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Comparative performance of the EQ-5D-5L and EQ-HWB-Short in the elderly: Data from the EQ DAPHNIE Survey in the UK

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Note: Analysis and results presented here are preliminary; further analyses are underway.

Abstract

Aims: This study evaluated how the EQ-5D-5L and EQ-HWB-Short compare with OPQOL-brief and PROMIS-10 in measuring health-related (HRQL) and broader quality of life (QoL) among older adults using data from the EQ-DAPHNIE survey in the UK.

Methods: A total of 970 respondents aged 65 years or older were included, with descriptive analyses conducted overall and by age groups (65-69, 70-74, 75-79, ≥80). Additional analyses focused on respondents reporting EQ-5D-5L health state 11111 (n=258, 26.6%). Spearman correlations assessed convergent and divergent validity, and known-groups analysis examined discriminative validity.

Results: Respondents averaged 72.1 years of age, with 46.4% female. Mean scores included EQ-5D-5L index 0.855 (SD 0.179), EQ VAS 73.9 (18.9), EQ-HWB-S index score 0.848 (0.180) OPQOL-brief summary 55.2 (7.6), PROMIS-10 physical 46.5 (8.5), and mental 50.5 (9.3) health summary T-scores. While scores varied slightly across age groups, they generally increased from ages 65-69 to 75-79 years, declining at age 80+ years. Correlations demonstrated EQ-5D-5L index's strong association with EQ-HWB-Short index (0.87) and PROMIS-10 physical summary (0.80), and moderate associations with OPQOL-brief summary (0.58) and PROMIS-10 mental summary (0.57) scores. EQ-5D-5L dimensions correlated more strongly with EQ-HWB-Short and PROMIS-10 than OPQOL-brief items. Respondents without chronic conditions reported higher scores across all measures compared to those with chronic conditions. Discriminative ability was strongest amongst those with depression, kidney disease, obesity, and respiratory disease, and weaker in heart disease, diabetes, hypertension, and stroke. Those with EQ-5D-5L health state 11111 reported significant exhaustion, loneliness, concentration difficulties, anxiety, depression, lack of control, and pain on the EQ-HWB-Short, and emotional problems and fatigue on the PROMIS-10.

Conclusion: EQ-5D-5L effectively captures physical health, pain, and mental health aspects of HRQL in older adults. However, it may overlook aspects of broader QoL dimensions such as social functioning, relationships, coping abilities, independence, sleep, memory, vision, hearing, safety, hope, and financial stability, some of which are captured by the EQ-HWB-Short. The OPQOL-brief failed to capture physical and mental aspects of HRQL. These results offer insights into which instruments should be used individually or alongside each other to facilitate assessment of particular constructs of QoL in older populations.

I. INTRODUCTION

The global demographic landscape is witnessing a significant transformation, marked by a growing elderly population across many nations [1]. This demographic shift is poised to exert substantial economic pressure on public expenditures in the coming years [2, 3]. Older individuals often face unique challenges related to physical health, mental well-being, and social interactions, profoundly impacting their overall well-being and quality of life [4]. Consequently, there is an increasing demand for effective strategies to address the health and well-being of older adults, highlighting the need for robust measures that accurately capture these impacts on quality of life.

Traditionally, cost-effectiveness analyses of interventions targeting older adults have predominantly focused on health status alone [5, 6]. However, there is now a growing recognition of the importance of comprehensive instruments that encompass broader dimensions of quality of life [7-9]. This paradigm shift underscores the significance of patient-reported outcomes (PROs) in evaluating interventions, reflecting outcomes that are most pertinent and valued by older individuals themselves. Initiatives such as the Geriatric Minimum Data Set (GMDS-25) [10], the Older Persons and Informal Caregivers Survey Minimum Dataset (TOPICS-MDS) [11], and the ICHOM standard set of health outcome measures for older persons [12] have been pivotal in promoting standardized measures across clinical trials and protocols, aiming to enhance comparability and effectiveness assessments.

Generic health-related quality of life (HRQL) measures such as the EQ-5D and PROMIS-10 are widely used in elderly populations across various health conditions. A recent review of the EQ-5D's application in this group found both the 3L and 5L versions to be feasible and applicable [13]. These generic measures are also sensitive to HRQL impacts of many chronic conditions prevalent in the elderly [14]. However, these instruments may only indirectly measure broader dimensions of QoL, limiting their usefulness in assessing interventions and programs with broader impacts [15].

Recognizing the limitations of existing measures, efforts have been made to develop more comprehensive instruments that assess health and well-being across multiple dimensions specifically for older adults. One such instrument is the EQ-HWB, which was developed to address

critical gaps in current measures [16]. Unlike traditional HRQL instruments that may focus primarily on health status, the EQ-HWB aims to provide a broader assessment encompassing physical, psychological, social, and environmental aspects particularly relevant to older adults.

Since its inception, the EQ-HWB has garnered attention in various studies assessing its measurement properties relative to other established measures such as the EQ-5D [17-21]. Notably, however, existing research has not examined its specific performance in the elderly population in comparison to generic HRQL measures, or examined its performance in comparison to an elderly-specific quality of life measure.

This study aims to fill this gap by evaluating the measurement characteristics of HRQL and broader QoL instruments in a sample of older adults. The comparison includes two instruments from the EuroQol suite (EQ-5D-5L and EQ-HWB-S) and two widely used non EuroQol instruments measuring HRQL (PROMIS-10) and broader quality of life in older people (Old People Quality-of-Life brief questionnaire (OPQOL-brief)).

II. METHODS

A. Design and Data Source

This study utilized data obtained from the EQ-DAPHNIE (EuroQol's Data for the Assessment of Population Health Needs and Instrument Evaluation) survey conducted in the United Kingdom, focusing specifically on respondents aged 65 years or older. The EQ-DAPHNIE is an initiative by the EuroQol Group aimed at establishing research infrastructure and creating comprehensive datasets for use by the members of the group. The primary objective is to design a data collection system for survey-based research studies, enabling the collection of extensive datasets on EuroQol and other instruments measuring HRQL and well-being. The initial phase of data collection for EQ-DAPHNIE has been completed in five countries, with ongoing data collection in 10 countries. The development of the survey and various project aspects were informed by a pilot study conducted in the UK in 2023.

Recruitment for this study was conducted utilizing online survey panels provided by Dynata. Quota sampling methodology was employed, with quotas defined based on age, sex, income, and residence in rural or urban areas using census data specific to the UK. Data collection was done via an online survey conducted between February 02 and March 14, 2024. Quota monitoring was implemented throughout the data collection period to ensure the recruitment of a representative sample in accordance with the predefined quotas. To maintain data integrity, various quality control measures were implemented. These included the utilization of reCAPTCHA to identify and exclude responses generated by bots and the removal of individuals who completed the survey in an unusually brief timeframe. Surveys conducted as part of this study were anonymous, and consent was assumed upon completion and submission of the survey. Ethics approval for this study was obtained from the Health Research Ethics Board at the University of Alberta, Canada (Pro00123401); this approval was sufficient for data collection in the UK given the international nature of the project.

B. Measures

The ***EQ-5D-5L*** assesses health status across five dimensions: mobility (MO), self-care (SC), usual activities (UA), pain/discomfort (PD) and anxiety/ depression (AD), along with a visual analogue scale (EQ VAS). The EQ-5D-5L index score, based on the UK value set [22], ranges from -0.285 to 1.0. The ***EQ-HWB-S*** assesses nine dimensions of health and well-being, including HRQL (e.g., mobility, activities, pain, anxiety, depression) and broader QoL dimensions (e.g., concentration, control, loneliness, exhaustion) The EQ-HWB-S index score, based on the pilot UK value set [23], ranges from - 0.384 to 1.0. The brief ***Old People Quality of Life (OPQOL-brief) questionnaire*** includes one global item about quality of life with five response options (very good, good, alright, bad, very bad), and 13 items covering multiple domains relevant to well-being of older individuals, including physical health, social relationships, psychological functioning, independence, safety, and having enough money [24]. Each of these 13 items is rated on a five-point Likert scale, where respondents indicate the extent to which they agree or disagree with each statement. The OPQOL summary score is computed by summing up the responses across all 13 items (range 13 to 65), with higher scores indicating better QoL. ***PROMIS-10*** is a brief instrument that includes 10 items designed to assess physical and mental health status including mental health, social relationships,

functional health, fatigue, and pain [25]. The PROMIS-10 physical health score ranges from 16.2 to 67.7, and the mental health summary score ranges from 21.2 to 67.6.

C. Statistical Analysis

We conducted descriptive analyses for all measures for the overall sample, by age groups (65-69, 70-74, 75-79, ≥80), and for participants with EQ-5D-5L health state 11111 (n=258), and examined the distribution of scores for each measure using histograms. We evaluated the presence of floor and ceiling effects where appropriate. For convergent and divergent validity, we examined the relationships between the EQ-5D-5L, EQ-HWB-S, OPQOL-brief, and PROMIS-10 dimensions, and items. We hypothesized that items/dimensions that assess similar constructs should have moderate-strong correlation (evidence of convergent validity), and those that do not assess similar constructs should have a weak correlation (evidence of divergent validity). This was done through scatter plots and Spearman correlation analysis. For discriminative validity, we employed the known-groups approach by comparing the summary scores of the measures across different groups defined by the presence/absence of 12 diseases (diabetes, heart disease, hypertension, obesity, respiratory disease, gastrointestinal disorders, rheumatological disorders, musculoskeletal disorders, cancer, sleep disorders, migraine, and mental health disorders including anxiety and depression).

III. RESULTS

962 respondents with complete data, averaging 72.1 years (SD 5.2) of age, with 46.4% female were included. The mean number of chronic conditions was 2.0 (SD 1.7; range 0 – 11), with 80.5% reporting at least one.

A. Descriptive analysis of the measures

Overall, this sample of older adults reported relatively high scores on all HRQL and well-being measures, with score distributions skewed towards better health (Figure 1). The mean EQ-5D-5L index score was 0.855 (SD 0.179), EQ VAS score was 73.9 (18.9), and the EQ-HWB-S index score was 0.848 (SD 0.180). The EQ-5D-5L index score exhibited a slightly wider scoring range (-0.242 to 1.0) than the EQ-HWB-S (-0.185 to 1.0). The number of health states reported was 151 for the EQ-5D-5L

(4.8% of 3,125) compared to 489 (0.03% of 1,953,125) for the EQ-HWB-S. Ceiling effect was 26.6% for EQ-5D-5L compared to 14.7% for the EQ-HWB-S, and floor effect was absent in both measures.

Among participants, 38.6% reported experiencing slight to extreme mobility issues on the EQ-5D-5L, whereas 25.8% reported challenges ranging from slight difficulties to complete inability to move around indoors and outdoors on the EQ-HWB-S (Tables 1, 2). As for usual activities, 32.9% indicated slight to extreme problems on the EQ-5D-5L, compared to 30.8% reporting difficulties from slight problems to being unable to perform day-to-day activities on the EQ-HWB-S. Regarding pain and discomfort, 62.7% reported mild to extreme levels on the EQ-5D-5L, whereas 70.3% reported mild to very severe physical pain on the EQ-HWB-S. Lastly, while 30.8% reported slight to extreme anxiety or depression on the EQ-5D-5L, 39.9% and 39.6% respectively reported experiencing anxiety and depressive symptoms occasionally to most or all of the time on the EQ-HWB-S.

The mean OPQOL-brief summary score was 55.2 (SD 7.6), with 71.2% reporting good to very good global quality-of-life (Table 3). Generally, the proportion of respondents who disagreed or strongly disagreed with the statements in the 13 items was small and ranged from 1.9% for “feeling safe where I live” to 7.9% for “I have social or leisure activities/hobbies that I enjoy doing”, with only 5.2% for “I am healthy enough to get out and about”.

Based on PROMIS-10, the proportion of respondents who reported their “overall health” and “quality of life” as excellent, very good, or good were 72.9% and 89.7%, respectively (Table 4). Noticeably, only 13.8% reported their mental health to be fair or poor, compared to higher proportions reporting anxiety and depression based on the EQ-5D-5L and EQ-HWB-S. Similarly, 15.9% reported their usual activities to be fair or poor, while the proportion reporting problems was much higher based on the EQ-5D-5L and EQ-HWB-S.

B. Measures’ scores across age sub-groups

While minor differences were observed across all measures’ domains, dimensions, and scores across age sub-groups, there was a noticeable trend in scores. Specifically, scores were generally higher in the 65-69 years and 75-79 years age groups, followed by a decline in the 80+ years age

group (Tables 1-4; Figure 2). It's important to note that overall scores can mask differences in specific health aspects with age. For instance, based on the EQ-5D-5L, there is an increased reporting of problems in MO from 65-69 years to 80+ years (Table 1). This is mirrored with a marked improvement in the AD dimension, whereby 38.1% of those aged 65-69 years reported mild-severe AD compared to 26.2% in those 80 years or more. Similarly, 32.2% of the younger group reported mild problems or were unable to perform UA, compared to 50% in those aged 80 and above. Moreover, 58.6% of individuals aged 65-69 reported mild to extreme pain, compared to 73.8% in those aged 80 and above.

Similar trends can be observed in the EQ-HWB-S, 26.1% of respondents aged 65-69 years reported slight difficulty – unable to in getting around inside and outside, compared to 41.5% in those aged 80+ years (Table 2). In the mental health items, 44.8% of the younger age group reported feeling anxious “only occasionally – most or all of the time”, compared to 39.5% in the older age group. Similarly, 42.6% of the younger respondents reported feeling sad or depressed “only occasionally – most or all of the time” compared to 35.4% in the older age group.

Regarding the OPQOL-brief, there were minimal distinctions observed between younger and older respondents (Table 3). For instance, 4.7% of individuals aged 65-69 years rated their quality of life as poor or very poor, slightly higher than the 3.5% reported by those aged 80+ years. Across the 13 items, differences in the proportion of younger versus older respondents who disagreed or strongly disagreed with the statements ranged from 1.0% to 4.4%. Notably, there was slight deterioration noted in two items: feeling healthy enough to get out and about, and the ability to please oneself.

While the trend is slightly present in PROMIS-10 total scores, the differences between younger and older age groups were less pronounced in certain dimensions, particularly those assessing physical health (Table 4). For example, 17.7% of respondents aged 65-69 years reported fair to poor physical health compared to 16.5% in those aged 80+ years. As for mental health, 17.9% of individuals in the younger age group reported fair-poor mental health compared to 9.4% in the oldest age group.

C. Health of respondents with EQ-5D-5L full health profile (11111)

Respondents with EQ-5D-5L health profile of 11111 reported feeling exhausted (18.2%), lonely (12.9%), having trouble concentrating/thinking clearly (9.9%), anxious (13.0%), depressed (13.0%), no control over life occasionally or all the time (10.3%), or in mild pain (21.3%) based on EQ-HWB-S, and having emotional problems (40%) or fatigue (52%) based on PROMIS-10 (data not shown).

D. Convergent and divergent validity

The observed magnitude of correlations between similar and dissimilar constructs across all measures provide evidence of convergent and divergent validity, respectively (Tables 5 – 6). For instance, while the EQ-5D-5L MO dimension had a strong correlation with the EQ-HWB-S "difficulty getting around inside and outside" and "difficulty doing day to day activities" items, the OPQOL-brief "healthy enough to get out and about" item, and the PROMIS-10 physical health and physical functioning items, it had a weak correlation with the EQ-HWB-S "feeling anxious" and "feeling sad/depressed" items, and with PROMIS-10 mental health and emotional problems items. Conversely, the EQ-5D-5L AD dimension had a strong correlation with the EQ-HWB-S "feeling anxious" and "feeling sad/depressed" items, and with the PROMIS-10 mental health and emotional problems items, but it had a weak correlation with the EQ-HWB-S "difficulty getting around inside and outside" and "difficulty doing day to day activities" items, and with PROMIS-10 physical health and physical functioning items. The strongest correlations observed were for items assessing pain across all measures.

Overall, the strongest correlations amongst the measures' items, dimensions and summary scores observed were between EQ-5D-5L and PROMIS-10, followed by the EQ-HWB-S, and weakest correlations were with OPQOL (Tables 5-6). For instance, 10% of the correlations between EQ-5D-5L and OPQOL items, dimensions and summary scores were strong, 33.3% moderate, while all the remaining were weak, while those between EQ-HWB-S and OPQOL were 8.7% strong, 60.7% moderate, and the remaining weak. Alternatively, 38.8% of the correlations between EQ-5D-5L and EQ-HWB-S items, dimensions and summary scores were strong, 42.5% were moderate, and all the remaining were weak. As for PROMIS-10, 51% of the correlations with EQ-5D-5L were strong, 40.6% were moderate and the remaining were weak. The correlations of EQ-HWB-S index score

was strongest with the EQ-5D-5L index score (0.83), followed by PROMIS-10 physical summary score (0.8), PROMIS-10 mental summary score (0.57), and the OPQOL-brief summary score (0.55). The correlations, whether indicative of convergent or divergent validity, suggest that the EQ-5D-5L has the largest overlap in terms of its content with PROMIS-10, followed by the EQ-HWB-S and the OPQOL. Moreover, correlations among summary scores across all measures were notably stronger for higher levels of HRQL and QOL, and comparatively weaker for lower levels (Figure 3).

E. Discriminative validity

The ability of the EQ-5D-5L index, EQ-HWB-S index score, EQ VAS, and the OPQOL summary score to distinguish between those with and without a disease was best observed in sleep and mental health disorders, followed by obesity, rheumatological, musculoskeletal, and gastrointestinal disorders (Table 7). Poorer performance was observed in diabetes, hypertension, migraine, heart disease, and in those with history of cancer. Overall, the EQ-5D-5L index score and the EQ-HWB-S had very similar discriminative ability across all conditions. The poorest discriminatory performance was for the OPQOL summary score which was had a moderate performance in mental health disorders only.

IV. DISCUSSION

To our knowledge, this is the first study to examine the measurement properties and the performance of the EQ-5D-5L, EQ-HWB-S, the OPQOL-brief and PROMIS-10 among elderly individuals. The findings suggest that the EQ-HWB-S was slightly better than the EQ-5D-5L in capturing broader HRQL in this demographic. While the EQ-5D-5L captures physical health, pain, and mental health aspects of HRQL in older adults, as documented in previous research [26], it may overlook other key aspects of HRQL such as social functioning, relationships, coping abilities, independence, sleep, memory, vision, hearing, safety, hope, and financial stability, some of which are better captured by the EQ-HWB-S. Similarly, while the OPQOL-brief demonstrates a broader coverage of quality-of-life dimensions, it falls short in adequately capturing “health status” including the physical and mental aspects of HRQL. Overall, our results underscore the use of both the EQ-5D-5L and the EQ-HWB-S in the assessment of both HRQL and broader QoL respectively amongst the elderly. The choice of instrument depends on the context, and the constructs that are

being assessed. These findings are consistent with a previous study comparing the EQ-5D-5L and EQ-HWB-S in a diverse US sample of cancer survivors and the general population, which noted substantial convergence between the measures and comparable discriminatory capabilities [17]. The changes observed in different dimensions of HRQL as individuals age—such as improvements in mental/emotional health and declines in physical health—highlight a nuanced relationship between aging and health. This nuanced perspective underscores the importance of examining individual dimension scores rather than relying solely on summary scores. Specifically, while there is a noticeable decline in physical aspects of health, particularly prominent after age 90, there is also a modest improvement in mental health observed after age 70. This suggests that the overall impact of aging on health involves a complex interplay between deteriorating physical health and potentially improving mental well-being, which may not be fully captured when focusing solely on aggregate scores. This can guide the choice of instrument to use to assess these differences between age groups, and potential change over time.

When evaluating the comparative performance of these measures, it's crucial to consider their distinct designs, features, and measurement scopes [27]. For example, the EQ-5D-5L primarily assesses "health status," while the EQ-HWB-S extends its scope to include both "health status" and "well-being." In contrast, the OPQOL-brief is designed to capture broader aspects of quality of life, while PROMIS-10 assesses overall HRQL. Additionally, the derivation of summary scores varies among these measures, indicating that direct comparisons may not always be appropriate, except for EQ-5D-5L and EQ-HWB-S index scores. These scores are preference-based and derived using population preferences. In contrast, the OPQOL summary score relies solely on self-reporting without external weighting, and PROMIS-10 summary scores are based on self-reporting with T scores derived from US population norms. These distinct scoring methodologies are crucial considerations when evaluating the performance of these instruments. It's important to note that the OPQOL was not designed for economic evaluations as it lacks a preference-based framework. Additionally, its descriptive system includes QOL domains, such as financial circumstances and feelings of luck compared to others, which are not typically considered in the measurement and valuation of QOL for cost-effectiveness analyses in health and aged care services.

Furthermore, each of these measures utilizes distinct methodological approaches: EQ-5D-5L measures the "severity" of problems with a recall period limited to "today," while the EQ-HWB-S assesses the "frequency" of issues (except for pain, which measures severity) over the preceding 7 days. PROMIS-10 assesses the severity of problems "in general" or "on average." In contrast, the OPQOL-brief employs response options based on agreement or disagreement with statements covering health-related and broader QOL domains. The choice of response options and the recall period are critical factors in selecting an instrument, particularly in clinical contexts where certain diseases may exhibit high symptom variability and frequent changes (e.g., cancer) or episodic symptoms (e.g., depression), compared to those with more stable symptoms (e.g., diabetes).

It is noteworthy that the older adults in this sample exhibit relatively high levels of HRQL compared to the general population in the UK, as indicated by the measures used. For instance, the EQ-HWB-S index score of 0.848 closely aligns with the 0.83 reported by McDool et al. in a recent UK study [21]. Similarly, the mean EQ-5D-5L index score for this sample, 0.8554, mirrors findings from the McDool study. Additionally, 14.7% of participants in our study reported full health (111111111) according to the EQ-HWB-S, compared to 9.5% in McDool's research. This is likely due to the sampling approach used, and recruitment from internet panels. Therefore, caution is warranted when interpreting the results, considering the potential lack of generalizability to other older adult populations. Moreover, it is crucial to consider the applicability of these measures across diverse cultural and socioeconomic contexts. Variations in perceptions of health and well-being among elderly populations worldwide may influence how these measures are interpreted and applied.

The assessment of HRQL in older individuals is enhanced by expanding the scope of measurement instruments to address issues that are personally significant to them. While the EQ-HWB-S shows promise, it is still in an experimental phase and requires further validation before official adoption. In the interim, exploring the performance of the EQ-5D-5L with specific bolt-ons could be beneficial [28], particularly those focused on cognition, vision, hearing, and social relationships, which are particularly relevant to the elderly [29]. Furthermore, considerations such as the length of the measure, the complexity of items, and response options are crucial. It is essential to ensure that

the selected measure is practical for administration and data collection among the elderly population, which has been demonstrated for the EQ-5D-5L [13].

While this study has several strengths, it is not without limitations. The cross-sectional design limits any analysis of responsiveness of the measures, a critical measurement property essential for understanding how these measures capture changes in health over time. Moreover, the sample population may not fully represent the diversity of older adults, including those with lower HRQL and those residing in varied geographic or socioeconomic contexts. Future research could benefit from longitudinal designs to explore responsiveness and ensure broader representation across different segments of the older adult population.

V. CONCLUSION

Preliminary analysis suggests that the EQ-5D-5L effectively captures physical health, pain, and mental health aspects of HRQL in older adults. However, it may overlook social functioning, relationships, coping abilities, independence, sleep, memory, vision, hearing, safety, hope, and financial stability, some of which are better captured by the EQ-HWB-S. The OPQOL-brief failed to capture physical and mental aspects of HRQL. The suitability of existing instruments for capturing the comprehensive impact of interventions on QOL beyond health outcomes remains a subject of ongoing refinement. Future research should consider these broader dimensions for a comprehensive assessment of HRQL in older populations across diverse cultures and socio-economic contexts.

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VII. FIGURES AND TABLES

Figure 1: Distribution of measures' summary scores

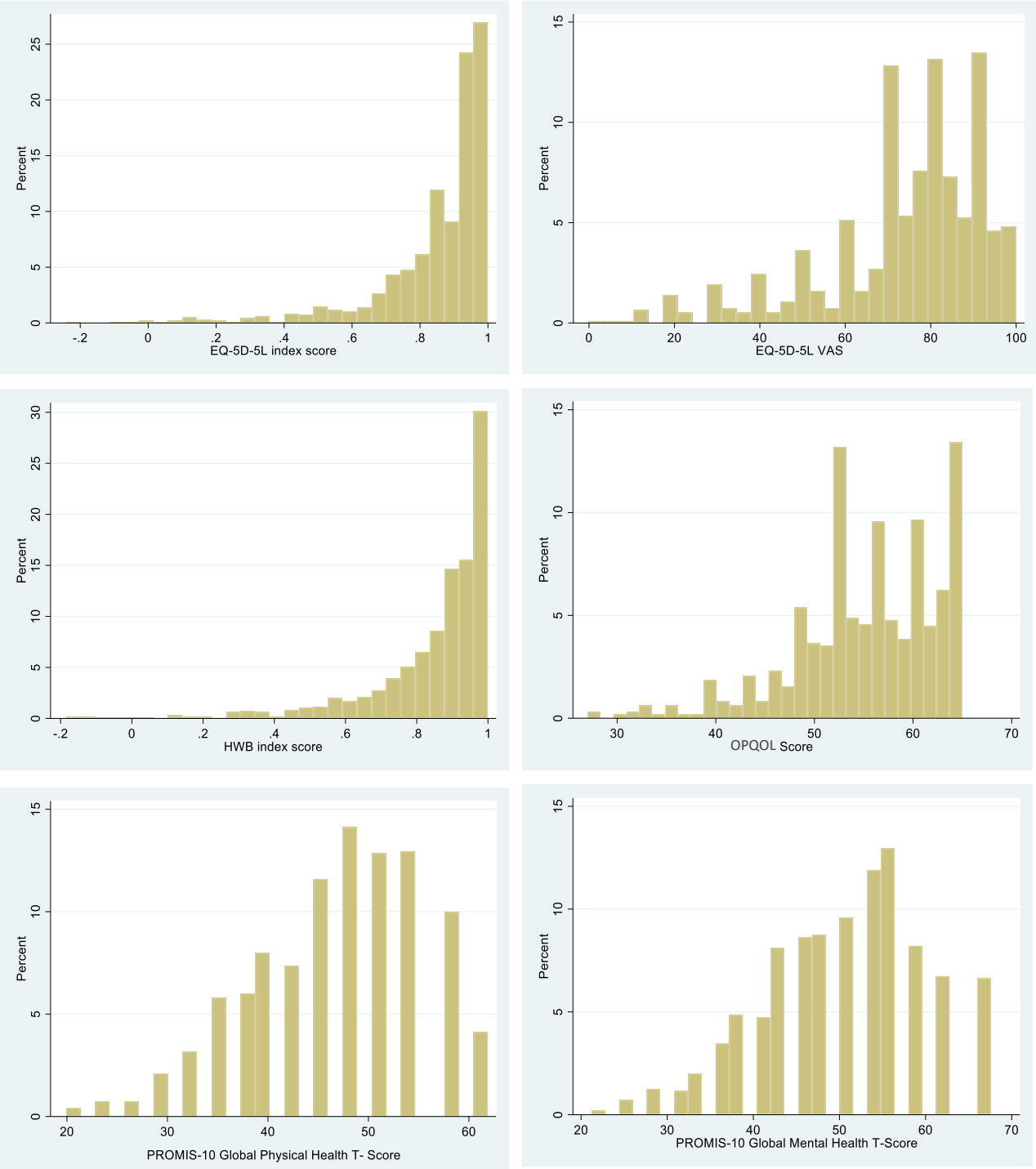
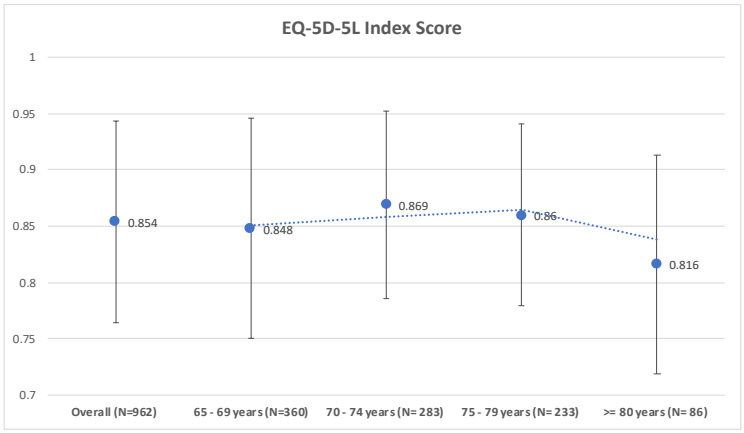
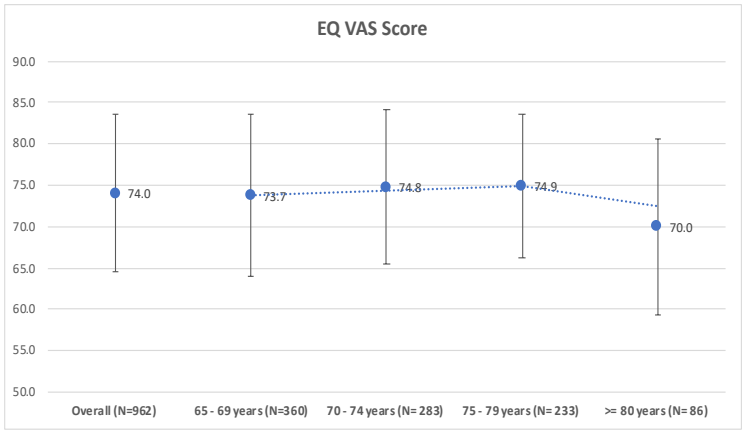
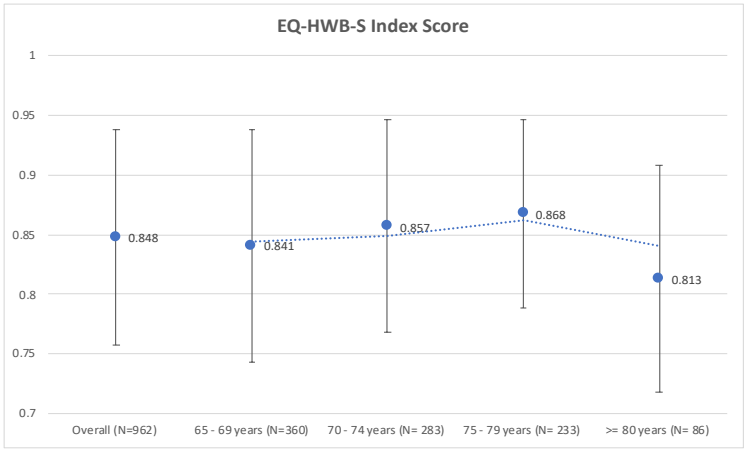
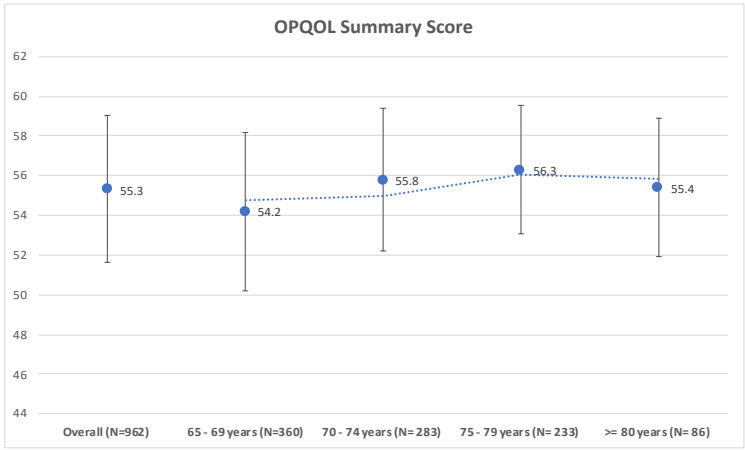


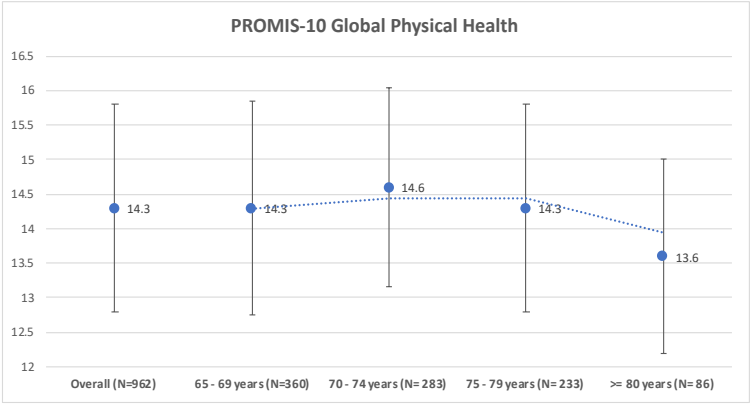
Figure 2: Measures' summary scores overall and by age groups











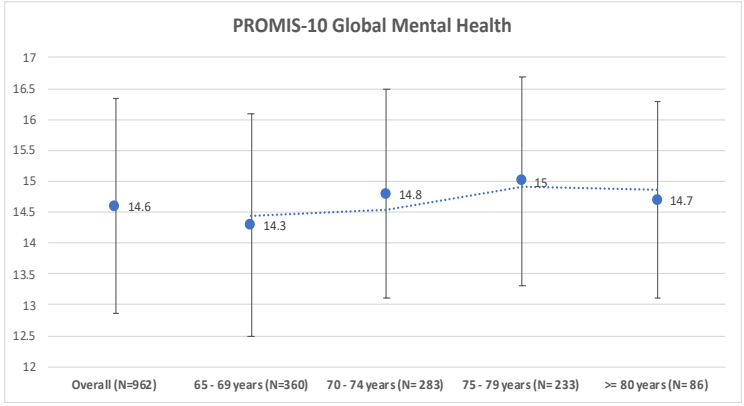
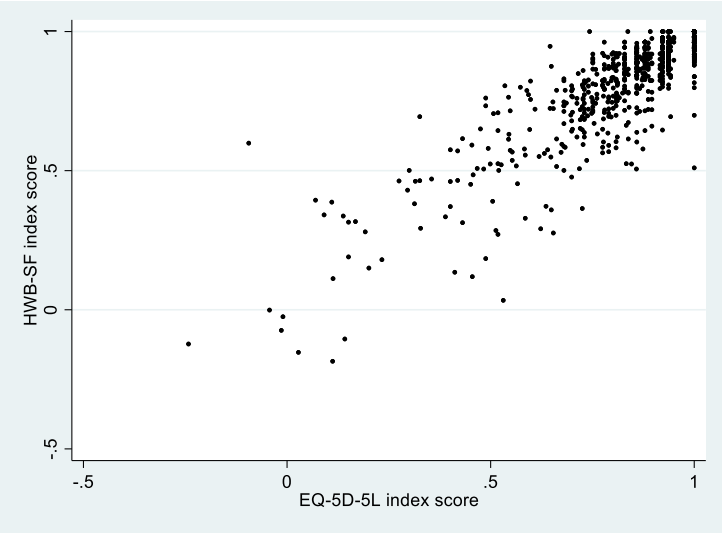
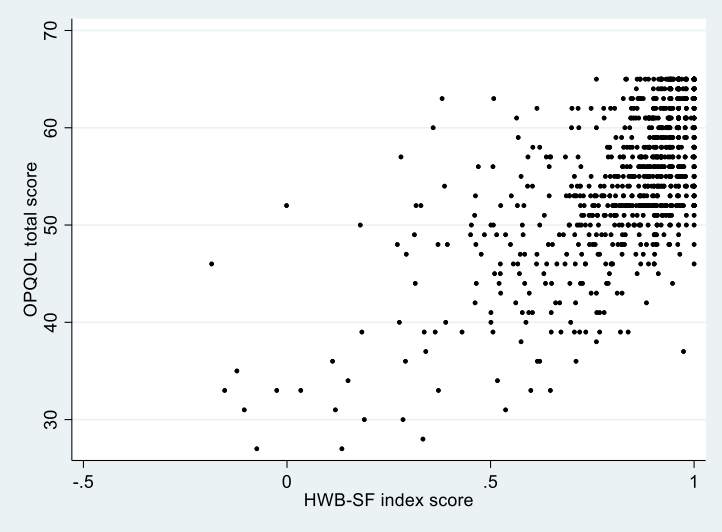


Figure 3: Correlations between measures' summary scores





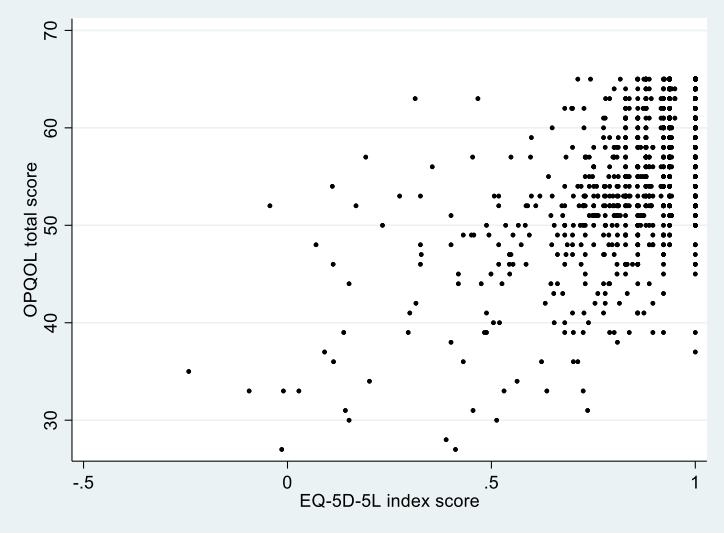


Table 1: EQ-5D-5L dimensions overall and by age subgroups

EQ-5D-5L	Overall (N=945)		65 - 69 years (N= 355)		70 - 74 years (N= 275)		75 - 79 years (N= 231)		>= 80 years (N= 84)	
Mobility	n	%	n	%	n	%	n	%	n	%
Level 1 – none	580	61.4	229	64.5	177	64.4	138	59.7	36	59.7
Level 2 – mild	218	23.1	70	19.7	63	22.9	62	26.8	23	26.8
Level 3 – moderate	96	10.2	37	10.4	24	8.7	18	7.8	17	7.8
Level 4 – severe	44	4.7	16	4.5	9	3.3	11	4.8	8	4.8
Level 5 – unable to	7	0.7	3	0.9	2	0.7	2	0.9	0	0.9
Self-care										
Level 1 – none	817	86.5	302	85.1	244	88.7	204	88.3	67	79.8
Level 2 – mild	90	9.5	37	10.4	21	7.6	17	7.4	15	17.9
Level 3 – moderate	31	3.3	13	3.7	8	2.9	10	4.3	0	0.0
Level 4 – severe	6	0.6	2	0.6	2	0.7	0	0.0	2	2.4
Level 5 – unable to	1	0.1	1	0.3	0	0.0	0	0.0	0	0.0
Usual activities										
Level 1 – none	634	67.1	241	67.9	194	70.6	157	68.0	42	50.0
Level 2 – mild	208	22.0	77	21.7	53	19.3	52	22.5	26	31.0
Level 3 – moderate	77	8.2	24	6.8	24	8.7	17	7.4	12	14.3
Level 4 – severe	21	2.2	11	3.1	3	1.1	5	2.2	2	2.4
Level 5 – unable to	5	0.5	2	0.6	1	0.4	0	0.0	2	2.4
Pain/discomfort										
Level 1 – none	352	37.3	147	41.4	102	37.1	81	35.1	22	26.2
Level 2 – mild	407	43.1	137	38.6	121	44.0	103	44.6	46	54.8
Level 3 – moderate	137	14.5	52	14.7	39	14.2	35	15.2	11	13.1
Level 4 – severe	38	4.0	13	3.7	11	4.0	11	4.8	3	3.6
Level 5 – extreme	11	1.2	6	1.7	2	0.7	1	0.4	2	2.4
Anxiety/depression										
Level 1 – none	654	69.2	220	62.0	207	75.3	165	71.4	62	73.8
Level 2 – mild	209	22.1	90	25.4	49	17.8	52	22.5	18	21.4
Level 3 – moderate	65	6.9	35	9.9	14	5.1	13	5.6	3	3.6
Level 4 – severe	14	1.5	9	2.5	3	1.1	1	0.4	1	1.2
Level 5 – extreme	3	0.3	1	0.3	2	0.7	0	0.0	0	0.0

Table 2: EQ-HWB-Short items overall and by age subgroups

EQ HWB Short	Overall (N=945)		65 - 69 years (N= 353)		70 - 74 years (N= 280)		75 - 79 years (N= 230)		>= 80 years (N= 82)	
Difficulty getting around inside and outside	n	%	n	%	n	%	n	%	n	%
Level 1 – No difficulty	701	74.2	261	73.9	216	77.1	176	76.5	48	58.5
Level 2 – Slight difficulty	148	15.7	56	15.9	39	13.9	31	13.5	22	26.8
Level 3 – Some difficulty	65	6.9	23	6.5	19	6.8	15	6.5	8	9.8
Level 4 – A lot of difficulty	29	3.1	12	3.4	6	2.1	7	3.0	4	4.9
Level 5 – Unable	2	0.2	1	0.3	0	0.0	1	0.4	0	0.0
Difficulty doing day to day activities										
Level 1 – No difficulty	654	69.2	244	69.1	204	72.9	162	70.4	44	53.7
Level 2 – Slight difficulty	165	17.5	59	16.7	45	16.1	41	17.8	20	24.4
Level 3 – Some difficulty	82	8.7	35	9.9	18	6.4	17	7.4	12	14.6
Level 4 – A lot of difficulty	37	3.9	12	3.4	13	4.6	9	3.9	3	3.7
Level 5 – Unable	7	0.7	3	0.9	0	0.0	1	0.4	3	3.7

EQ HWB Short	Overall (N=945)		65 - 69 years (N= 353)		70 - 74 years (N= 280)		75 - 79 years (N= 230)		>= 80 years (N= 82)	
Feeling exhausted										
Level 1 – None of the time	478	50.6	171	48.4	155	55.4	120	52.4	32	39.0
Level 2 – Only occasionally	287	30.4	109	30.9	71	25.4	74	32.3	33	40.2
Level 3 – Sometimes	107	11.3	40	11.3	32	11.4	26	11.4	9	11.0
Level 4 – Often	48	5.1	19	5.4	18	6.4	5	2.2	6	7.3
Level 5 – Most or all of the time	24	2.5	14	4.0	4	1.4	4	1.8	2	2.4
Feeling lonely										
Level 1 – None of the time	662	70.1	243	69.0	198	70.7	163	70.9	58	70.7
Level 2 – Only occasionally	168	17.8	59	16.8	51	18.2	45	19.6	13	15.9
Level 3 – Sometimes	67	7.1	25	7.1	20	7.1	15	6.5	7	8.5
Level 4 – Often	34	3.6	17	4.8	9	3.2	5	2.2	3	3.7
Level 5 – Most or all of the time	13	1.4	8	2.3	2	0.7	2	0.9	1	1.2
Having trouble concentrating or thinking clearly										
Level 1 – None of the time	636	67.3	220	62.3	199	71.1	164	71.3	53	64.6
Level 2 – Only occasionally	225	23.8	93	26.4	63	22.5	51	22.2	18	22.0
Level 3 – Sometimes	58	6.1	29	8.2	10	3.6	9	3.9	10	12.2
Level 4 – Often	22	2.3	10	2.8	8	2.9	4	1.7	0	0.0
Most or all of the time	4	0.4	1	0.3	0	0.0	2	0.9	1	1.2
Feeling anxious										
Level 1 – None of the time	567	60.1	195	55.2	181	64.6	142	61.7	49	60.5
Level 2 – Only occasionally	235	24.9	93	26.4	60	21.4	59	25.7	23	28.4
Level 3 – Sometimes	100	10.6	50	14.2	24	8.6	23	10.0	3	3.7
Level 4 – Often	28	3.0	11	3.1	9	3.2	4	1.7	4	4.9
Level 5 – Most or all of the time	14	1.5	4	1.1	6	2.1	2	0.9	2	2.5
Feeling sad or depressed										
Level 1 – None of the time	570	60.4	202	57.4	170	60.7	145	63.0	53	64.6
Level 2 – Only occasionally	249	26.4	98	27.8	75	26.8	55	23.9	21	25.6
Level 3 – Sometimes	88	9.3	35	9.9	22	7.9	27	11.7	4	4.9
Level 4 – Often	25	2.7	12	3.4	7	2.5	2	0.9	4	4.9
Level 5 – Most or all of the time	12	1.3	5	1.4	6	2.1	1	0.4	0	0.0
Feeling no control over your day-to-day life										
Level 1 – None of the time	649	68.7	232	65.7	203	72.5	164	71.3	50	61.0
Level 2 – Only occasionally	176	18.6	73	20.7	47	16.8	37	16.1	19	23.2
Level 3 – Sometimes	54	5.7	20	5.7	12	4.3	14	6.1	8	9.8
Level 4 – Often	25	2.7	12	3.4	6	2.1	5	2.2	2	2.4
Level 5 – Most or all of the time	41	4.3	16	4.5	12	4.3	10	4.4	3	3.7
Physical pain										
Level 1 – No	280	29.7	112	31.8	82	29.3	67	29.1	19	23.2
Level 2 – Mild	417	44.2	152	43.2	133	47.5	98	42.6	34	41.5
Level 3 – Moderate	195	20.7	71	20.2	51	18.2	49	21.3	24	29.3
Level 4 – Severe	43	4.6	13	3.7	11	3.9	15	6.5	4	4.9
Level 5 – Very severe	9	1.0	4	1.1	3	1.1	1	0.4	1	1.2

Table 3: OPQOL-Brief items overall and by age subgroups

OPQOL	Overall (N=962)		65 - 69 years (N=360)		70 - 74 years (N= 283)		75 - 79 years (N= 233)		>= 80 years (N= 86)	
GLOBAL: Your quality of life as a whole is	n	%	n	%	n	%	n	%	n	%
Very good	271	28.2	101	28.1	89	31.5	62	26.6	19	22.1
Good	414	43.0	146	40.6	130	45.9	100	42.9	38	44.2
Alright	239	24.8	96	26.7	53	18.7	64	27.5	26	30.2
Bad	33	3.4	14	3.9	10	3.5	7	3.0	2	2.3
Very bad	5	0.5	3	0.8	1	0.4	0	0.0	1	1.2
I enjoy my life overall										
Strongly Agree	303	31.5	109	30.3	99	35.0	74	31.8	21	24.4
Agree	493	51.3	180	50.0	137	48.4	123	52.8	53	61.6
Neither agree nor disagree	111	11.5	48	13.3	31	11.0	24	10.3	8	9.3
Disagree	45	4.7	19	5.3	13	4.6	11	4.7	2	2.3
Strongly disagree	10	1.0	4	1.1	3	1.1	1	0.4	2	2.3
I look forward to things										
Strongly Agree	381	39.6	135	37.5	112	39.6	98	42.1	36	41.9
Agree	438	45.5	159	44.2	134	47.4	108	46.4	37	43.0
Neither agree nor disagree	111	11.5	51	14.2	26	9.2	22	9.4	12	14.0
Disagree	29	3.0	14	3.9	9	3.2	5	2.2	1	1.2
Strongly disagree	3	0.3	1	0.3	2	0.7	0	0.0	0	0.0
I am healthy enough to get out and about										
Strongly Agree	466	48.4	170	47.2	139	49.1	121	51.9	36	41.9
Agree	366	38.1	136	37.8	110	38.9	82	35.2	38	44.2
Neither agree nor disagree	80	8.3	33	9.2	21	7.4	20	8.6	6	7.0
Disagree	41	4.3	16	4.4	11	3.9	9	3.9	5	5.8
Strongly disagree	9	0.9	5	1.4	2	0.7	1	0.4	1	1.2
My family, friends or neighbours would help me if needed										
Strongly Agree	398	41.4	132	36.7	120	42.4	112	48.1	34	39.5
Agree	409	42.5	160	44.4	120	42.4	90	38.6	39	45.4
Neither agree nor disagree	121	12.6	54	15.0	35	12.4	22	9.4	10	11.6
Disagree	28	2.9	12	3.3	7	2.5	6	2.6	3	3.5
Strongly disagree	6	0.6	2	0.6	1	0.4	3	1.3	0	0.0
I have social or leisure activities/hobbies that I enjoy doing										
Strongly Agree	365	37.9	131	36.4	117	41.3	85	36.5	32	37.2
Agree	404	42.0	153	42.5	116	41.0	100	42.9	35	40.7
Neither agree nor disagree	117	12.2	43	11.9	32	11.3	29	12.5	13	15.1
Disagree	54	5.6	21	5.8	11	3.9	17	7.3	5	5.8
Strongly disagree	22	2.3	12	3.3	7	2.5	2	0.9	1	1.2
I try to stay involved with things										
Strongly Agree	292	30.4	99	27.5	90	31.8	77	33.1	26	30.2
Agree	480	49.9	175	48.6	141	49.8	119	51.1	45	52.3
Neither agree nor disagree	136	14.1	58	16.1	35	12.4	32	13.7	11	12.8
Disagree	42	4.4	20	5.6	13	4.6	5	2.2	4	4.7
Strongly disagree	12	1.3	8	2.2	4	1.4	0	0.0	0	0.0
I am healthy enough to have my independence										
Strongly Agree	559	58.1	203	56.4	175	61.8	137	58.8	44	51.2
Agree	314	32.6	119	33.1	90	31.8	74	31.8	31	36.1
Neither agree nor disagree	57	5.9	22	6.1	12	4.2	15	6.4	8	9.3
Disagree	23	2.4	10	2.8	5	1.8	6	2.6	2	2.3
Strongly disagree	9	0.9	6	1.7	1	0.4	1	0.4	1	1.2

OPQOL	Overall (N=962)		65 - 69 years (N=360)		70 - 74 years (N= 283)		75 - 79 years (N= 233)		>= 80 years (N= 86)	
I can please myself what I do										
Strongly Agree	485	50.4	165	45.8	142	50.2	139	59.7	39	45.4
Agree	365	37.9	143	39.7	112	39.6	74	31.8	36	41.9
Neither agree nor disagree	74	7.7	33	9.2	20	7.1	16	6.9	5	5.8
Disagree	30	3.1	16	4.4	6	2.1	3	1.3	5	5.8
Strongly disagree	8	0.8	3	0.8	3	1.1	1	0.4	1	1.2
I feel safe where I live										
Strongly Agree	534	55.5	183	50.8	158	55.8	147	63.1	46	53.5
Agree	360	37.4	134	37.2	109	38.5	80	34.3	37	43.0
Neither agree nor disagree	54	5.6	36	10.0	11	3.9	5	2.2	2	2.3
Disagree	12	1.3	7	1.9	4	1.4	1	0.4	0	0.0
Strongly disagree	2	0.2	0	0.0	1	0.4	0	0.0	1	1.2
I get pleasure from my home										
Strongly Agree	468	48.7	162	45.0	142	50.2	125	53.7	39	45.4
Agree	362	37.6	138	38.3	104	36.8	84	36.1	36	41.9
Neither agree nor disagree	106	11.0	44	12.2	29	10.3	23	9.9	10	11.6
Disagree	23	2.4	15	4.2	6	2.1	1	0.4	1	1.2
Strongly disagree	3	0.3	1	0.3	2	0.7	0	0.0	0	0.0
I take life as it comes and make the best of things										
Strongly Agree	391	40.6	119	33.1	125	44.2	106	45.5	41	47.7
Agree	465	48.3	190	52.8	131	46.3	104	44.6	40	46.5
Neither agree nor disagree	88	9.2	41	11.4	21	7.4	21	9.0	5	5.8
Disagree	14	1.5	8	2.2	5	1.8	1	0.4	0	0.0
Strongly disagree	4	0.4	2	0.6	1	0.4	1	0.4	0	0.0
I feel lucky compared to most people										
Strongly Agree	393	40.9	115	31.9	126	44.5	114	48.9	38	44.2
Agree	419	43.6	169	46.9	118	41.7	92	39.5	40	46.5
Neither agree nor disagree	130	13.5	63	17.5	34	12.0	26	11.2	7	8.1
Disagree	17	1.8	12	3.3	4	1.4	1	0.4	0	0.0
Strongly disagree	3	0.3	1	0.3	1	0.4	0	0.0	1	1.2
I have enough money to pay for household bills										
Strongly Agree	471	49.0	164	45.6	139	49.1	122	52.4	46	53.5
Agree	369	38.4	128	35.6	122	43.1	85	36.5	34	39.5
Neither agree nor disagree	89	9.3	48	13.3	16	5.7	20	8.6	5	5.8
Disagree	24	2.5	14	3.9	5	1.8	4	1.7	1	1.2
Strongly disagree	9	0.9	6	1.7	1	0.4	2	0.9	0	0.0

Table 4: PROMIS-10 items overall and by age subgroups

PROMIS-10	Overall (N=949)		65 - 69 years (N= 357)		70 - 74 years (N= 278)		75 - 79 years (N= 229)		>= 80 years (N= 85)	
Overall health	n	%	n	%	n	%	n	%	n	%
Excellent	53	5.6	22	6.2	14	5.0	15	6.6	2	2.4
Very good	255	26.9	100	28.0	81	29.1	56	24.5	18	21.2
Good	384	40.5	135	37.8	115	41.4	99	43.2	35	41.2
Fair	205	21.6	75	21.0	55	19.8	51	22.3	24	28.2
Poor	52	5.5	25	7.0	13	4.7	8	3.5	6	7.1

PROMIS-10	Overall (N=949)		65 - 69 years (N= 357)		70 - 74 years (N= 278)		75 - 79 years (N= 229)		>= 80 years (N= 85)	
Overall quality of life										
Excellent	118	12.4	42	11.8	37	13.3	31	13.5	8	9.4
Very good	363	38.3	136	38.1	115	41.4	85	37.1	27	31.8
Good	326	34.4	116	32.5	91	32.7	83	36.2	36	42.4
Fair	120	12.6	52	14.6	30	10.8	26	11.4	12	14.1
Poor	22	2.3	11	3.1	5	1.8	4	1.8	2	2.4
Physical health										
Excellent	59	6.2	21	5.9	20	7.2	15	6.6	3	3.5
Very good	256	27.0	102	28.6	77	27.7	58	25.3	19	22.4
Good	354	37.3	125	35.0	108	38.9	87	38.0	34	40.0
Fair	227	23.9	87	24.4	57	20.5	59	25.8	24	28.2
Poor	53	5.6	22	6.2	16	5.8	10	4.4	5	5.9
Mental health										
Excellent	267	28.1	86	24.1	80	28.8	77	33.6	24	28.2
Very good	345	36.4	127	35.6	103	37.1	81	35.4	34	40.0
Good	206	21.7	80	22.4	63	22.7	44	19.2	19	22.4
Fair	110	11.6	54	15.1	24	8.6	24	10.5	8	9.4
Poor	21	2.2	10	2.8	8	2.9	3	1.3	0	0.0
Social activities										
Excellent	188	19.8	64	17.9	56	20.1	52	22.7	16	18.8
Very good	327	34.5	117	32.8	102	36.7	80	34.9	28	32.9
Good	254	26.8	102	28.6	76	27.3	51	22.3	25	29.4
Fair	125	13.2	48	13.5	27	9.7	38	16.6	12	14.1
Poor	55	5.8	26	7.3	17	6.1	8	3.5	4	4.7
Usual activities/roles										
Excellent	201	21.2	73	20.5	63	22.7	51	22.3	14	16.5
Very good	340	35.8	124	34.7	102	36.7	84	36.7	30	35.3
Good	257	27.1	97	27.2	79	28.4	58	25.3	23	27.1
Fair	119	12.5	46	12.9	24	8.6	33	14.4	16	18.8
Poor	32	3.4	17	4.8	10	3.6	3	1.3	2	2.4
Physical functioning										
Completely	524	55.2	202	56.6	160	57.6	127	55.5	35	41.2
Mostly	229	24.1	80	22.4	72	25.9	53	23.1	24	28.2
Moderately	124	13.1	49	13.7	26	9.4	34	14.9	15	17.7
A little	57	6.0	19	5.3	19	6.8	11	4.8	8	9.4
Not at all	15	1.6	7	2.0	1	0.4	4	1.8	3	3.5
Emotional problems										
Never	323	34.0	111	31.1	90	32.4	92	40.2	30	35.3
Rarely	319	33.6	116	32.5	103	37.1	67	29.3	33	38.8
Sometimes	229	24.1	94	26.3	65	23.4	55	24.0	15	17.7
Often	65	6.9	30	8.4	15	5.4	14	6.1	6	7.1
Always	13	1.4	6	1.7	5	1.8	1	0.4	1	1.2
Fatigue										
None	216	22.8	79	22.1	73	26.3	52	22.7	12	14.1
Mild	462	48.7	171	47.9	136	48.9	112	48.9	43	50.6
Moderate	218	23.0	84	23.5	53	19.1	55	24.0	26	30.6
Severe	43	4.5	17	4.8	14	5.0	10	4.4	2	2.4
Very severe	10	1.1	6	1.7	2	0.7	0	0.0	2	2.4
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Pain	4.4	2.7	4.4	2.7	4.3	2.7	4.3	2.7	4.9	2.7

Table 5: Spearman correlations between EQ-5D-5L, EQ-HWB-S, OPQOL-brief, and PROMIS-10

EQ HWB-Short	MO	SC	UA	PD	AD	TSS	EQ VAS	Index
Difficulty getting around inside and outside	0.72*	0.59	0.70	0.56	0.27	0.68	0.50	0.66
Difficulty doing day to day activities	0.70	0.58*	0.77*	0.60	0.32	0.72	0.55	0.70
No control over day-to-day life	0.35	0.39	0.43	0.33	0.45	0.46	0.38	0.47
Trouble concentrating	0.24	0.28	0.32	0.28	0.46	0.40	0.33	0.41
Feeling anxious	0.26	0.28	0.31	0.28	0.70*	0.46	0.36	0.49
Feeling sad/depressed	0.25	0.27	0.31	0.29	0.68*	0.45	0.37	0.48
Feeling lonely	0.24	0.23	0.25	0.24	0.45	0.35	0.31	0.36
Feeling exhausted	0.45	0.35	0.49	0.47	0.42	0.57	0.45	0.56
Physical pain severity	0.59	0.41	0.56	0.82*	0.27	0.74	0.50	0.72
HWB-S index score	0.66	0.49	0.68	0.70	0.52	0.84	0.61	0.83
OPQOL	**MO**	**SC**	**UA**	**PD**	**AD**	**TSS**	**EQ VAS**	**Index**
QOL Global	0.41	0.35	0.46	0.42	0.45	0.55	0.56	0.56
Enjoy my life	0.30	0.33	0.35	0.31	0.44	0.43	0.47	0.44
Look forward to things	0.27	0.32	0.34	0.29	0.38	0.40	0.41	0.41
Healthy enough to get out and about	0.58*	0.46	0.60	0.47	0.34	0.62	0.56	0.61
Family, friends or neighbors would help me if needed	0.16	0.17	0.17	0.13	0.25	0.21	0.20	0.22
Have social or leisure activities/ hobbies	0.33	0.32	0.38	0.31	0.37	0.43	0.42	0.44
Try to stay involved with things	0.25	0.23	0.30	0.25	0.28	0.34	0.32	0.34
Healthy enough to have my independence	0.48	0.46*	0.53	0.39	0.32	0.52	0.50	0.52
Please myself what I do	0.28	0.28	0.33	0.25	0.30	0.36	0.34	0.36
Feel safe where I live	0.24	0.24	0.26	0.21	0.29	0.31	0.31	0.32
Get pleasure from my home	0.23	0.22	0.26	0.21	0.27	0.31	0.33	0.33
Take life as it comes and make the best of things	0.17	0.20	0.23	0.18	0.38	0.29	0.30	0.31
Feel lucky compared to most people	0.25	0.24	0.28	0.23	0.30	0.34	0.37	0.35
Have enough money to pay for household bills	0.26	0.21	0.27	0.23	0.30	0.34	0.32	0.34
Total score	0.42	0.40	0.47	0.38	0.46	0.54	0.53	0.55
PROMIS-10	**MO**	**SC**	**UA**	**PD**	**AD**	**TSS**	**EQ VAS**	**Index**
Overall health	0.59	0.44	0.56	0.54	0.38	0.67	0.73	0.66
Overall quality of life	0.44	0.40	0.47	0.40	0.47	0.56	0.60	0.57
Physical health	0.59*	0.44	0.60	0.54	0.37	0.68	0.71	0.67
Mental health	0.23	0.27	0.29	0.26	0.62*	0.42	0.44	0.45
Social activities	0.31	0.30	0.36	0.28	0.46	0.43	0.48	0.45
Usual activities/roles	0.49	0.43	0.54*	0.45	0.45	0.60	0.58	0.60
Physical functioning	0.75*	0.56	0.75	0.62	0.31	0.76	0.61	0.75
Emotional problems	0.24	0.25	0.27	0.31	0.66*	0.46	0.38	0.49
Fatigue	0.50	0.39	0.51	0.49	0.43	0.60	0.52	0.60
Pain	0.60	0.41	0.59	0.80*	0.32	0.76	0.58	0.67
PROMIS physical summary score	0.70	0.48	0.69	0.70	0.38	0.82	0.72	0.80
PROMIS mental summary score	0.35	0.35	0.40	0.37	0.64	0.55	0.56	0.57

* Represents dimensions/items/domains expected to have strong correlation

Pearson correlation interpretation:

weak	< 0.3
moderate	0.3 – 0.49
strong	≥0.5

Table 6: Spearman correlations between EQ-HWB-S, OPQOL-brief, and PROMIS-10

	Difficulty getting around inside and outside	Difficulty doing day to day	No control over day-to-day life	Trouble concentrating	Feeling anxious	Feeling sad/ depressed	Feeling lonely	Feeling exhausted	Physical pain severity	HWB-S index score
OPQOL										
QOL Global	0.41	0.49	0.44	0.40	0.46	0.50	0.47	0.47	0.43	0.63
Enjoy my life	0.34	0.40	0.39	0.36	0.44	0.51	0.47	0.39	0.31	0.53
Look forward to things	0.30	0.37	0.32	0.32	0.35	0.43	0.38	0.35	0.28	0.46
Healthy enough to get out and about	0.56*	0.63	0.40	0.32	0.32	0.35	0.31	0.44	0.48	0.62
Family, friends or neighbors would help me if needed	0.17	0.21	0.20	0.20	0.22	0.25	0.28	0.19	0.15	0.28
Have social or leisure activities/ hobbies	0.33	0.40	0.34	0.31	0.34	0.40	0.37	0.35	0.30	0.49
Try to stay involved with things	0.24	0.33	0.24	0.33	0.30	0.34	0.33	0.31	0.25	0.41
Healthy enough to have my independence	0.50	0.57	0.41	0.33	0.33	0.31	0.30	0.39	0.38	0.53
Please myself what I do	0.32	0.34	0.40	0.32	0.34	0.30	0.23	0.31	0.24	0.40
Feel safe where I live	0.22	0.25	0.25	0.24	0.31	0.32	0.29	0.24	0.21	0.34
Get pleasure from my home	0.24	0.28	0.26	0.27	0.26	0.31	0.32	0.27	0.20	0.35
Take life as it comes and make the best of things	0.21	0.25	0.27	0.31	0.38	0.37	0.28	0.28	0.17	0.35
Feel lucky compared to most people	0.29	0.33	0.28	0.27	0.28	0.28	0.26	0.26	0.24	0.37
Have enough money to pay for household bills	0.25	0.32	0.31	0.25	0.31	0.31	0.30	0.30	0.25	0.40
OPQOL summary score	0.43	0.51	0.44	0.41	0.45	0.50	0.45	0.45	0.38	0.61
PROMIS-10										
Overall health	0.51	0.58	0.52	0.34	0.36	0.40	0.39	0.38	0.53	0.61
Overall quality of life	0.41	0.50	0.46	0.47	0.39	0.49	0.51	0.42	0.41	0.59
Physical health	0.54	0.61	0.50	0.32	0.35	0.38	0.38	0.36	0.56	0.62
Mental health	0.25	0.33	0.47	0.46	0.51	0.62	0.64	0.36	0.29	0.52
Social activities	0.29	0.39	0.44	0.54	0.43	0.49	0.54	0.33	0.32	0.52
Usual activities/roles	0.74	0.80	0.54	0.32	0.40	0.38	0.35	0.42	0.61	0.75
Physical functioning	0.60	0.64	0.53	0.31	0.33	0.34	0.37	0.31	0.84	0.71
Emotional problems	0.49	0.54	0.72	0.39	0.47	0.53	0.48	0.35	0.50	0.65
Fatigue	0.49	0.60	0.52	0.43	0.46	0.46	0.49	0.41	0.48	0.65
Pain	0.28	0.33	0.51	0.52	0.47	0.72	0.72	0.37	0.33	0.57

Table 7: Known-groups validity by chronic conditions

	EQ-5D-5L index score	EQ-HWB-Short index score	EQ VAS	OPQOL total score
Diabetes				
No (n=873)	0.862	0.852	74.6	53.1
Yes (n= 138)	0.799	0.801	70.3	52.2
Effect size	0.36	0.28	0.23	0.07
Heart disease				
No (n= 920)	0.861	0.851	74.9	52.9
Yes (n= 91)	0.779	0.782	65.1	53.6
Effect size	0.46	0.38	0.53	0.05
Hypertension				
No (n= 570)	0.873	0.859	76.5	52.5
Yes (n= 441)	0.829	0.828	70.9	53.5
Effect size	0.25	0.17	0.30	0.08

	EQ-5D-5L index score	EQ-HWB-Short index score	EQ VAS	OPQOL total score
Obesity				
No (n= 951)	0.861	0.853	74.7	53.3
Yes (n= 60)	0.735	0.718	62.4	48.1
Effect size	0.71	0.75	0.66	0.39
Respiratory disease				
No (n= 894)	0.863	0.855	75.3	53.3
Yes (n= 117)	0.783	0.771	64.8	50.5
Effect size	0.45	0.46	0.57	0.21
Gastrointestinal disorders				
No (n= 879)	0.866	0.859	74.9	53.3
Yes (n= 132)	0.771	0.755	67.9	50.3
Effect size	0.54	0.58	0.38	0.23
Rheumatological disease				
No (n= 936)	0.864	0.855	74.8	53.0
Yes (n=75)	0.726	0.717	65.0	53.0
Effect size	0.79	0.77	0.52	0.00
Musculoskeletal disorders				
No (n= 915)	0.867	0.858	74.9	53.1
Yes (n= 96)	0.728	0.726	65.4	51.6
Effect size	0.79	0.73	0.51	0.11
History of cancer				
No (n= 872)	0.854	0.845	74.6	52.7
Yes (n=139)	0.853	0.845	70.6	54.6
Effect size	0.00	0.00	0.21	0.15
Sleep disorders				
No (n= 953)	0.865	0.858	74.9	53.2
Yes (n= 58)	0.666	0.643	59.7	48.7
Effect size	1.15	1.22	0.82	0.35
Migraine				
No (n= 947)	0.857	0.850	74.3	53.0
Yes (n= 64)	0.804	0.777	70.4	52.5
Effect size	0.30	0.40	0.21	0.04
Mental health disorders				
No (n= 834)	0.883	0.880	75.9	54.3
Yes (n= 177)	0.711	0.682	65.1	46.6
Effect size	1.03	1.19	0.59	0.60

Effect size interpretation	Small < 0.5	Moderate 0.5 – 0.79	Large ≥ 0.8