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Normative values of EQ-5D-5L for diabetes patients from Spain

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Abstract

Introduction: **diabetes is a metabolic disease that can lead a reduction in health-related quality of life. The EQ-5D is a generic preference-based health-related quality of life questionnaire widely used in patients with diabetes.**

Objective: **the aim of the current manuscript is to provide normative values of EQ-5D-5L for Spanish people suffering from diabetes.**

Methods: **data from the Spanish Health Survey (2011/2012) was utilized. A total of 1 857 people suffering from diabetes participated in the survey. EQ-5D-5L scores were defined by sex, region (including the 17 Autonomous regions and 2 Autonomous cities of Spain), and 8 age groups.**

Results: **mean EQ-5D-5L utility index for the whole sample was 0.742. It was better for men (0.826) than for women (0.673). Similar results were observed in the VAS. The ceiling effect was much higher for men (44.83%) than for women (24.41%).**

Conclusions: **the current study provides EQ-5D-5L normative and representative data for Spanish people suffering from diabetes.**

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Key words: *Health-related quality of life. Health state. Normative data. Utility. Spain.*

DATOS NORMATIVOS DEL EQ-5D-5L EN PACIENTES DIABÉTICOS DE ESPAÑA

Resumen

Introducción: **la diabetes es una enfermedad metabólica que puede conllevar una reducción de la calidad de vida relacionada con la salud. El EQ-5D es un cuestionario genérico de calidad de vida relacionada con la salud basado en preferencias sociales. Este cuestionario ha sido muy utilizado en pacientes con diabetes.**

Objetivo: **el objetivo del presente artículo es informar sobre los valores normativos del cuestionario EQ-5D-5L en personas españolas con diabetes.**

Métodos: **se utilizaron datos de la Encuesta Española de Salud (2011/2012). Un total de 1.857 personas con diabetes participaron en la encuesta. La puntuación del EQ-5D-5L se ha reflejado en función del sexo, región (incluyendo las 17 comunidades autónomas y las 2 ciudades autónomas de España), y 8 grupos de edad.**

Resultados: **la media del índice de utilidad para toda la muestra fue de 0,742. Esta fue mejor para hombres (0,826) que para mujeres (0,673). Resultados similares se observaron en la Escala Visual Analógica. El efecto techo fue mucho mayor en hombres (44,83%) que en mujeres (24,41%).**

Conclusiones: **el presente estudio recoge datos normativos representativos del EQ-5D-5L en España de personas con diabetes.**

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Palabras clave: *Calidad de vida relacionada con la salud. Estado de salud. Datos normativos. Utilidad. España.*

Introduction

Diabetes mellitus is a metabolic disease characterized by hyperglycemia as a consequence of defects in insulin secretion, insulin action, or both of them. Diabetes is associated with vascular complications, including cardiovascular diseases, retinopathy, and nephropathy[1]. There is high prevalence of obesity among patients with diabetes[2]. All this can lead a reduction in health-related quality of life (HRQoL). Approximately 10-12.5% of Spanish adults aged more than 25 are

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diabetic. This high prevalence imposes a substantial burden on countries[4].

The EQ-5D-5L is a widely used generic preference-based HRQoL questionnaire[5]. It consists of 5 dimensions (mobility, self-care, usual activities, pain or discomfort, and anxiety or depression), with five possible levels of problem. Health states can be described with a 5-digit number, where the first number is the answer of the first question, the second number is the answer of the second question, and so on. Given that EQ-5D is a preference-based questionnaire, these health states can be converted into a utility index by applying the appropriate formula. This instrument also includes a Visual Analog Scale (VAS) with a range from 0 (worst imaginable health state) to 100 (best imaginable health state).

The EQ-5D-5L was developed from a previous version which consisted of the same 5 dimensions but with only three answer alternatives. This previous version was the EQ-5D-3L. The main limitations of EQ-5D-3L were[6-8]: 1) the limited number of possible health states, allowing only $3^5 = 243$ health states, which restricted the ability to discriminate small differences in health status, and 2) the commonly reported ceiling effect. These limitations were reduced in the EQ-5D-5L version. This questionnaire allows $5^5 = 3125$ health states, its discriminatory power is higher, and the ceiling effect is lower[8,9]. However, the ceiling effect is still a problem, especially among general healthy population[10]. The EQ-5D-5L showed lower ceiling effect compared to EQ-5D-3L (29% versus 33%), more discriminatory power, and higher preference by the respondents[11].

EQ-5D-5L and EQ-5D-3L have been widely used in diabetic populations. Patients with diabetes often report lower scores in the VAS score compared to the general population[12]. Similar results were reported for the utility index[12]. Among diabetes patients, the tendency of HRQoL problems assessed using EQ-5D increased with age, female gender, lower education, previous stroke, heart problems, problems with lower extremities and eyes disorders[13].

Interpretation of results from EQ-5D-5L for Spanish diabetic population may refer to normative values in order to identify deviations according with age, gender, education level, marital status, region, smoking status, and net monthly income of household. The aim of the current manuscript is to provide these normative values.

Methods

The Spanish Ministry of Health, Social Services, and Equality recently performed a National Health Survey. Acquisition of data started in July 2011 and ended in June 2012. This survey comprised four main blocks: socio-demographic parameters, health status, health-care services, and determinants of health [14]. In the health status block, the EQ-5D-5L was included for the first time in this regular survey.

Data collection method was computer-assisted personal interviews (CAPI). Therefore, this study is a cross-sectional study. The total effective sample was 21,007 people, aged from 15 to 103 years. This representative sample allows the establishment of normative values in different pathologic sub-populations. The current manuscript shows normative values for the 1,857 people suffering from diabetes who participated in the survey. Data was defined by sex, region (including the 17 Autonomous regions and 2 Autonomous cities of Spain), and 8 age groups.

Statistical analysis

Mean and SD of the EQ-5D-5L utility index and VAS of perceived health were calculated for the whole sample.

The EQ-5D-5L utility index for Spanish population is the result of a "crosswalk" from the previous version, the EQ-5D-3L. The preference-based method known as time trade-off (TTO) was used to calculate it, and the algorithm is available at EuroQol Group's website (http:// http://www.euroqol.org/). This index is calculated from the 5 digit score, where each digit comes from one dimension. An index score of 1 means perfect health state, and it coincides with the value 11111. On the other hand, in Spanish population, the worst health corresponds to -0.654, and with the 5-digit number 55555. The frequency (total number and percentage) of the perfect health status in the EQ-5D-5L utility index was evaluated in order to determine the ceiling effect.

The sample was stratified by gender, age group, and region. Effects of marital status, smoking status, monthly incomes, and educational level were also taken into account. Score distribution in each dimension was analyzed separately for men and women and for age group. The answers "do not know" and "no answer" were considered as missing data.

Results

Table I shows the main characteristics of the sample. A total of 1,857 diabetic patients participated in the survey. Of these, 1016 were women, and 841 were men. Mean EQ-5D-5L utility index for the whole sample was 0.742. This score was better for men (0.826) than for women (0.673). Similar results were observed in the VAS. The ceiling effect was consistent with these previous results, and was much higher for men (44.83%) than for women (24.41%). EQ-5D-5L utility index, VAS score, and ceiling effect experienced a reduction as the age of the patients increased. By region, best scores in EQ-5D-5L utility index were observed in Melilla and Aragon, whereas best scores in the VAS

Table I
Sample characteristics. EQ-5D-5L diabetic population normative values

			EQ-5D-5L Utility Index		*EQ-5D-VAS*		*Ceiling effect*	
	n	*(%)*	*Mean*	*SD*	*Mean*	*SD*	*n*	*(%)*
Overall	1,857	-	0.742	0.324	61.106	20.510	625	33.66
Gender								
Female	1,016	54.71	0.673	0.349	57.934	20.874	248	24.41
Male	841	45.29	0.826	0.267	64.912	19.402	377	44.83
Age group								
18-29	12	0.65	0.992	0.259	89.166	6.978	11	91.67
30-39	64	3.45	0.930	0.159	76.222	16.236	44	68.75
40-49	92	4.95	0.941	0.118	74.826	15.562	64	69.57
50-59	298	16.05	0.837	0.236	63.684	18.769	135	45.30
60-69	459	24.72	0.806	0.246	62.623	19.895	162	35.29
70-79	557	29.99	0.725	0.308	58.329	20.525	152	27.29
80-89	335	18.04	0.542	0.414	54.720	20.466	55	16.42
90 +	40	2.15	0.354	0.425	49.842	20.377	2	5.00
Region								
Andalusia	257	13.84	0.727	0.350	58.832	20.249	92	35.80
Aragon	60	3.23	0.831	0.206	63.533	19.406	20	33.33
Principality of Asturias	62	3.34	0.675	0.338	56.774	17.772	14	22.58
Balearic Islands	64	3.45	0.743	0.335	59.750	19.786	22	34.38
Canarias	105	5.65	0.700	0.351	58.638	20.143	31	29.52
Cantabria	53	2.85	0.746	0.323	52.509	14.536	19	35.85
Castile and León	106	5.71	0.797	0.247	61.735	19.429	39	36.79
Castile-La Mancha	109	5.87	0.732	0.346	56.770	21.812	32	29.36
Catalonia	194	10.45	0.703	0.328	62.196	22.128	52	26.80
Community of Valencia	152	8.19	0.703	0.353	59.157	22.657	49	32.24
Extremadura	108	5.82	0.780	0.297	60.916	23.030	36	33.33
Galicia	128	6.89	0.699	0.297	60.515	15.472	31	24.22
Community of Madrid	141	7.59	0.819	0.244	68.560	19.477	56	39.72
Murcia Region	94	5.06	0.759	0.327	65.712	20.002	32	34.04
Community of Navarre	52	2.80	0.748	0.410	59.803	24.008	22	42.31
Basque Country	84	4.52	0.739	0.367	63.273	20.359	38	45.24
La Rioja	58	3.12	0.799	0.310	69.413	20.322	27	46.55
Ceuta	15	0.81	0.756	0.287	66.666	16.931	6	40.00
Melilla	15	0.81	0.855	0.169	59.466	21.820	7	46.67
Marital status								
Single	192	10.34	0.803	0.291	64.978	19.644	80	41.67
Married	1,011	54.44	0.788	0.292	62.676	20.508	406	40.16
Divorced/separated	100	5.39	0.812	0.273	62.202	19.930	39	39.00
Widowed	553	29.78	0.625	0.365	56.635	20.182	100	18.08
Smoking status								
Yes	252	13.57	0.834	0.249	67.108	19.395	109	43.25
No	1,604	86.38	0.728	0.331	60.164	20.530	516	32.17
Net Monthly income of household, €								
Less than 550	132	7.11	0.681	0.319	56.442	17.052	28	21.21
551-1,300	924	49.76	0.708	0.331	58.324	20.959	254	27.49
1,301-2,250	325	17.50	0.804	0.305	65.121	19.682	149	45.85
2,251-3,450	94	5.06	0.887	0.225	69.634	19.104	55	58.51
3,451 +	18	0.97	0.932	0.137	74.000	14.196	13	72.22
Educational level								
Low	1,056	56.87	0.686	0.345	57.52	20.458	261	24.72
Medium	660	35.54	0.794	0.291	64.384	19.517	268	40.61
High	141	7.59	0.920	0.154	71.744	19.237	96	68.09

were observed in La Rioja and the Community of Madrid. Health status was better as long as the net monthly income of household and the educational level were increased.

As can be seen in table II, men reported better health status than women in the 8 age groups and in 18 of the 19 regions (except the Principality of Asturias). These gender differences were also observed regardless their marital status, monthly incomes, and smoking status. However, women with high education level reported higher scores in EQ-5D-5L utility index and VAS than men.

Similar gender differences were also observed for each dimension of the questionnaire (Table III). In the dimension "mobility", 64.3% of men and 43.8% of women answered 1 " I have no problems in walking about"; in the dimension "self-care", 85.1% of men and 69.1% of women answered 1 " I have no problems washing or dressing myself"; in the dimension "usual activities" 74.7% of men and 52.5% of women answered 1 "I have no problem doing my usual activities"; highest difference was observed in the pain/discomfort dimension, where 59.0% of men and 34.5% of women answered 1 "I have no pain or discomfort"; Finally, in the dimension "anxiety/depression" dimension, 80.8% of the men and 62.1% of the women answered 1 "I am not anxious or depressed".

Table IV shows the Spanish distribution of health status. A total of 625 people (which represents the 33.66% of the total diabetic sample) reported a perfect health status (11111). The second most common health status (5.7% of the sample) was 11121, which means no problems in mobility, self-care, usual activities and anxiety/depression, but slight pain or discomfort.

Discussion

Spanish men suffering from diabetes reported better health status than women. This results are consistent with previous studies focused on diabetes from a gender perspective[15,16]. In this regard, obese women with diabetes have more physical and emotional problems than obese males with diabetes. Similarly, women reported more problems in the handling of the disease[15]. There is a close relation between diabetes and overweight, and previous studies observed gender differences in the impact of overweight[17]. Adult obese women (aged 35-64 years) had poorer scores in all HRQoL dimensions, whereas the impact of overweight in adult obese men is only focused on physical functioning and general health perception[18]. Obese women also experienced greater impairments than men on self-esteem or sexual life, which may be related with mental health[19].

To the best of our knowledge, this is the first paper that aims to provide normative data of EQ-5D-5L for Spanish people suffering from diabetes. The current study is useful at both national and regional level, because the sample is representative of the Spanish people with diabetes, and it is stratified by region, age group, and gender. One previous study was conducted with a representative sample of the region of Murcia but it used the SF-12-v2 and only included population from 1 of the 17 regions of Spain[20]. Results were similar to those reported in the current manuscript, finding that diabetic men had better HRQoL than women.

Normative data in specific populations is crucial because it allows HRQoL comparisons between pathologic populations and general population, helping the development and planning of health policy[21,22]. In research, normative data allows evaluations of the clinical significance of specific treatments and interventions[23,24], and may be an useful resource in interpreting patient-reported outcome results[25]. Spanish National Survey is performed periodically, thus it provides relevant information about the variations of Spanish population over time.

As expected, EQ-5D-5L scores were lower when the age was increased. Educational level and household net monthly income seemed to be relevant for the perception of HRQoL. Interestingly, men with low and medium education had better scores in EQ-5D-5L utility index and VAS than women, whereas women with high educational level reported better scores than men with high educational level. Previous research observed that people with adequate knowledge about own disease often are able to handle it better[26]. This knowledge is positively associated with educational level[27,28]. Therefore, it seems reasonable that the higher educational level, the better HRQoL. Gender differences are lower at high educational level, compared to low and medium levels. This supports the notion that health education is crucial in the management of the disease.

The ceiling effect was high. More than 1/3 of the total diabetic sample reported a perfect health status (11111). As expected, ceiling effect was lower in diabetic sample compared to general population, where almost half of the participants reported being in the optimal health status[10]. The dimension "self-care" registered the greatest ceiling effect (76.4%), whereas the lowest ceiling effect was observed in the dimension "pain/discomfort" (45.6%).

The current study has several limitations. First, Spanish utility index of EQ-5D-5L is the result of a "crosswalk" from the EQ-5D-3L, and, to our knowledge, the specific set of EQ-5D-5L for Spanish population has not been developed. The second limitation is the lack of control of the severity of diabetic symptoms. Similarly, the presence/absence and severity of overweight and obesity were not considered. And the lack of control on the type of diabetes (type 1, type 2 or gestational diabetes). In spite of these limitations, the current manuscript meets the objective of providing normative data for the Spanish diabetic population.

Table II
Study sample characteristics. EQ-5D-5L diabetic population normative values

	n = 1857		*EQ-5D-5L Utility Index*				*EQ-5D-VAS*				*Ceiling effect*	
	Male	*Fem*	*Male*		*Fem*		*Male*		*Fem*		*Male*	*Fem*
	n	*n*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*n*	*n*
Age group												
18-29	4	8	0.977	0.045	1.000	0.000	89.750	7.411	88.875	7.259	3	8
30-39	26	38	0.889	0.226	0.958	0.080	76.884	16.212	75.756	16.459	17	27
40-49	49	43	0.953	0.111	0.927	0.126	74.857	15.304	74.790	16.032	36	28
50-59	179	119	0.879	0.198	0.774	0.274	66.106	18.458	60.000	18.716	97	38
60-69	245	214	0.860	0.227	0.745	0.253	65.371	18.454	59.457	20.854	116	46
70-79	213	344	0.819	0.247	0.667	0.327	63.234	19.235	55.309	20.737	81	71
80-89	119	216	0.621	0.401	0.500	0.416	57.113	21.423	53.409	19.852	26	29
90 +	6	34	0.728	0.148	0.284	0.424	68.166	24.750	46.406	17.877	1	1
Region												
Andalusia	121	136	0.843	0.249	0.624	0.392	63.983	19.001	54.250	20.289	58	34
Aragon	27	33	0.902	0.185	0.774	0.208	67.814	16.241	60.030	17.781	14	6
Principality of Asturias	27	35	0.666	0.372	0.682	0.314	56.222	16.463	57.200	18.947	8	6
Balearic Islands	30	34	0.748	0.372	0.738	0.304	60.633	22.535	58.970	17.314	12	10
Canarias	48	57	0.769	0.326	0.642	0.363	62.500	21.913	55.386	18.082	21	10
Cantabria	22	31	0.816	0.295	0.696	0.338	52.227	11.135	52.709	16.714	9	10
Castile and León	47	59	0.840	0.189	0.762	0.282	64.340	20.214	59.661	18.693	20	19
Castile-La Mancha	41	68	0.891	0.206	0.635	0.379	62.853	21.442	53.102	21.356	21	11
Catalonia	80	114	0.803	0.268	0.632	0.349	67.718	17.160	58.224	24.430	28	24
Community of Valencia	64	88	0.782	0.323	0.646	0.364	63.953	21.176	55.670	23.173	27	22
Extremadura	57	51	0.884	0.131	0.664	0.379	67.122	20.460	53.980	23.941	21	15
Galicia	58	70	0.770	0.281	0.641	0.300	62.965	17.140	58.485	13.736	21	10
Community of Madrid	71	70	0.880	0.169	0.757	0.291	68.957	18.685	68.157	20.377	36	20
Murcia Region	39	55	0.828	0.288	0.712	0.346	68.102	17.638	64.018	21.519	18	14
Community of Navarre	26	26	0.811	0.377	0.686	0.439	60.692	23.515	58.880	24.960	13	9
Basque Country	40	44	0.877	0.243	0.617	0.416	66.575	18.368	60.272	21.788	24	14
La Rioja	32	26	0.838	0.295	0.750	0.326	73.843	17.079	63.961	22.888	18	9
Ceuta	7	8	0.924	0.137	0.608	0.310	73.142	19.126	61.000	13.459	5	1
Melilla	4	11	0.955	0.091	0.819	0.179	80.000	10.801	52.000	20.040	3	4
Marital status												
Single	122	70	0.849	0.244	0.723	0.346	66.116	18.093	62.909	22.187	57	23
Married	568	443	0.835	0.261	0.727	0.318	64.684	19.704	60.069	21.249	273	133
Divorced/separated	100	453	0.732	0.249	0.602	0.290	64.030	19.013	55.020	20.173	25	14
Widowed	51	49	0.861	0.320	0.762	0.371	66.280	19.605	58.040	19.965	22	78
Smoking status												
Yes	180	72	0.856	0.230	0.778	0.286	67.871	18.570	65.130	21.407	83	26
No	661	943	0.818	0.276	0.665	0.352	64.092	19.562	57.405	20.754	294	222
Net Monthly income of household, €												
Less than 550	40	92	0.771	0.348	0.641	0.299	61.800	18.325	54.087	16.005	16	12
551-1,300	383	541	0.808	0.268	0.637	0.352	62.082	19.926	55.662	21.281	149	105
1,301-2,250	178	147	0.863	0.228	0.733	0.367	67.457	19.032	62.250	20.150	91	58
2,251-3,450	70	24	0.887	0.245	0.887	0.158	70.700	18.048	66.391	22.137	44	11
3,451 +	13	5	0.960	0.140	0.858	0.101	75.846	10.495	69.200	22.050	12	1
Educational level												
Low	392	664	0.784	0.300	0.628	0.356	62.470	19.641	54.611	20.385	143	118
Medium	350	310	0.847	0.246	0.735	0.325	66.143	18.914	62.390	20.023	170	98
High	99	42	0.919	0.140	0.922	0.184	69.909	18.996	76.071	19.333	64	32

Table III

Percentage frequency distributions of EQ-5D-5L dimensions by gender and age group

Level	*Mobility*			*Self-care*			*Usual activities*			*Pain/discomfort*			*Anxiety/depression*		
	Total	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*
All															
1	53.2	64.3	43.9	76.4	85.1	69.1	62.5	74.7	52.5	45.6	59.0	34.5	70.6	80.8	62.1
2	16.7	14.4	18.7	8.6	5.6	11.1	14.8	11.1	17.9	22.3	20.4	23.8	14.5	10.4	17.9
3	15.8	11.4	19.4	6.7	4.8	8.4	11.0	7.3	14.2	20.1	13.4	25.7	9.5	4.4	13.8
4	11.0	7.4	14.1	4.6	2.4	6.5	5.3	3.3	7.0	10.4	6.3	13.8	3.9	3.0	4.6
5	3.3	2.5	3.9	3.7	2.1	4.9	6.3	3.7	8.5	1.3	0.5	2.1	0.8	0.5	1.0
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.4	0.5	0.3
18-29															
1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	91.7	75.0	100.0	100.0	100.0	100.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	25.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-39															
1	90.6	80.8	97.4	98.4	96.2	100.0	90.6	84.6	94.7	81.3	80.8	81.6	89.1	88.5	89.5
2	3.1	7.7	0.0	0.0	0.0	0.0	4.7	7.7	2.6	9.4	3.8	13.2	4.7	3.8	5.3
3	4.7	7.7	2.6	0.0	0.0	0.0	1.6	0.0	2.6	6.3	7.7	5.3	1.6	3.8	0.0
4	1.6	3.8	0.0	0.0	0.0	0.0	1.6	3.8	0.0	3.1	7.7	0.0	4.7	3.8	5.3
5	0.0	0.0	0.0	1.6	3.8	0.0	1.6	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40-49															
1	89.1	89.8	88.4	98.9	100.0	97.7	91.3	93.9	88.4	80.4	87.8	72.1	85.9	89.8	81.4
2	6.5	6.1	7.0	0.0	0.0	0.0	4.3	4.1	4.7	6.5	8.2	4.7	6.5	8.2	4.7
3	2.2	2.0	2.3	0.0	0.0	0.0	3.3	0.0	7.0	10.9	2.0	20.9	7.6	2.0	14.0
4	2.2	2.0	2.3	1.1	0.0	2.3	0.0	0.0	0.0	2.2	2.0	2.3	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-59															
1	70.1	73.7	64.7	89.3	92.7	84.0	79.5	86.0	69.7	56.7	65.9	42.9	68.5	77.1	55.5
2	14.1	12.3	16.8	5.0	3.4	7.6	9.4	5.6	15.1	19.1	15.6	24.4	16.8	15.6	18.5
3	8.1	8.4	7.6	3.0	2.2	4.2	6.7	5.0	9.2	16.1	14.0	19.3	9.7	4.5	17.6
4	6.7	5.0	9.2	1.3	0.6	2.5	2.7	2.2	3.4	8.1	4.5	13.4	4.4	2.8	6.7
5	1.0	0.6	1.7	1.3	1.1	1.7	1.7	1.1	2.5	0.0	0.0	0.0	0.7	0.0	1.7
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60-69															
1	61.7	69.0	53.3	87.8	91.8	83.2	72.1	79.2	64.0	47.5	64.0	40.1	71.1	82.5	57.9
2	16.1	14.3	18.2	5.2	3.7	7.0	15.0	9.4	21.5	24.6	22.0	36.5	14.3	9.8	19.6
3	15.0	11.0	19.6	3.9	2.0	6.1	7.0	6.1	7.9	17.0	10.6	13.8	9.6	4.1	15.9
4	6.1	4.5	7.9	2.2	1.6	2.8	3.9	3.7	4.2	10.7	3.4	9.6	3.7	2.4	5.1
5	1.1	1.2	0.9	0.9	0.8	0.9	2.0	1.6	2.3	0.2	0.0	0.0	0.9	0.4	1.4
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0
70-79															
1	45.6	60.1	36.6	73.2	82.6	67.4	57.1	70.4	48.8	39.1	53.7	29.9	69.0	79.4	62.5
2	19.7	16.9	21.5	12.0	7.5	14.8	17.4	16.4	18.0	26.0	26.2	25.9	15.4	10.7	18.3
3	20.3	14.1	24.1	7.9	6.1	9.0	15.3	9.4	18.9	22.8	13.6	28.5	9.7	4.2	13.1
4	11.3	6.6	14.2	4.5	2.3	5.8	5.2	1.4	7.6	10.6	5.1	14.0	4.8	4.2	5.2
5	3.1	2.3	3.5	2.3	1.4	2.9	5.0	2.3	6.7	1.3	0.5	1.7	0.7	0.5	0.9
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.0	0.2	0.5	0.0
80-89															
1	25.7	35.3	20.4	49.9	58.0	45.4	34.9	47.1	28.2	28.6	36.7	24.1	65.7	78.5	58.5
2	20.3	16.8	22.2	13.4	10.9	14.8	20.3	16.0	22.7	23.2	23.3	23.1	16.6	6.6	22.1
3	21.8	16.0	25.0	14.6	14.3	14.8	15.8	12.6	17.6	27.4	22.5	30.1	11.8	6.6	14.7
4	23.6	21.8	24.5	11.6	8.4	13.4	11.6	9.2	13.0	15.2	13.3	16.2	3.3	3.3	3.2
5	8.7	10.1	7.9	10.4	8.4	11.6	17.3	15.1	18.5	5.1	2.5	6.5	0.9	1.7	0.5
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.0	0.9	1.7	0.5
90 or more															
1	7.5	16.7	5.9	20.0	33.3	17.6	10.0	33.3	5.9	24.4	33.3	22.9	71.4	100.0	66.7
2	22.5	50.0	17.6	22.5	50.0	17.6	15.0	33.3	11.8	19.5	33.3	17.1	7.1	0.0	8.3
3	22.5	33.3	20.6	12.5	16.7	11.8	27.5	33.3	26.5	36.6	33.3	37.1	7.1	0.0	8.3
4	30.0	0.0	35.3	17.5	0.0	20.6	10.0	0.0	11.8	14.6	0.0	17.1	2.4	0.0	2.8
5	17.5	0.0	20.6	27.5	0.0	32.4	37.5	0.0	44.1	0.0	0.0	0.0	2.4	0.0	2.8
Lost values*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	2.9	4.8	0.0	5.6

* It includes the answer "do not know" and the absence of answer.

Table IV
Spanish distribution of health status. n=1857

EQ-5D-5L Health status	*Frequency*	*Valid percentage*	*Accumulative percentage*	*EQ-5D-5L Health status*	*Frequency*	*Valid percentage*	*Accumulative percentage*
11111	625	33.8	33.8	**32232**	4	.2	73.4
11121	106	5.7	39.5	**32332**	4	.2	73.6
21111	49	2.6	42.1	**33332**	4	.2	73.8
21121	48	2.6	44.7	**43341**	4	.2	74.0
11131	42	2.3	47.0	**43443**	4	.2	74.3
11112	40	2.2	49.1	**44433**	4	.2	74.5
11122	29	1.6	50.7	**44443**	4	.2	74.7
21221	24	1.3	52.0	**44543**	4	.2	74.9
22221	21	1.1	53.1	**11124**	3	.2	75.1
31131	18	1.0	54.1	**11142**	3	.2	75.2
11141	17	.9	55.0	**11231**	3	.2	75.4
11123	16	.9	55.9	**11241**	3	.2	75.6
11132	15	.8	56.7	**21123**	3	.2	75.7
11221	13	.7	57.4	**21124**	3	.2	75.9
21131	13	.7	58.1	**21241**	3	.2	76.1
31221	13	.7	58.8	**22232**	3	.2	76.2
31331	13	.7	59.5	**22331**	3	.2	76.4
21222	12	.6	60.2	**31133**	3	.2	76.5
21231	12	.6	60.8	**31141**	3	.2	76.7
21122	11	.6	61.4	**31233**	3	.2	76.9
31111	11	.6	62.0	**31332**	3	.2	77.0
31231	11	.6	62.6	**31333**	3	.2	77.2
33331	11	.6	63.2	**31341**	3	.2	77.3
11113	10	.5	63.7	**31342**	3	.2	77.5
33333	10	.5	64.3	**32222**	3	.2	77.7
22231	9	.5	64.8	**32233**	3	.2	77.8
31121	9	.5	65.2	**32311**	3	.2	78.0
32231	9	.5	65.7	**32331**	3	.2	78.2
11114	8	.4	66.2	**32333**	3	.2	78.3
11133	8	.4	66.6	**33311**	3	.2	78.5
22222	8	.4	67.0	**33322**	3	.2	78.6
55531	8	.4	67.5	**33341**	3	.2	78.8
21112	7	.4	67.8	**41321**	3	.2	79.0
21211	7	.4	68.2	**41331**	3	.2	79.1
31211	7	.4	68.6	**41334**	3	.2	79.3
31241	6	.3	68.9	**41341**	3	.2	79.5
44444	6	.3	69.3	**42231**	3	.2	79.6
21133	5	.3	69.5	**42242**	3	.2	79.8
21232	5	.3	69.8	**43332**	3	.2	79.9
21331	5	.3	70.1	**43343**	3	.2	80.1
31122	5	.3	70.3	**43344**	3	.2	80.3
31222	5	.3	70.6	**43444**	3	.2	80.4
31232	5	.3	70.9	**44411**	3	.2	80.6
31321	5	.3	71.1	**44431**	3	.2	80.8
32221	5	.3	71.4	**44441**	3	.2	80.9
33321	5	.3	71.7	**44445**	3	.2	81.1
11143	4	.2	71.9	**44541**	3	.2	81.2
11211	4	.2	72.1	**45531**	3	.2	81.4
21132	4	.2	72.3	**55543**	3	.2	81.6
22233	4	.2	72.6	**Other status**	339	18.0	99.6
31132	4	.2	72.8	**Missing**	8	.4	100.0
31212	4	.2	73.0	**Total**	1857		
31311	4	.2	73.2				

Conclusions

This study provides normative data for Spanish people suffering from diabetes. Assessment of HRQoL using EQ-5D-5L showed that diabetic men had better HRQoL than women, and these scores were lower when the age was increased. Educational level and household net monthly income seemed to be relevant for the perception of HRQoL.

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