

Norwegian Population Norms for the EQ-5D-5L: Results From a General Population Survey

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Abstract

Purpose: To provide the first Norwegian EQ-5D-5L and EQ VAS population norms for the adult general population.

Methods: Postal survey of a random sample of 12,790 Norwegians identified through the National Registry of the Norwegian Tax Administration. Norms are shown for the five EQ-5D-5L dimensions, EQ-5D index and EQ VAS scores for seven age categories, males, females and education level.

Results: There were 3,200 (25.9%) respondents to 12,263 correctly addressed questionnaires. The EQ-5D-5L dimensions, EQ VAS and background questions were completed by 3,120 (24.6%) respondents. The mean age (SD) was 50.9 (21.7); range 18 to 97 years. The youngest age group of 18-29 years and oldest of 80 years and over had the highest (n=691) and lowest (n=239) number of respondents respectively. Compared to the general population, the respondents comprised a greater number of females, younger and older ages, and had a higher education level. 32% of respondents reported no health problems on the EQ-5D-5L. From the youngest to oldest age groups, there was a general decline in health as assessed by the EQ-5D-5L. The exception was for anxiety/depression, where the youngest age groups had the poorest health. Apart from self-care, women reported poorer health than men, as assessed by the EQ-5D-5L; EQ VAS scores were similar for men and women. Higher levels of health (EQ-5D index, EQ VAS scores) were found with increasing levels of education.

Conclusion: The population norms will improve interpretation of EQ-5D-5L and EQ VAS scores in Norwegian applications including clinical practice, clinical and health services research, and national quality registers where EQ-5D-5L is the most widely used patient-reported instrument.

Introduction

The EuroQol EQ-5D is by far the most widely used patient-reported health outcome measure (PROM) suitable for use in economic evaluation including cost per quality adjusted life year (QALY) calculations [1,2]. The instrument is available in over 150 languages [3], and national value sets and population norms for purposes of scoring and interpretation exist for over 20 countries [4,5]. It is brief, widely tested, and includes five important aspects of health or dimensions (mobility, self-care, usual activities, pain/discomfort and anxiety/depression). The original version of the instrument, now referred to as the EQ-5D-3L, assessed these aspects of health with three levels corresponding to no, moderate and extreme problems [4]. The more recent EQ-5D-5L, used in this study, has five levels, corresponding to no, slight, moderate, severe and extreme problems.

The EQ-5D is considered highly acceptable to most patient groups and feasible for application where a short-form general measure of health is required. The instrument has had widespread application in research including clinical trials, population health surveys, and as a health care quality indicator. The latter includes the National Health Service for England and Wales Patient Reported Outcomes Measures (PROMs) program [4], and Norwegian and Swedish National Quality Registries (NQR) where it is the most widely used PROM [6,7]. The Norwegian Medicines Agency recommends the use of EQ-5D in all technology assessments [8]. In the absence of a Norwegian value set and scoring algorithm, the Agency recommends the EQ-5D-3L algorithm for the UK [9] together with a mapping algorithm [10].

Population norms or reference scores have been widely used to aid the interpretation of PROMs, including short-form generic instruments available over the last three decades, such as the EQ-5D and SF-36 [11,12]. Generic PROMs have relevance across populations irrespective of underlying health problems, and norms are usually based on representative samples of the general population. Population norms provide a benchmark or reference to interpret individual or group scores, often for specific health problems [11-13]. Norwegian population norms for the EQ-5D-3L recently became available and include data for the EQ-5D index, EQ VAS and dimension scores for categories of age, sex and education level [11].

National population norms are increasingly available for the EQ-5D-5L and to date include 14 countries: Bulgaria [14], China [15], Germany [16], Hong Kong [17], Italy [18], Indonesia [19], Ireland [20], Japan [21], Poland [22], Slovenia [23], Spain [24], Trinidad and Tobago [25], USA [2] and Vietnam [26]. Data were collected by computer assisted interview, face-to-face interview, on-line and self-completed (pen and paper). The collection of population norms was the main objective of four studies while the remainder had other objectives including valuation and national health surveys, which also included the EQ-5D-5L questionnaire. Samples size ranged from approximately 1000 [14], the level required for EQ-5D-5L valuation studies, to over 20 000 in the Spanish National Health Survey [24]. Most studies reported norms for the EQ-5D-5L dimensions, index and EQ VAS scores across categories of age and sex, with other socioeconomic variables including education level, being less widely reported [2, 14-26].

This is the first study to derive population norms for the EQ-5D-5L by means of a postal survey based on a nationally representative sample of Norwegians adults. The norms are presented for the five dimensions, EQ-5D index and EQ VAS scores across categories of age (18-29, 30-39, 40-49, 50-59, 60-69, 70-79, ≥80 years), sex and education level (below/above upper secondary school and short/long higher education).

Methods

Data collection

Age and sex specific response rates to existing Norwegian postal surveys, including those designed to give population norms (11, 12, 27-29), were assessed and determined the necessary sample size to give a similar number of respondents, and estimates of equal precision, per age and sex group. The National Registry of the Norwegian Tax Administration (Folkeregisteret) was used to select a random group of 12,790 adults aged 18 years and over, who in December 2019, were sent a postal questionnaire and reply-paid envelope addressed to the Norwegian Institute of Public Health. The accompanying letter explained the purpose of the study, that by responding to the questionnaire they gave their informed consent, and that those returning a completed questionnaire would be included in a lottery of ten prizes each to the value of NOK 10,000 (1,000 Euro).

The EQ-5D-5L was translated into the Norwegian language in accordance with EuroQol translation procedures including forward backwards translation, cognitive debriefing and quality control [30]. Used alongside the EQ-5D, the EQ VAS is a 20cm vertical visual analogue scale assessing "your own health today" on a scale of 0 to 100 corresponding to the worst and best imaginable health. Responses to the five items representing EQ-5D-5L health states are identified by a five-digit number (for example, 11232), each of which corresponds to the response category reported for successive dimensions, beginning with mobility. Each state has a value attached, which are based on national value sets, typically derived from general population studies and used in the calculation of QALYs. In the absence of a scoring algorithm for Norway, the Norwegian Medicines Agency recommendations [8] are for use of the UK EQ-5D-3L value set [9] mapped to the EQ-5D-5L descriptions of health [10], a "crosswalk value set". This crosswalk value set was used for the Norwegian EQ-5D-3L population norms [11] and is available to the system of national quality registers [31, 32]. The questionnaire also included questions relating to age, gender and education level.

The Regional Committee for Medical and Research Ethics stated that the study did not require their approval. The Data Protection Impact Assessment was approved by the Norwegian Institute of Public Health on the 16th October 2019.

Population norms

Presentation of norms including descriptive statistics, follow existing EQ-5D-5L studies and include EQ-5D-5L dimension, index and EQ VAS scores for the entire sample and by sex, seven age groups and education level [2, 14-26]. The latter is less widely reported but has a consistent role in explaining lower EQ-5D scores [13]. The most widely reported health states are shown for EQ-5D-5L states with 0.5% or more responses. The data were not weighted to better approximate the characteristics of general population. However, because the norms are shown by age and sex, there is no need for the sample to have the same distribution of these variables as the general population [13].

Stata version 15.0 (StataCorp LLC, College Station, TX) was used for statistical analyses.

Results

Data collection

Of the 12,790 questionnaires mailed, 426 were returned by the Post Office for being wrongly addressed, and one person had died. Of the remainder, 3,200 (25.9%) returned a questionnaire that was at least partly completed. The results that follow are based on the 3,120 (24.4%) respondents who completed the EQ-5D-5L dimensions and background questions. There were 73 fewer usable responses to the EQ VAS. The mean age (SD) was 50.9 (21.7) and ages ranged from 18 to 97 years (Table 1). There were approximately 10% more female respondents than male, and 239 to 691 respondents across seven age categories; the lowest number of respondents was for 80 years and above and the highest was for those 18-29 years of age. Respondents to the five education levels ranged from 282 to 862 for below secondary school to postgraduate higher education. The final column of Table 1 gives the Norwegian general population characteristics from Statistics Norway at the time of data collection. Survey respondents are also over-represented for the youngest and oldest age groups, and highest education level.

Table 2 shows that almost one third of respondents reported no problems on any of the five EQ-5D-5L dimensions, and 23% reported slight problems in relation to self-care. Twenty health states had frequencies of 0.5% and above, accounting for 84.3% of respondents. Of the possible 3125 EQ-5D-5L health states, 277 (8.9%) were reported.

Population norms

The distributions of the EQ-5D-5L item responses for the seven age groups are shown in Table 3, and separately for females and males in Tables 4 and 5 respectively. Irrespective of age and sex, the great majority (79-83%) responded that they have no problems with mobility, self-care, and usual activities. Two exceptions were mobility and usual activities for respondents aged 80 years and over, where approximately 50% of females and 60% of males responded that they have no problems (Tables 4-5). The great majority (85%) responded that they have none or slight pain/discomfort. For anxiety/depression the majority (68%) responded that they have no problems, which was more apparent for older age groups. Apart from anxiety/depression, the proportion of respondents reporting no problems decreases with age (Tables 3-5).

Responses to the categories of severe or extreme problems ranged from 0.5 to 4.3% for the self-care and pain/discomfort dimensions respectively. Responses to the categories of severe or extreme problems for the mobility and self-care dimensions, came mostly from the two oldest age groups. Severe and extreme problems for usual activities, pain/discomfort, and anxiety/depression were more evenly distributed across age groups with two exceptions; the age group 30-39 years, which had the best health across all five dimensions, and the youngest age group, which had highest reported levels of anxiety/depression.

The EQ-5D index and EQ VAS scores are shown in Table 6. Compared to males, females have slightly lower scores for the EQ-5D-5L index and slightly higher scores for the EQ VAS. For all respondents, the index and EQ VAS scores follow a similar pattern across the seven age groups, with slightly higher scores for the age group 30-39 years compared to the youngest age group. The scores fall slightly for the next age group 40-49 years, increase for the age groups 50-59 and 60-69, and decrease in the oldest age groups. These fluctuations are more pronounced for the EQ VAS in both females and males. The EQ-5D index scores show a slightly different pattern for females and males, with a decrease in scores for the female age group 50-59 years, and an increase for the female age group 60-69 years.

Both scores show a linear trend towards higher levels of health with the four levels of education from below upper secondary school level to postgraduate (Table 6). The differences between levels is very similar for the EQ-5D-5L and EQ VAS. The largest differences are for the first two levels of below and upper secondary school education. For both scores this difference is larger than that for the three remaining levels of education combined.

Discussion

This study makes available the first Norwegian population norms for the EQ-5D-5L from the Norwegian general population. This data is highly important to Norwegian users of PROMs in clinical and health services research, and the Norwegian NQRs, where EQ-5D-5L is by far the most widely used patient-reported instrument. The survey was specifically designed for the collection of norm data, whereas published data for several countries followed the collection EQ-5D valuation data for national scoring algorithms [2, 14, 15, 17, 20] or as part of other health surveys [24, 25]. The former followed EuroQol Valuation Technology and survey requirements including computer-assisted face-to-face interviews and sample sizes of approximately 1000, although the EQ-5D-5L and EQ VAS are generally completed by means of pen and paper in this context [5, 14]. The presence of an interviewer may still contribute to social desirability bias [2].

Differences in survey design, methods of recruitment and reporting limit comparisons with EQ-5D-5L norms for those available from other countries. However, as was found for Norway, across the eleven countries for which EQ-5D dimension data was reported, older groups generally reported increasing problems apart from anxiety and depression [2, 14, 15, 17, 19, 20, 22-26]. There were some exceptions for the usual activities dimension in the age groups 50-79 years, which reported slightly less problems than the 40-49 age group. The findings are similar for age groups that overlap with those for 50-79 years in three Asian countries and Ireland [17, 19, 20, 26]. Furthermore, compared to the youngest age group, those aged 30-39 years reported less problems with usual activities, which is comparable to the findings from six countries [14, 15, 17, 20, 25, 26]. Higher levels of anxiety/depression in the youngest age groups were also found for the youngest age groups in five Asian countries and Slovenia [15, 17, 19, 21, 23, 26].

Apart from self-care, males generally reported less health problems than females across the EQ-5D-5L dimensions. Males in the age group 60-69 years reported slightly more problems than females for mobility. For three of the seven age categories (40-49, 60-69, 70-79), males reported more problems with self-care than females. Across the eight countries for which such data were reported, the findings were similar for two or three overlapping age categories for Bulgaria [14], China [15], Ireland [20] and Poland [22]. For Indonesia, the same proportion of females and males reported no problems for self-care [19].

The use of national value sets for scoring the EQ-5D-5L limits the interpretation of EQ-5D index scores across countries. The additional use of a common value set, including the first EQ-5D-3L value set [9] with mapping [10], or summated rating scale based on the five items [20, 24], would aid interpretation but are rarely reported. EQ-5D index and EQ VAS scores did not consistently decrease with age, rather there was a slight increase for the second age group and two age groups from 50-69 years. Some increases in scores or leveling off with increases in age were found for ten countries reporting this data [15-21, 23, 25, 26]. In common with all other countries apart from the USA [2], EQ-5D index scores were lower for females than males [14-26]. The lower EQ VAS scores for males was previously found for four other countries [15, 20, 21, 25].

The use of postal administration followed published Norwegian surveys for collecting norm data for generic PROMs including the EQ-5D and SF-36, the most recent being reported in 2018 [11, 12, 29]. Independent of mode of administration, such surveys often have low response rates for older age groups, but the sampling methodology used here secured a relatively high number of respondents, which allowed the use of ten-year categories up to 80 years of age and over. Existing Norwegian surveys had smaller samples for older age groups [11, 12, 29], even when there has been a much larger sample [11,12]. This makes the norm data more relevant for the interpretation of EQ-5D scores from Norwegian patients, who are often older than respondents to surveys designed to give general population norms [27, 28]. Except for Spain, where the data came from a much larger sample [24], existing national norm data for the EQ-5D-5L has not included an age category of 80 years or above.

The response rate of 26% was low, and a reminder might have increased response rates. However, reminders sent to over 9,000 non-respondents to the first mailing would have made it costly. Based on published Norwegian surveys [11, 29], a low response rate was expected. The lottery incentive was included to mitigate this, albeit with what appears to be limited success. It is not possible to ascertain the impact of the lottery, but the most recent Norwegian postal survey designed to collect population norms for the SF-36, had a response rate of 20% before and 36% after one reminder [29]. One postal survey designed to collect Norwegian norms for the earlier version of the EQ-5D, which has three levels (EQ-5D-3L), used a sample frame based on the same Norwegian register in 2010. No reminders were used, but a lottery ticket for NOK 25 (2.5 Euros) was given to half the sample, and the overall response rate was 23% [11].

The present study adopted a similar approach to other countries based on quota sampling including age and sex [20, 21]. In common with the vast majority of other countries [2, 14, 15, 18-23, 25-26], the data were not weighted to better approximate the characteristics of general population, and because the norms are shown by age and sex, there is no need for the sample to have the same distribution of these variables as the general population [13]. However, given the over-representation of females and those with higher education levels, the data are not fully representative for the Norwegian general population. While not all EQ-5D-5L studies included a comparison with the general population, those that have also found over representation in relation to females [20], younger [21] and older age groups [20], and higher education levels [2, 14, 23, 25]. This may be problematic for the aggregated columns of all respondents, but users can easily weight the data to their own needs. The population norms will be made freely available to Norwegian users for comparative purposes after matching for background characteristics including age and sex-specific strata [33] or following regression analysis [34].

Study Limitations

There is currently no Norwegian value set or scoring algorithm for the EQ-5D-5L. Norwegian data was being collected for this purpose [5] but was postponed because of the COVID-19 pandemic. Other countries have faced similar issues in the reporting of population norms [14, 26]. Norms for the EQ-5D index scores were based on the UK value set with a mapping algorithm, which follows current recommendations [8]. When a Norwegian value set becomes available, EQ-5D index norms will be updated accordingly, and users informed.

Electronic data collection, including internet administration, is increasingly used for collecting PROMs data, and this additional mode of administration would have strengthened the study. Instrument scores and measurement properties are generally comparable for electronic and pen and paper administration, but response rates tend to be lower, and respondents less representative for the former [35-37]. EQ-5D data from internet panels has been shown to give systematically different respondents and norms to those from pen and paper administration [2]. Response rates to Norwegian surveys that include PROMs and related instruments including those assessing patient experiences, give lower response rates for internet compared to postal surveys and particularly for older age groups [11, 38, 39]. Norwegian norm data for the earlier version of the EQ-5D with three levels, was collected in 2010 by postal and electronic means, and while the authors concluded that methodological considerations limited the comparison of the two response rates, there were just 57 respondents over 71 years of age in the electronic survey compared to 175 in the postal survey [11]. National surveys of patient experiences of health services quality in Norway span two decades, and while there has been a steady increase in both the use and response rates to internet surveys, response rates to the postal component continue to be highest [38, 39].

Conclusion

This study collected the first general population norms for the EQ-5D-5L and EQ VAS from a sample of the Norwegian general population by means of a postal survey. The data will improve the interpretation of EQ-5D scores in clinical and health services research and quality indicator use, including the National Quality Registers.

Abbreviations

NQR national quality registers

PROM patient-reported health outcome measure

QALY quality adjusted life year

Declarations

Author contributions

All authors contributed to the study conception and design. Data management and analysis were performed by Andrew Garratt. The first draft of the manuscript was written by Andrew Garratt and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability

The data will be available for download from the Norwegian Centre for Research Data (nsd.no).

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Tables

Table 1 Respondent characteristics(n=3,120)

	n	%	Norwegian population ^a %
Female	1713	54.9	49.8
Male	1407	45.1	50.2
Age, years			
18-29	691	22.1	18.8
30-39	385	12.3	16.6
40-49	368	11.8	16.7
50-59	453	14.5	16.8
60-69	484	15.5	14.0
70-79	500	16.0	10.9
>=80	239	7.7	6.2
Education			
Below upper secondary education	282	9.0	32.8
Upper secondary education	1215	38.9	37.6
Higher education, short	761	24.4	21.4
Higher education, long	862	27.6	8.2

^a Data from Statistics Norway (www.ssb.no/befolkning) December 2019

Table 2 Most frequently^a reported EQ-5D-5L health states

Health state	n	%	Health state	n	%
11111	1006	32.2	11113	30	1.0
11121	704	22.6	11132	30	1.0
11122	271	8.7	21122	26	0.8
11112	158	5.1	11223	24	0.8
21121	60	1.9	11231	22	0.7
11221	51	1.6	21222	20	0.6
11123	46	1.5	11122	16	0.5
11222	44	1.4	11112	16	0.5
21221	38	1.2	11232	16	0.5
11131	36	1.2	21231	15	0.5

^a EQ-5D-5L health states reported by at least 0.5% of respondents.

Table 3 Distribution of EQ-5D items scores by age (n=3,120)

EQ-5D-5L item	Age group, years														All	
	18-29		30-39		40-49		50-59		60-69		70-79		≥ 80		n	%
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<i>Mobility</i>																
No problems	629	91.0	362	94.0	317	86.1	387	85.4	399	82.4	372	74.4	131	54.8	2597	83.2
Slight problems	46	6.6	18	4.7	37	10.1	43	9.5	54	11.2	85	17.0	55	23.0	338	10.8
Moderate problems	10	1.4	4	1.0	12	3.3	17	3.8	16	3.3	24	4.8	25	10.5	108	3.5
Severe problems	5	0.7	1	0.3	2	0.5	5	1.1	15	3.1	16	3.2	21	8.8	65	2.1
Unable to do	1	0.1	0	0	0	0	1	0.2	0	0	3	0.6	7	2.9	12	0.4
<i>Self-care</i>																
No problems	675	97.7	374	97.1	353	95.9	420	92.7	453	93.6	457	91.4	191	79.9	2923	93.7
Slight problems	10	1.4	9	2.3	8	2.2	25	5.5	24	5.0	30	6.0	29	12.1	135	4.3
Moderate problems	5	0.7	2	0.5	6	1.6	7	1.5	4	0.8	10	2.0	10	4.2	44	1.4
Severe problems	1	0.1	0	0	1	0.3	1	0.2	2	0.4	3	0.6	6	2.5	14	0.4
Unable to do	0	0	0	0	0	0	0	0	1	0.2	0	0	3	1.3	4	0.1
<i>Usual activities</i>																
No problems	559	80.9	340	88.3	282	76.6	355	78.4	397	82.0	402	80.4	141	59.0	2476	79.4
Slight problems	88	12.7	34	8.8	53	14.4	67	14.8	60	12.4	65	13.0	56	23.4	423	13.6
Moderate problems	26	3.8	7	1.8	23	6.3	17	3.8	14	2.9	14	2.8	24	10.0	125	4.0
Severe problems	14	2.0	3	0.8	7	1.9	14	3.1	13	2.7	16	3.2	9	3.8	76	2.4
Unable to do	4	0.6	1	0.3	3	0.8	0	0	0	0	3	0.6	9	3.8	20	0.6
<i>Pain/discomfort</i>																
None	351	50.8	201	52.2	140	38.0	166	36.6	176	36.4	171	34.2	66	27.6	1271	40.7
Slight	271	39.2	148	38.4	164	44.6	210	46.4	235	48.6	247	49.4	125	52.3	1400	44.9
Moderate	50	7.2	28	7.3	44	12.0	50	11.0	49	10.1	55	11.0	37	15.5	313	10.0
Severe	13	1.9	7	1.8	17	4.6	22	4.9	20	4.1	22	4.4	9	3.8	110	3.5
Extreme	6	0.9	1	0.3	3	0.8	5	1.1	4	0.8	5	1.0	2	0.8	26	0.8
<i>Anxiety/Depression</i>																
None	400	57.9	249	64.7	242	65.8	303	66.9	373	77.1	385	77.0	170	71.1	2122	68.0
Slight	180	26.0	95	24.7	87	23.6	115	25.4	80	16.5	91	18.2	53	22.2	701	22.5
Moderate	76	11.0	33	8.6	27	7.3	28	6.2	25	5.2	20	4.0	13	5.4	222	7.1
Severe	29	4.2	6	1.6	9	2.4	7	1.5	6	1.2	3	0.6	3	1.3	63	2.0
Extreme	6	0.9	2	0.5	3	0.8	0	0	0	0	1	0.2	0	0	12	0.4

Table 4 Distribution of EQ-5D items scores for females by age (n=1,713)

EQ-5D-5L item	Age group, years														All	
	18-29		30-39		40-49		50-59		60-69		70-79		>= 80		n	%
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<i>Mobility</i>																
No problems	407	89.6	213	92.6	191	85.3	198	84.3	220	84.6	133	67.9	56	49.1	1418	82.8
Slight problems	37	8.1	13	5.7	24	10.7	25	10.6	26	10.0	43	21.9	30	26.3	198	11.6
Moderate problems	9	2.0	3	1.3	8	3.6	7	3.0	7	2.7	13	6.6	14	12.3	61	3.6
Severe problems	1	0.2	1	0.4	1	0.4	4	1.7	7	2.7	5	2.6	12	10.5	31	1.8
Unable to do	0	0	0	0	0	0	1	0.4	0	0	2	1.0	2	1.8	5	0.3
<i>Self-care</i>																
No problems	443	97.6	223	97.0	215	96.0	217	92.3	249	95.8	185	94.4	89	78.1	1621	94.6
Slight problems	7	1.5	6	2.6	6	2.7	11	4.7	7	2.7	6	3.1	14	12.3	57	3.3
Moderate problems	3	0.7	1	0.4	3	1.3	6	2.6	3	1.2	4	2.0	8	7.0	28	1.6
Severe problems	1	0.2	0	0	0	0	1	0.4	1	0.4	1	0.5	3	2.6	7	0.4
Unable to do	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Usual activities</i>																
No problems	363	80.0	202	87.8	163	72.8	183	77.9	210	80.8	149	76.0	60	52.6	1330	77.6
Slight problems	62	13.7	21	9.1	38	17.0	31	13.2	36	13.8	34	17.3	31	27.2	253	14.8
Moderate problems	17	3.7	4	1.7	15	6.7	9	3.8	7	2.7	5	2.6	15	13.2	72	4.2
Severe problems	10	2.2	2	0.9	6	2.7	12	5.1	7	2.7	6	3.1	5	4.4	48	2.8
Unable to do	2	0.4	1	0.4	2	0.9	0	0	0	0	2	1.0	3	2.6	10	0.6
<i>Pain/discomfort</i>																
None	218	48.0	110	47.8	87	38.8	76	32.3	94	36.2	57	29.1	22	19.3	664	38.8
Slight	181	39.9	94	40.9	92	41.1	119	50.6	128	49.2	95	48.5	61	53.5	770	45.0
Moderate	39	8.6	22	9.6	30	13.4	21	8.9	25	9.6	32	16.3	23	20.2	192	11.2
Severe	12	2.6	3	1.3	13	5.8	15	6.4	10	3.8	11	5.6	7	6.1	71	4.1
Extreme	4	0.9	1	0.4	2	0.9	4	1.7	3	1.2	1	.5	1	0.9	16	0.9
<i>Anxiety/Depression</i>																
None	244	53.7	145	63.0	146	65.2	147	62.6	196	75.4	140	71.4	75	65.8	1093	63.8
Slight	131	28.9	61	26.5	60	26.8	66	28.1	45	17.3	46	23.5	29	25.4	438	25.6
Moderate	56	12.3	23	10.0	12	5.4	17	7.2	16	6.2	9	4.6	8	7.0	141	8.2
Severe	19	4.2	1	0.4	5	2.2	5	2.1	3	1.2	1	0.5	2	1.8	36	2.1
Extreme	4	0.9	0	0	1	0.4	0	0	0	0	0	0	0	0	5	0.3

Table 5 Distribution of EQ-5D items scores for males by age (n=1,407)

	Age group. years														All	
	18-29		30-39		40-49		50-59		60-69		70-79		≥ 80		n	%
EQ-5D-5L item	n	%	n	%	n	%	n	%	n	%	n	%	n	%		
<i>Mobility</i>																
No problems	222	93.7	149	96.1	126	87.5	189	86.7	179	79.9	239	78.6	75	60.0	1179	83.8
Slight problems	9	3.8	5	3.2	13	9.0	18	8.3	28	12.5	42	13.8	25	20.0	140	10.0
Moderate problems	1	0.4	1	0.6	4	2.8	10	4.6	9	4.0	11	3.6	11	8.8	47	3.3
Severe problems	4	1.7	0	0	1	0.7	1	0.5	8	3.6	11	3.6	9	7.2	34	2.4
Unable to do	1	0.4	0	0	0	0	0	0	0	0	1	0.3	5	4.0	7	0.5
<i>Self-care</i>																
No problems	232	97.9	151	97.4	138	95.8	203	93.1	204	91.1	272	89.5	102	81.6	1302	92.5
Slight problems	3	1.3	3	1.9	2	1.4	14	6.4	17	7.6	24	7.9	15	12.0	78	5.5
Moderate problems	2	0.8	1	0.6	3	2.1	1	.5	1	0.4	6	2.0	2	1.6	16	1.1
Severe problems	0	0	0	0	1	0.7	0	0	1	0.4	2	0.7	3	2.4	7	0.5
Unable to do	0	0	0	0	0	0	0	0	1	0.4	0	0	3	2.4	4	0.3
<i>Usual activities</i>																
No problems	196	82.7	138	89.0	119	82.6	172	78.9	187	83.5	253	83.2	81	64.8	1146	81.4
Slight problems	26	11.0	13	8.4	15	10.4	36	16.5	24	10.7	31	10.2	25	20.0	170	12.1
Moderate problems	9	3.8	3	1.9	8	5.6	8	3.7	7	3.1	9	3.0	9	7.2	53	3.8
Severe problems	4	1.7	1	0.6	1	0.7	2	0.9	6	2.7	10	3.3	4	3.2	28	2.0
Unable to do	2	0.8	0	0	1	0.7	0	0	0	0	1	0.3	6	4.8	10	0.7
<i>Pain/discomfort</i>																
None	133	56.1	91	58.7	53	36.8	90	41.3	82	36.6	114	37.5	44	35.2	607	43.1
Slight	90	38.0	54	34.8	72	50.0	91	41.7	107	47.8	152	50.0	64	51.2	630	44.8
Moderate	11	4.6	6	3.9	14	9.7	29	13.3	24	10.7	23	7.6	14	11.2	121	8.6
Severe	1	0.4	4	2.6	4	2.8	7	3.2	10	4.5	11	3.6	2	1.6	39	2.8
Extreme	2	0.8	0	0	1	0.7	1	0.5	1	0.4	4	1.3	1	0.8	10	0.7
<i>Anxiety/Depression</i>																
None	156	56.8	104	67.1	96	66.7	156	71.6	177	79.0	245	80.6	95	76.0	1029	73.1
Slight	49	20.7	34	21.9	27	18.8	49	22.5	35	15.6	45	14.8	24	19.2	263	18.7
Moderate	20	8.4	10	6.5	15	10.4	11	5.0	9	4.0	11	3.6	5	4.0	81	5.8
Severe	10	4.2	5	3.2	4	2.8	2	0.9	3	1.3	2	0.7	1	0.8	27	1.9
Extreme	2	0.8	2	1.3	2	1.4	0	0	0	0	1	0.3	0	0	7	0.5

Table 6 EQ-5D index and EQ VAS (0-100 scale) scores for the entire sample, age, sex and education (n=3,120)

	EQ-5D index			EQ VAS		
	n	Mean	SD	n	Mean	SD
All	3120	0.82	0.185	3047	79.4	17.2
Sex						
Female	1713	0.815	0.185	1677	79.6	17.7
Male	1407	0.834	0.185	1370	79.3	16.6
Ages						
18-29	691	0.838	0.178	682	80.1	15.5
30-39	385	0.865	0.148	378	82.2	14.7
40-49	368	0.819	0.187	363	78.1	17.8
50-59	453	0.819	0.185	444	79.8	16.9
60-69	484	0.829	0.173	470	81.7	16.9
70-79	500	0.813	0.190	483	79.5	17.1
≥80	239	0.742	0.240	227	69.6	22.6
Ages female						
18-29	454	0.829	0.179	449	79.5	16.3
30-39	230	0.858	0.136	225	82.7	15.0
40-49	224	0.815	0.192	219	77.9	18.3
50-59	235	0.798	0.201	231	79.6	18.4
60-69	260	0.831	0.174	254	82.9	16.6
70-79	196	0.792	0.184	190	79.9	17.1
≥80	114	0.718	0.227	109	68.8	24.01
Ages male						
18-29	237	0.857	0.175	233	81.3	13.8
30-39	155	0.875	0.164	153	81.4	14.1
40-49	144	0.825	0.178	144	78.4	17.0
50-59	218	0.843	0.162	213	80.1	15.2
60-69	224	0.827	0.172	216	80.4	17.2
70-79	304	0.826	0.193	293	79.2	17.1
≥80	125	0.763	0.250	118	70.3	21.3
Education						
Below upper secondary	282	0.712	0.258	273	70.7	22.1
Upper secondary	1215	0.806	0.195	1183	77.8	18.5
Higher education, short	761	0.843	0.158	747	81.0	15.0

Higher education, long	862	0.869	0.142	844	83.2	13.8