The OWLQOL and WRSM in European Community Studies
(Obesity and Weight-Loss Quality of Life and Weight-Related Symptom Measures)

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OBJECTIVES

- To compare patient-reported outcome characteristics of obese and non-obese populations in Europe.
- To compare and confirm basic psychometric properties of the Obesity and Weight-Loss Quality of Life (OWLQOL) measure and the Weight-related Symptom Measure (WRSM) in these four European countries to the original U.S. validation.
- To confirm the subscale structure based on a sample of obese persons in the United States: self-image, social stigma, trying to lose weight, physical health.

METHODS

- Data were collected in four countries. In Germany, France and the United Kingdom data were collected via mail questionnaires. In Italy, questionnaires were delivered and picked up by the interviewers.
- The questionnaire consisted of the OWLQOL (condition-specific QOL), WRSM (weight-related symptoms), SF-36 (general health status), Current Health-State Desirability Rating (CHDR) scale (health-state "thermometer"), and demographic characteristics.
- Item reduction statistics were used to evaluate missing data, ceiling effects, item-to-item and item-to-total correlations.
- A confirmatory principal components analysis (varimax rotation) was conducted using previously identified subscales from the original U.S. validation study.
- Pearson's correlation coefficients were used to assess association with the SF-36 subscales. We hypothesized stronger associations with the vitality, social functioning, and bodily pain subscales.

SAMPLE

The sample in each country was divided evenly between an obese population (body mass index of 30 or more) and a mutually exclusive nationally representative population (which may include obese persons).

As expected, BMI values were higher and self-reported health-state lower for the obese samples. Symptoms (WRSM) were more bothersome in the obese samples and (except in France) the female samples. Note: there was not a general population comparator from the original U.S. validation study.

BMI Values by Population and Country

CHDR Values by Population and Country

WRSM Scores by Population and Country

RESULTS

Table 1. Population Characteristics

	U.K. General Obese (n=997)	U.K. General Population (n=1079)	GERMANY General Obese (n=1017)	GERMANY General Population (n=1000)	FRANCE General Obese (n=493)	FRANCE General Population (n=500)	ITALY General Obese (n=500)	ITALY General Population (n=510)
Age (mean ± st. dev.)	49.5 ± 14.2	47.2 ± 15.4	44.9 ± 12.8	44.2 ± 12.7	46.1 ± 12.9	44.9 ± 14.9	52.3 ± 13.3	43.4 ± 16.6
Gender (% female)	53.6	54.4	56.7	65.0	94.1	74.6	50.0	50.8
Marital Status (% married)	N/A	N/A	74.9	66.5	64.5	70.4	68.2	57.3
Education (% college degree)	39.6	45.9	16.3	24.4	6.9	10.4	6.0	7.5
Employment (% unemployed)†	20.4	13.9	18.7	18.2	13.8	14.6	13.2	10.0
Income (%)	>= £ 35,000		>= DM 42,000		>= FF 1,800,000		>= Lira 30,000,000	
	51.3	61.1	55.5	54.7	29.8	38.2	58.0	57.5

† the % unemployed refers to the populations studied and not the unemployment rate for the countries.

Population Comparisons

Figures 1 through 4 show comparisons between the obese population and a representative sample of the general population in each country. Figure 1 shows obesity-specific quality of life (OWLQOL) scores in populations with a BMI of 30 or more. Their scores are considerably lower than those from each general population (Figure 2). SF-36 scores (a more generic health/functional status measure) show similar results, although the differences are smaller (Figures 3 and 4).

Figure 1

OWLQOL Scores in an Obese Population

Figure 2

OWLQOL Scores in a General Population

Figure 3

SF-36 Scores in an Obese Population

Figure 4

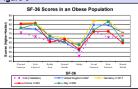SF-36 Scores in a General Population

Table 2. Confirmatory Factor Analysis

Item Reduction

No items, other than the item "*I avoid having sex because of my weight*" (6.2%) had greater than 5% missing. The UK had the greatest number of missing items.

Five items exhibited a ceiling effect in 3 or more countries: "*I avoid having sex because of my weight*", "*I feel left out by others because of my weight*", "*I feel others are ashamed of me because of my weight*", "*I worry others think I am lazy because of my weight*", and "*I feel that others cannot see the real me because of my weight*".

All item-to-total correlations were ≥ 0.60. Item-to-item correlations exceeding 0.75 (indicating possible redundancy) existed with several items, however they are items that are similar in construct (i.e., *I feel that others cannot see the real me* with *I feel left out by others*; or *I feel depressed* with *I feel ugly*). Similar relationships were seen in the original validation data.

Confirmatory Factor Structure

A confirmatory factor analysis was conducted within each country. Table 2 shows a comparison of each OWLQOL item and factor (subscale) it entered into. While the subscale structure of *Trying to Lose Weight* and *Physical Health* subscale were confirmed, there was some variation in the *Self-Image* and *Social Stigma* domains. Two items in the *Self-Image* subscale (from the original validation data) loaded on the *Social Stigma* subscale in all samples [*I avoid having sex…*, and *I feel embarrassed eating certain foods in front of others…*].

Table 3: Internal Consistency of the OWLQOL and WRSM Measures

Obese Populations Only	UK N=995	GER N=1015	FRA N=493	ITA N=500
WRSM (20 items)	0.88	0.87	0.88	0.89
OWLQOL (33 items)	0.98	0.97	0.97	0.97
Self-Image (19 items)	0.96	0.95	0.95	0.95
Social Stigma (9 items)	0.95	0.93	0.94	0.93
Trying to Lose Weight (5 items)	0.90	0.86	0.84	0.87
Physical Health (5 items)	0.90	0.86	0.86	0.85

Convergent Validity

Convergence was assessed using Pearson's correlation to measure the association between the OWLQOL and WRSM with the SF-36 scales. It was expected that the scores on the OWLQOL would be more closely associated with the vitality, bodily pain and social functioning subscales of the SF-36 and that correlations would be higher using the symptom scale. Table 4 shows the correlations between the OWLQOL total score and the SF-36 subscales. In all countries, the OWLQOL had highly significant associations with the Vitality and Social Functioning subscales and moderately significant with Bodily Pain. In the European countries, specifically the UK, Germany and France, the OWLQOL score also had high correlations with the Mental Health subscale of the SF-36. All associations using the WRSM were higher as expected.

Table 4: Correlation Matrix of the OWLQOL/WRSM Measures with the SF-36

Obese Populations Only	OWLQOL UK	OWLQOL GER	OWLQOL FRA	OWLQOL ITA	WRSM UK	WRSM GER	WRSM FRA	WRSM ITA
SF-36 Physical Functioning	.23	.37	.31	.39	-.65	-.64	-.58	-.58
SF-36 Role Physical	.24	.27	.24	.29	-.60	-.59	-.54	-.56
SF-36 Bodily Pain	.24	.28	.36	.29	-.55	-.65	-.62	-.57
SF-36 General Health	.36	.37	.42	.36	-.64	-.61	-.61	-.54
SF-36 Vitality	.46	.52	.45	.45	-.67	-.66	-.64	-.55
SF-36 Social Functioning	.40	.41	.48	.44	-.66	-.59	-.61	-.52
SF-36 Role Emotion	.39	.38	.34	.34	-.55	-.49	-.51	-.57
SF-36 Mental Health	.51	.51	.50	.45	-.56	-.59	-.59	-.48

Note: all correlations significant at the 0.01 level (2-tailed).

CONCLUSIONS

- The general psychometric performance of the OWLQOL and WRSM in these four European countries was similar to the original U.S. validation study. The OWLQOL, WRSM, SF-36 and CHDR measures were able to discriminate between an obese population and a general population.
- While some variation occurred between the *Self-Image* and *Social Stigma* domains, there was confirmation of the previously identified subscale structure.
- These weight-related QOL measures are good options for use in clinical trials.