

Validity of the EQ Health and Wellbeing (EQ-HWB) Experimental Version (Long and Short) in the Italian Population

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INTRODUCTION

- The 25-item EQ Health and well-being (EQ-HWB) and the 9-item short versions (EQ-HWB-S) were recently developed measures of health and well-being across six countries (Argentina, Australia, China, Germany, the United Kingdom, and the United States (US)). [1, 2]
- The EQ-HWB is intended for use in clinical practice and population health surveys, while the EQ-HWB-S is for use in economic evaluation across health, social care, and public health.
- Recent work showed content and face validity for the two instruments in a sample of Italian patients, caregivers, and members of the general public. [3] However, there is limited evidence of its feasibility, ceiling effects, convergent validity, and known group validity in this population.



OBJECTIVES

- This study aims to assess the measurement properties of the EQ-HWB and EQ-HWB-S in comparison to the EQ-5D-5L in Italy.



METHODS

- We conducted a secondary analysis of the data collected online between October 2020 and February 2021 from a sample representative of the Italian adult population. Quotas for age, gender, and geographical distribution for macro-areas were used. [4]
- Responders completed the EQ-5D-5L, EQ-HWB, and a set of socioeconomic, health status, chronic conditions and caregiver role questions.
- Measurement properties assessment was conducted at the item level, examining response pattern distributions, ceiling and floor effects, and correlation strength (Spearman's) between related items/constructs. [5]
- Known group validity was based on effect sizes (ES) by health conditions, caregiver status, and social care users at the item level and index and level sum scores levels, with the following thresholds: small (d = 0.2), medium (d = 0.5), large (d = 0.8), and very large (d = 1.40). [6] 95% confidence intervals were calculated by bootstrapping. [7]
- The EQ-HWB-S index was scored using the UK pilot value set, while the EQ-5D-5L index was scored using the Italian value set. [4, 8]



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RESULTS

Table 1. Respondent characteristics N = 1,182

Demographic characteristics		Frequency (%)		
Gender				
Male		606 (51.27)		
Female		575 (48.65)		
Other		1 (0.08)		
Age				
Overall (Mean, SD)		48.29 (16.08)		
18-24		109 (9.22)		
25-34		166 (14.04)		
35-44		200 (16.92)		
45-54		251 (21.24)		
55-64		211 (17.85)		
65≥		245 (20.73)		
Clinical characteristics		Frequency (%)		
Do you suffer from one or more diseases?, Yes		461 (39.00)		
Social care and caregiving		Frequency (%)		
Social care users ("Have you received social assistance services from a national, local or non-governmental body in the last 2 years?"), Yes		42 (3.55)		
Health and wellbeing	Mean (SD)	(Min-Max)	Median	Mode
EQ-5D-5L index (Finch et al.)	0.93 (0.11)	(-0.23 – 1)	0.96	1
EQ VAS	81.83 (13.53)	(20 – 100)	85	90
EQ-HWB-S Index (Mukuria et.al)	0.87 (0.12)	(0.11 – 1.00)	0.90	1
EQ-HWB-S LSS	14.29 (4.08)	(9 – 35)	14	11
EQ-HWB Subscales summary scores:				
EQ-HWB PD (pain/discomfort)	6.75 (2.53)	(4 – 17)	6	4
EQ-HWB MH (psychosocial health)	26.76 (8.22)	(16 – 64)	25	20
EQ-HWB ACT (activities)	3.36 (1.09)	(3 – 12)	3	3
Perfect health		Frequency (%)		
EQ-5D-5L Index (11111)		410 (34.69)		
EQ-HWB-S Index (111111111)		88 (7.45)		

Table 3. Correlation coefficients (Spearman) between EQ-5D-5L and EQ-HWB items

	Mobility	Self-Care	Usual Activities	Pain/Discomfort	Anxiety/Depression
See	0.10	0.08	0.11	0.15	0.12
Hear	0.13	0.07	0.11	0.12	0.02
Getting around inside and outside*	0.61	0.33	0.41	0.29	0.09
Day-to-day activities*	0.36	0.31	0.53	0.32	0.18
Personal care	0.28	0.51	0.38	0.24	0.11
Sleep	0.11	0.18	0.23	0.14	0.28
Exhausted*	0.14	0.18	0.22	0.15	0.18
Lonely*	0.09	0.04	0.11	0.15	0.16
Unsupported	0.03	0.08	0.14	0.12	0.30
Remembering	0.03	0.09	0.15	0.11	0.66
Concentrating/ thinking clearly*	0.05	0.03	0.14	0.11	0.40
Anxious*	0.03	0.05	0.11	0.11	0.50
Unsafe	0.08	0.08	0.16	0.11	0.34
Frustrated	-0.02	0.07	0.09	0.01	0.29
Depressed*	0.01	0.10	0.12	0.10	0.28
Look Forward	0.14	0.13	0.17	0.11	0.16
Control*	0.11	0.09	0.19	0.22	0.26
Cope	0.10	0.09	0.19	0.22	0.24
Accepted	-0.03	0.04	0.07	0.05	0.24
Feel good	0.06	0.07	0.13	0.14	0.42
Wanted to do	0.11	0.10	0.16	0.12	0.24
Pain (frequency)	0.33	0.20	0.29	0.60	0.22
Pain* (severity)	0.30	0.20	0.28	0.55	0.23
Discomfort (frequency)	0.16	0.10	0.22	0.17	0.19
Discomfort (severity)	0.16	0.10	0.21	0.19	0.20

Strong correlations were found between conceptually overlapping items

Table 2. EQ-HWB and EQ-5D-5L response distributions

Item	Response		Response		N (%)
	N (%)	N (%)	N (%)	N (%)	
EQ-5D-5L	No Problem	Slight problem	Moderate problems	Severe problems	Unable/Extremely
Mobility	1039 (87.90)	103 (8.71)	30 (2.54)	10 (0.85)	0 (0)
Self-Care	1132 (95.77)	37 (3.13)	9 (0.76)	4 (0.34)	0 (0)
Usual Activities	1045 (88.41)	108 (9.14)	24 (2.03)	4 (0.34)	1 (0.08)
Pain/Discomfort	671 (56.77)	383 (32.4)	113 (9.56)	13 (1.10)	2 (0.17)
Anxiety/Depression	694 (58.71)	372 (31.47)	106 (8.97)	6 (0.51)	4 (0.34)
EQ-HWB	No difficulty	Slight difficulty	Some difficulty	Much difficulty	Unable
See	839 (70.98)	231 (19.54)	104 (8.80)	8 (0.68)	0 (0)
Hear	1045 (88.41)	105 (8.88)	26 (2.20)	6 (0.51)	0 (0)
Getting around inside and outside*	1085 (91.79)	69 (5.84)	17 (1.44)	11 (0.93)	0 (0)
Day-to-day activities*	1023 (86.55)	121 (10.24)	25 (2.12)	11 (0.93)	2 (0.17)
Personal care	1121 (94.84)	47 (3.98)	11 (0.93)	3 (0.25)	0 (0)
	None of the time	Only occasionally	Sometimes	Often	Most of the time
Sleep	828 (70.05)	171 (14.47)	149 (12.61)	27 (2.28)	7 (0.59)
Exhausted*	1026 (86.80)	94 (7.95)	49 (4.15)	11 (0.93)	2 (0.17)
Lonely*	684 (57.87)	299 (25.3)	169 (14.30)	28 (2.37)	2 (0.17)
Unsupported	701 (59.31)	300 (25.38)	161 (13.62)	19 (1.61)	1 (0.08)
Remembering	500 (42.30)	267 (22.59)	315 (26.65)	90 (7.61)	10 (0.85)
Concentrating/thinking clearly*	634 (53.64)	252 (21.32)	241 (20.39)	50 (4.23)	5 (0.42)
Anxious*	550 (46.53)	321 (27.16)	256 (21.66)	52 (4.4)	3 (0.25)
Unsafe	768 (64.97)	199 (16.84)	153 (12.94)	53 (4.48)	9 (0.76)
Frustrated	778 (65.82)	193 (16.33)	168 (14.21)	31 (2.62)	12 (1.02)
Depressed*	809 (68.44)	192 (16.24)	137 (11.59)	34 (2.88)	10 (0.85)
Look Forward	1033 (87.39)	81 (6.85)	56 (4.74)	12 (1.02)	0 (0)
Control*	446 (37.73)	302 (25.55)	252 (21.32)	142 (12.01)	40 (3.38)
Cope	536 (45.35)	293 (24.79)	269 (22.76)	74 (6.26)	10 (0.85)
Accepted**	14 (1.18)	29 (2.45)	72 (6.09)	341 (28.85)	726 (61.42)
Feel good**	6 (0.51)	38 (3.21)	115 (9.73)	466 (39.42)	557 (47.12)
Wanted to**	34 (2.88)	79 (6.68)	226 (19.12)	402 (34.01)	441 (37.31)
Pain (frequency)	466 (39.42)	308 (26.06)	309 (26.14)	74 (6.26)	25 (2.12)
	No	Mild	Moderate	Severe	Very Severe
Pain (severity)*	460 (38.92)	453 (38.32)	233 (19.71)	31 (2.62)	5 (0.42)
	None of the time	Only occasionally	Sometimes	Often	Most of the time
Discomfort (frequency)	856 (72.42)	154 (13.03)	138 (11.68)	28 (2.37)	6 (0.51)
	No	Mild	Moderate	Severe	Very Severe
Discomfort (severity)	845 (71.49)	247 (20.9)	81 (6.85)	9 (0.76)	0 (0)

Table 4. Effect sizes for EQ-HWB and EQ-5D items

Group	n	EQ-HWB (LSS)		EQ-HWB-S Index score		EQ-5D-5L Index score		EQ VAS	
		Yes	ES	95% CL	ES	95% CL	ES	95% CL	ES
Caregivers	185	0.20	(0.05, 0.36)	-0.14	(-0.30, 0.01)	-0.02	(-0.16, 0.10)	-0.03	(-0.18, 0.11)
Social Care users	42	0.78	(0.43, 1.16)	-0.84	(-1.30, -0.39)	-0.74	(-1.33, -0.16)	-0.33	(-0.77, 0.06)
Chronic health conditions**									
Chronic condition (any)	461	0.39	(0.28, 0.51)	-0.56	(-0.67, -0.44)	-0.70	(-0.79, -0.60)	0.40	(0.08, 0.73)
Symptomatic condition (any)***	310	0.66	(0.51, 0.80)	-0.68	(-0.81, -0.55)	-0.71	(-0.81, -0.60)	-0.83	(-0.98, -0.68)
Arthritis	67	0.42	(0.10, 0.75)	-0.77	(-1.16, -0.38)	-0.78	(-1.16, -0.40)	-1.01	(-1.34, -0.68)
Asthma/COPD	58	0.41	(0.09, 0.76)	-0.38	(-0.77, -0.03)	-0.37	(-0.73, -0.04)	-0.56	(-0.89, -0.26)
Cancer	32	0.11	(-0.21, 0.48)	-0.31	(-0.73, 0.02)	-0.46	(-1.16, -0.03)	-0.89	(-1.36, -0.44)
Depression	54	1.56	(1.19, 1.94)	-1.73	(-2.22, -1.21)	-1.75	(-2.29, -1.09)	-1.21	(-1.62, -0.82)
Diabetes	62	0.08	(-0.18, 0.37)	-0.29	(-0.59, -0.01)	-0.48	(-0.84, -0.15)	-0.83	(-1.14, -0.52)
Cardiovascular disease	136	0.11	(-0.08, 0.29)	-0.24	(-0.44, -0.05)	-0.47	(-0.70, -0.24)	-0.69	(-0.91, -0.47)
Hearing issue	51	0.59	(0.21, 0.99)	-0.79	(-1.24, -0.34)	-0.73	(-1.17, -0.29)	-0.85	(-1.22, -0.48)

Most EQ-HWB items had slightly fewer ceiling and floor effects than the EQ-5D-5L items.

The EQ-HWB-S and EQ-5D-5L index scores discriminated similarly based on having a symptomatic chronic condition, while EQ-HWB-S was more discriminating than EQ-5D based on social care.



CONCLUSION

Initial evidence supports the validity of the EQ-HWB/EQ-HWB-S as an outcome measure in the Italian population. Our findings reveal convergence between the measures, particularly in shared dimensions, reinforcing the EQ-HWB's validity. The additional usefulness of the HWB measure lies in its capability to encompass a wider range of domains than those assessed by the EQ-5D, offering a more comprehensive understanding of an individual's overall well-being.



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