, 0.03)	-4.44 (-8.33, -0.56)	
Q4	-2.62 (-3.92, -1.32)	-2.24 (-3.81, -0.68)	-6.69 (-11.28, -2.10)	

S2.3 Informant-rated living well and informant-rated factors

Table S2.3 reports the associations between informant-rated living well measures and informant-rated measures. Since not all items were rated by both people with dementia and carers, the analysis only focused on the small number of informant-rated measures. All estimates were adjusted for age, sex, dementia subtypes and relationship between person with dementia and carer.

Table S2.3: Informant-rated living well and informant-rated factors

	QoL-AD	SwLS	WHO-5	p-value
Capitals, assets and resources				
Social network [i]				
Not isolated (ref.)	-	-	-	0.008
Isolated	-1.50 (-2.41, -0.59)	-0.59 (-1.69, 0.52)	-4.36 (-7.55, -1.17)	
Cultural capitals [i]				
Q1 (ref.)	-	-	-	<0.001
Q2	2.88 (1.97, 3.78)	0.87 (-0.23, 1.96)	6.64 (3.48, 9.80)	
Q3	2.88 (1.93, 3.83)	-0.16 (-1.31, 0.99)	8.14 (4.81, 11.46)	
Q4	4.28 (3.31, 5.26)	1.20 (0.02, 2.39)	12.39 (8.97, 15.81)	
Social location				
Social comparison [i]				
Ordinal	1.97 (1.64, 2.29)	2.53 (2.16, 2.90)	5.67 (4.53, 6.81)	<0.001
Psychological characteristics and health				
Life events [i]				
None (ref.)	-	-	-	0.009
T1	0.59 (-0.37, 1.55)	-0.43 (-1.55, 0.68)	-0.90 (-4.20, 2.41)	
T2	-0.77 (-1.70, 0.17)	-1.35 (-2.44, -0.26)	-3.54 (-6.77, -0.32)	
T3	-1.41 (-2.41, -0.41)	-1.42 (-2.59, -0.25)	-5.38 (-8.83, -1.92)	
Physical fitness and health				
Physical activity [i]				
Inactive (ref.)	-	-	-	<0.001
Moderately inactive	1.05 (-0.18, 2.28)	0.55 (-0.95, 2.06)	1.18 (-3.03, 5.38)	
Moderately active	1.63 (0.57, 2.69)	1.59 (0.30, 2.89)	4.23 (0.61, 7.85)	
Active	2.37 (1.25, 3.48)	1.36 (0.00, 2.72)	9.71 (5.92, 13.51)	
Falls [i]				
0 (ref.)	-	-	-	<0.001
1	-0.46 (-1.53, 0.62)	-0.46 (-1.77, 0.86)	-1.33 (-5.00, 2.34)	
2+	-2.11 (-2.84, -1.37)	-1.46 (-2.36, -0.56)	-7.06 (-9.58, -4.54)	
Poor sleep [i]				
Ordinal variable	-0.70 (-1.05, -0.35)	-0.88 (-1.30, -0.45)	-3.69 (-4.87, -2.51)	<0.001
Poor appetite [i]				
Ordinal variable	-1.31 (-1.70, -0.93)	-0.92 (-1.39, -0.45)	-4.20 (-5.51, -2.89)	<0.001
Managing everyday life with dementia				
Functional ability [i]				
None (ref.)	-	-	-	<0.001
Q1	-3.43 (-5.60, -1.26)	-3.85 (-6.70, -0.99)	-3.77 (-11.54, 4.01)	
Q2	-4.63 (-6.92, -2.33)	-4.92 (-7.94, -1.90)	-4.91 (-13.14, 3.32)	

Q3	-5.82 (-8.19, -3.43)	-5.89 (-9.02, -2.76)	-8.92 (-17.45, -0.40)	
Q4	-5.51 (-7.96, -3.06)	-5.77 (-8.99, -2.55)	-6.02 (-14.80, 2.76)	
Dependence [i]				
Q1 (ref.)	-	-	-	0.04
Q2	-0.35 (-1.92, 1.22)	1.43 (-0.64, 3.49)	-2.63 (-8.26, 3.00)	
Q3	-0.64 (-2.26, 0.98)	0.36 (-1.77, 2.49)	-4.32 (-10.13, 1.48)	
Q4	-1.92 (-3.60, -0.23)	-0.12 (-2.33, 2.09)	-6.31 (-12.35, -0.28)	
NPI [i]				
None (ref.)	-	-	-	<0.001
T1	-1.97 (-3.03, -0.91)	-2.33 (-3.72, -0.93)	-9.21 (-13.01, -5.41)	
T2	-3.46 (-4.59, -2.33)	-4.26 (-5.74, -2.77)	-16.85 (-20.90, -12.79)	
T3	-6.18 (-7.38, -4.97)	-5.88 (-7.46, -4.30)	-25.80 (-30.11, -21.48)	
Decision involvement[i]				
T1 (ref.)	-	-	-	0.004
T2	1.05 (0.23, 1.86)	0.19 (-0.88, 1.27)	2.73 (-0.19, 5.66)	
T3	1.65 (0.73, 2.56)	-0.34 (-1.55, 0.86)	3.54 (0.25, 6.84)	

S2.4 Informant-rated living well, self- and informant-rated factors

All self- and informant-rated measures were fitted in one model to investigate their associations with informant-rated living well measures. Table S2.4 reports results adjusting for age, sex, dementia subtypes and relationship between person with dementia and carer in the five constructs.

Table S2.4: Informant-rated living well, self- and informant-rated factors

	QoL-AD	SwLS	WHO-5	p-value
Capitals, assets and resources				
Personal relations				
Q1 (ref.)	-	-	-	0.001
Q2	1.89 (0.60, 3.17)	1.53 (0.00, 3.06)	3.80 (-0.86, 8.47)	
Q3	3.25 (1.81, 4.69)	1.93 (0.21, 3.64)	5.76 (0.52, 10.99)	
Q4	2.79 (1.31, 4.27)	2.10 (0.33, 3.87)	3.10 (-2.29, 8.49)	
Social network [s]				
Not isolated (ref.)	-	-	-	0.51
Isolated	0.11 (-1.00, 1.22)	0.68 (-0.64, 2.01)	2.16 (-1.88, 6.20)	
Social network [i]				
Not isolated (ref.)	-	-	-	0.74
Isolated	-0.61 (-1.90, 0.67)	-0.32 (-1.86, 1.21)	-2.50 (-7.17, 2.16)	
Resource generator				
Continuous score	-0.03 (-0.15, 0.09)	-0.06 (-0.21, 0.08)	-0.14 (-0.57, 0.29)	0.84
Social participation				
0 (ref.)	-	-	-	0.92
1	-0.13 (-1.51, 1.24)	0.46 (-1.19, 2.10)	-0.88 (-5.89, 4.13)	
2+	0.39 (-0.96, 1.73)	0.42 (-1.19, 2.02)	2.23 (-2.65, 7.11)	
Civic participation				
High (ref.)	-	-	-	0.73
Low	-0.52 (-1.80, 0.75)	-0.69 (-2.22, 0.83)	-2.52 (-7.17, 2.13)	
Local trust				
Likely (ref.)	-	-	-	0.94
Other	-0.19 (-1.32, 0.93)	-0.40 (-1.74, 0.95)	-0.39 (-4.48, 3.70)	
Willingness to help				
Strongly agree (ref.)	-	-	-	0.42
Slightly agree	0.33 (-0.76, 1.41)	0.30 (-1.00, 1.59)	0.15 (-3.79, 4.10)	
Not agree	-0.37 (-2.08, 1.34)	1.40 (-0.64, 3.45)	2.36 (-3.86, 8.59)	
Education				
No qualification (ref.)	-	-	-	0.93
GCSE/equivalent	-0.08 (-1.51, 1.34)	-0.45 (-2.15, 1.25)	-1.00 (-6.18, 4.19)	
A level/equivalent	0.26 (-0.92, 1.45)	-0.11 (-0.53, 1.31)	2.18 (-2.14, 6.50)	
College	-0.14 (-1.64, 1.36)	-0.60 (-2.39, 1.19)	-0.83 (-6.28, 4.62)	
Cultural capitals [s]				
Q1 (ref.)	-	-	-	0.18
Q2	-0.01 (-1.38, 1.37)	0.32 (-1.33, 1.96)	1.54 (-3.46, 6.55)	
Q3	-0.47 (-1.92, 0.98)	0.52 (-1.21, 2.26)	-2.33 (-7.61, 2.95)	
Q4	-0.32 (-2.09, 1.45)	0.32 (-1.80, 2.43)	3.27 (-3.16, 9.71)	
Cultural capitals [i]				

Q1 (ref.)	-	-	-	0.002
Q2	2.54 (1.26, 3.83)	0.69 (-0.84, 2.22)	6.93 (2.26, 11.60)	
Q3	2.40 (0.93, 3.87)	0.12 (-1.21, 1.88)	7.91 (2.54, 13.27)	
Q4	3.51 (1.82, 5.20)	1.72 (-1.80, 2.43)	10.13 (3.99, 16.27)	
Income				
Q1 (ref.)	-	-	-	0.001
Q2	1.41 (0.09, 2.72)	-0.75 (-2.32, 0.82)	4.31 (-0.47, 9.09)	
Q3	0.99 (-0.38, 2.37)	-1.76 (-3.40, -0.13)	2.37 (-2.62, 7.37)	
Q4	1.80 (0.30, 3.29)	-1.51 (-3.29, 0.28)	7.65 (2.21, 13.08)	
Social location				
Social class				
I/II (ref.)	-	-	-	0.07
III-NM	-0.04 (-0.99, 0.90)	0.21 (-0.89, 1.31)	-2.30 (-5.64, 1.04)	
III-M	-0.52 (-1.43, 0.39)	1.08 (0.02, 2.14)	-1.54 (-4.75, 1.67)	
IV/V/VI	-0.70 (-1.81, 0.42)	0.37 (-0.94, 1.67)	-3.22 (-7.17, 0.73)	
Social comparison [s]				
Ordinal	0.77 (0.40, 1.14)	0.64 (0.21, 1.07)	3.02 (1.72, 4.33)	<0.001
Social comparison [i]				
Ordinal	1.79 (1.44, 2.14)	2.40 (1.99, 2.80)	4.94 (3.70, 6.17)	<0.001
Societal ladder				
Ordinal	0.11 (-0.44, 0.66)	0.55 (-0.09, 1.19)	-0.21 (-2.15, 1.74)	0.22
Community ladder				
Ordinal	0.92 (0.44, 1.41)	0.37 (-0.20, 0.94)	2.92 (1.19, 4.64)	0.001
Psychological characteristics and health				
Personality				
Extraversion	-0.04 (-0.15, 0.08)	0.01 (-0.13, 0.14)	-0.08 (-0.49, 0.33)	0.90
Agreeableness	-0.04 (-0.20, 0.13)	-0.35 (-0.53, -0.16)	-0.08 (-0.64, 0.48)	0.001
Conscientiousness	0.03 (-0.12, 0.18)	-0.15 (-0.32, 0.02)	0.01 (-0.50, 0.52)	0.17
Neuroticism	-0.04 (-0.18, 0.10)	0.01 (-0.15, 0.18)	-0.76 (-1.26, -0.27)	0.001
Intellect	0.01 (-0.13, 0.15)	0.02 (-0.15, 0.18)	-0.10 (-0.59, 0.40)	0.90
Religion				
Slightly important (ref.)	-	-	-	0.99
Moderate	0.54 (-0.70, 1.78)	0.23 (-1.20, 1.67)	1.37 (-2.90, 5.64)	
Important	0.23 (-0.96, 1.43)	0.29 (-1.10, 1.67)	0.91 (-3.22, 5.03)	
Spirituality				
Slightly important (ref.)	-	-	-	0.74
Moderate	0.30 (-0.92, 1.52)	-0.07 (-1.48, 1.34)	0.32 (-3.90, 4.53)	
Important	-0.63 (-1.86, 0.60)	-0.18 (-1.60, 1.24)	-3.07 (-7.31, 1.17)	
Optimism				
Continuous score	0.05 (-0.11, 0.20)	0.02 (-0.17, 0.20)	0.05 (-0.50, 0.59)	0.94
Self-esteem (single item)				
Disagree (ref.)	-	-	-	0.16
Neutral	0.34 (-0.90, 1.57)	-0.32 (-1.75, 1.11)	1.35 (-2.90, 5.60)	
Agree	-0.79 (-2.02, 0.43)	-0.50 (-1.91, 0.92)	-1.32 (-5.54, 2.90)	
Strongly agree	0.93 (-0.97, 2.83)	0.84 (-1.36, 3.04)	6.91 (0.35, 13.47)	
Self-esteem (Rosenberg)				
Q1 (ref.)	-	-	-	0.11
Q2	0.18 (-1.07, 1.43)	0.35 (-1.09, 1.80)	-0.54 (-4.86, 3.77)	
Q3	0.63 (-1.23, 2.49)	0.60 (-1.55, 2.75)	-4.37 (-10.79, 2.04)	
Q4	0.17 (-1.46, 1.80)	-0.40 (-2.29, 1.48)	1.41 (-4.22, 7.03)	
Sense of self				
Strongly agree (ref.)	-	-	-	0.70
Agree	-0.80 (-2.18, 0.57)	-0.10 (-1.69, 1.49)	0.87 (-3.87, 5.61)	
Neutral	-1.45 (-3.64, 0.74)	-1.85 (-4.38, 0.68)	0.47 (-7.08, 8.01)	
Disagree	-0.77 (-2.38, 0.85)	-0.63 (-2.50, 1.23)	0.74 (-4.84, 6.31)	
Strongly disagree	-2.15 (-5.61, 1.31)	-1.62 (-5.62, 2.38)	-4.84 (-16.78, 7.09)	
Self-acceptance				
Q1 (ref.)	-	-	-	0.05

Q2	1.12 (-0.15, 2.38)	1.38 (-0.08, 2.84)	4.26 (-0.09, 8.61)	
Q3	0.70 (-0.61, 2.01)	1.69 (0.17, 3.20)	2.53 (-1.99, 7.05)	
Q4	1.40 (-0.06, 2.87)	2.84 (1.14, 4.54)	2.39 (-2.67, 7.46)	
Self-efficacy				
Q1 (ref.)	-	-	-	0.02
Q2	-0.33 (-1.51, 0.85)	1.79 (0.43, 3.16)	0.85 (-3.22, 4.92)	
Q3	-0.93 (-2.20, 0.33)	1.73 (0.26, 3.19)	-0.86 (-5.23, 3.50)	
Q4	0.17 (-1.18, 1.51)	2.27 (0.71, 3.82)	0.60 (-4.03, 5.23)	
Loneliness: scale				
Not lonely (ref.)	-	-	-	0.60
Lonely	0.15 (-0.80, 1.10)	0.60 (-0.50, 1.69)	1.62 (-1.65, 4.90)	
Loneliness: single item				
No/more or less (ref.)	-	-	-	0.09
Yes	-1.92 (-3.65, -0.19)	-1.97 (-3.96, 0.03)	-6.94 (-12.89, -0.99)	
Stigma				
<8 (ref.)	-	-	-	0.18
8	0.30 (-0.71, 1.30)	0.24 (-0.91, 1.40)	2.79 (-0.66, 6.25)	
>8	-1.01 (-2.22, 0.20)	-0.43 (-1.83, 0.96)	-2.36 (-6.53, 1.80)	
Life events [s]				
None (ref.)	-	-	-	0.25
T1	0.93 (-0.23, 2.09)	-0.14 (-1.49, 1.20)	2.14 (-1.86, 6.14)	
T2	1.71 (0.36, 3.07)	0.82 (-0.74, 2.39)	4.44 (-0.23, 9.10)	
T3	1.28 (-0.04, 2.60)	-0.25 (-1.77, 1.28)	1.75 (-2.80, 6.30)	
Life events [i]				
None (ref.)	-	-	-	
T1	0.41 (-0.78, 1.61)	-0.03 (-1.41, 1.35)	-0.60 (-4.73, 3.52)	0.23
T2	-0.90 (-2.08, 0.28)	-1.42 (-2.78, -0.05)	-2.68 (-6.76, 1.39)	
T3	-1.20 (-2.45, 0.06)	-0.80 (-2.25, 0.66)	-5.19 (-9.53, -0.85)	
Depression				
No (ref.)	-	-	-	
Yes	-1.38 (-2.59, -0.17)	-1.42 (-2.82, -0.01)	-6.13 (-10.31, -1.95)	0.03
Attitudes toward own ageing				
Continuous score	0.50 (0.17, 0.83)	0.69 (0.31, 1.08)	2.21 (1.07, 3.35)	<0.001
Subjective age				
Continuous score	0.15 (-0.44, 0.74)	0.03 (-0.66, 0.71)	0.10 (-1.94, 2.14)	0.95
Physical fitness and health				
Physical activity [s]				
Inactive (ref.)	-	-	-	0.29
Moderately inactive	0.06 (-1.45, 1.56)	0.74 (-1.11, 2.59)	-0.37 (-5.54, 4.80)	
Moderately active	-0.25 (-1.55, 1.05)	-1.24 (-2.84, 0.36)	0.21 (-4.26, 4.68)	
Active	0.38 (-1.03, 1.80)	-0.52 (-2.26, 1.22)	4.62 (-0.23, 9.47)	
Physical activity [i]				
Inactive (ref.)	-	-	-	0.06
Moderately inactive	0.93 (-0.42, 2.27)	0.47 (-1.18, 2.12)	1.16 (-3.45, 5.77)	
Moderately active	1.36 (0.16, 2.57)	1.84 (0.36, 3.33)	3.02 (-1.12, 7.15)	
Active	1.66 (0.30, 3.02)	0.87 (-0.80, 2.55)	6.85 (2.18, 11.52)	
Smoking [s]				
Never (ref.)	-	-	-	0.77
Ex-smoker	0.12 (-0.63, 0.88)	-0.03 (-0.96, 0.90)	1.18 (-1.42, 3.77)	
Current smoker	-1.05 (-2.71, 0.61)	-0.55 (-2.60, 1.50)	-0.96 (-6.66, 4.75)	
Drinking alcohol [s]				
No (ref.)	-	-	-	0.007
Yes	1.05 (0.31, 1.80)	0.37 (-0.55, 1.28)	0.49 (-2.07, 3.05)	
Co-morbidity score [s]				
1-2 (ref.)	-	-	-	0.10
3-4	-0.57 (-1.50, 0.37)	-0.82 (-1.97. 0.33)	-3.68 (-6.89, -0.47)	
5+	-0.79 (-1.72, 0.13)	0.10 (-1.04, 1.24)	-1.33 (-4.51, 1.85)	
Falls [s]				
0 (ref.)	-	-	-	0.53

1	-0.14 (-1.22, 0.94)	-0.54 (-1.87, 0.78)	0.01 (-3.69, 3.72)	
2+	0.16 (-0.86, 1.17)	-0.99 (-2.24, 0.26)	-1.02 (-4.50, 2.46)	
Falls [i]				
0 (ref.)	-	-	-	0.01
1	-0.39 (-1.57, 0.80)	-0.18 (-1.64, 1.27)	-0.82 (-4.88, 3.24)	
2+	-1.84 (-2.77, -0.91)	-0.89 (-2.03, 0.25)	-5.16 (-8.34, -1.98)	
Poor sleep [s]				
Ordinal variable	0.24 (-0.17, 0.65)	0.04 (-0.47, 0.55)	0.13 (-1.29, 1.55)	0.56
Poor sleep [i]				
Ordinal variable	-0.65 (-1.07, -0.23)	-0.79 (-1.31, -0.28)	-3.27 (-4.72, -1.83)	<0.001
Poor eyesight [s]				
Ordinal variable	-0.60 (-0.99, -0.21)	-0.56 (-1.04, -0.07)	-1.17 (-2.52, 0.17)	0.02
Poor hearing [s]				
Ordinal variable	-0.05 (-0.41, 0.32)	-0.02 (-0.47, 0.43)	-1.76 (-3.01, -0.51)	0.004
Poor diet (SNAQ) [s]				
No (ref.)	-	-	-	0.09
Yes	0.17 (-0.99, 1.32)	1.43 (0.01, 2.85)	-0.98 (-4.93, 2.98)	
Poor appetite [i]				
Ordinal variable	-1.23 (-1.68, -0.79)	-0.92 (-1.47, -0.38)	-4.08 (-5.60, -2.55)	<0.001
Change in gustation [s]				
No (ref.)	-	-	-	0.45
Yes	0.41 (-0.68, 1.51)	-0.55 (-1.89, 0.79)	1.24 (-2.51, 4.98)	
Change in olfaction [s]				
No (ref.)	-	-	-	0.79
Yes	-0.46 (-1.65, 0.73)	-0.36 (-1.82, 1.10)	-2.12 (-6.20, 1.95)	
Self-rated health [s]				
Excellent/very good (ref.)	-	-	-	0.04
Good	-1.12 (-2.03, -0.21)	-0.49 (-1.61, 0.64)	-1.15 (-4.29, 1.99)	
Fair	-1.95 (-3.06, -0.85)	-1.39 (-2.75, -0.03)	-4.54 (-8.33, -0.75)	
Poor/very poor	-2.08 (-3.51, -0.65)	-1.55 (-3.31, 0.43)	-5.74 (-10.65, -0.83)	
Managing everyday life with dementia				
Cognition (ACE-III)				
Q1 (ref.)	-	-	-	0.05
Q2	-1.31 (-2.28, -0.33)	-0.67 (-1.95, 0.62)	-4.00 (-7.51, -0.50)	
Q3	-0.87 (-1.89, 0.14)	-0.63 (-1.97, 0.70)	-2.92 (-6.56, 0.73)	
Q4	-1.52 (-2.60, -0.45)	-2.16 (-3.57, -0.75)	-5.18 (-9.03, -1.34)	
Functional ability [s]				
None (ref.)	-	-	-	0.26
Q1	-0.81 (-2.11, 0.49)	-1.15 (-2.85, 0.56)	-3.69 (-8.35, 0.97)	
Q2	0.01 (-1.36, 1.37)	-1.14 (-2.93, 0.66)	-3.78 (-8.68, 1.11)	
Q3	-0.63 (-2.12, 0.86)	-1.91 (-3.86, 0.04)	-5.93 (-11.26, -0.60)	
Q4	-0.30 (-1.90, 1.30)	-2.05 (-4.15, 0.05)	-7.00 (-12.73, -1.27)	
Functional ability [i]				
None (ref.)	-	-	-	<0.001
Q1	-3.40 (-5.73, -1.06)	-3.53 (-6.60, -0.47)	-1.77 (-10.14, 6.59)	
Q2	-4.49 (-6.98, -1.99)	-4.27 (-7.54, -0.99)	-1.27 (-10.20, 7.67)	
Q3	-5.88 (-8.49, -3.26)	-5.28 (-8.70, -1.85)	-4.99 (-14.34, 4.37)	
Q4	-5.93 (-8.67, -3.18)	-5.18 (-8.78, -1.58)	-2.36 (-12.18, 7.46)	
Dependence [s]				
Q1 (ref.)	-	-	-	0.67
Q2	0.10 (-0.91, 1.12)	-0.04 (-1.37, 1.29)	0.32 (-3.31, 3.95)	
Q3	-0.23 (-1.33, 0.88)	-0.43 (-1.88, 1.02)	0.07 (-3.89, 4.02)	
Q4	-1.30 (-2.65, 0.04)	-1.31 (-3.07, 0.46)	-2.51 (-7.33, 2.31)	
Dependence [i]				
Q1 (ref.)	-	-	-	0.14
Q2	-0.18 (-1.85, 1.48)	1.41 (-0.78, 3.59)	-1.74 (-7.70, 4.23)	
Q3	-0.59 (-2.34, 1.15)	-0.10 (-2.39, 2.19)	-4.56 (-10.81, 1.70)	
Q4	-1.55 (-3.37, 0.26)	-0.23 (-2.61, 2.16)	-5.42 (-11.92, 1.08)	
NPI [i]				

None (ref.)	-	-	-	<0.001
T1	-2.04 (-3.16, -0.93)	-2.55 (-4.02, -1.09)	-10.29 (-14.30, -6.29)	
T2	-3.62 (-4.82, -2.43)	-4.30 (-5.86, -2.73)	-18.24 (-22.52, -13.97)	
T3	-6.17 (-7.45, -4.90)	-5.78 (-7.45, -4.11)	-26.97 (-31.53, -22.40)	
Decision involvement				
T1 (ref.)	-	-	-	0.09
T2	0.80 (-0.07, 1.67)	0.09 (-1.05, 1.23)	2.42 (-0.70, 5.53)	
T3	1.25 (0.27, 2.23)	-0.41 (-1.70, 0.87)	3.17 (-0.34, 6.68)	

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