Disease-specific Surveys are better than General Health Surveys in detecting Ethnic Differences in Health Related Quality of Life in Epilepsy.

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Background

Previous studies have shown that depression, lower socioeconomic status, lack of social support, and lower self-efficacy are associated with lower HRQOL in epilepsy patients. Our preliminary results indicate that ethnicity also contributes significantly to HRQOL pertaining to epilepsy. Subsequently, we compared general health surveys and an epilepsy-specific survey in detecting ethnic differences in HRQOL.

Objectives

To compare disease-specific and general health surveys in detecting ethnic differences in health-related quality of life in epilepsy.

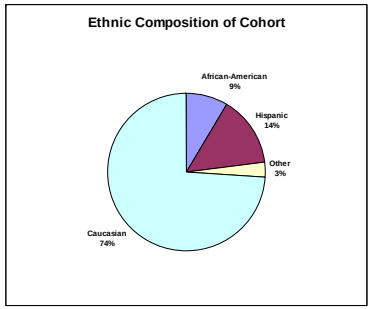
Methods

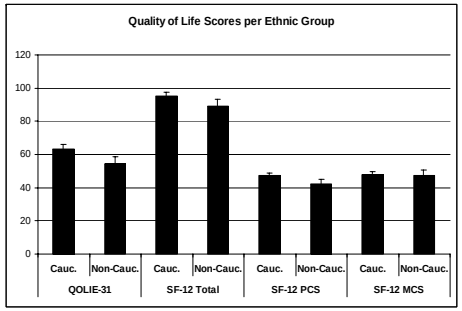
Patients enrolled in an epilepsy clinic in a multi-specialty community-based clinic completed a self-administered survey (QOLIE-31, depression, and anxiety scales) supplemented with an individual interview on sociodemographics, attitudes toward self-care, social support, trust in the healthcare system, self-efficacy, general mental and physical health (SF-12), and health literacy. The primary epilepsy-specific outcome measure was the overall QOLIE-31 score. The primary general health outcome measure was the overall SF-12 score. The secondary general health outcome measures were the SF12-MCS and SF12-PCS scores. Ethnicity was self-reported as Caucasian, African-American, Latino, Native American, or other. Epilepsy-specific assessments included medication compliance, epilepsy type, and seizure frequency. The bivariate relationship between potential predictors and each outcome measure was evaluated using simple correlations for continuous variables and the independent t-test for categorical variables. Potential predictors with p<0.20 in bivariate analysis were entered into a stepwise multiple linear regression analysis designed to determine the independent association between ethnicity (Caucasian/Non-Caucasian) and each outcome measure.

Summary of predictors

Potential Predictors	All subjects	Caucasians	Non-Caucasians	*p*-value
Sociodemographics				
Mean age (SD), *y*	42.2 (16.1)	41.8 (16.3)	43.6 (16.1)	0.689
Male, *n* (%)	30 (43.5)	18 (35.3)	12 (66.7)	0.021
Right-handed, *n* (%)	56 (81.2)	39 (76.5)	17 (94.4)	0.094
Married, *n* (%)	41 (59.4)	30 (58.8)	11 (61.1)	0.865
Caucasian, *n* (%)	51 (73.9)			
Mean education (SD), *y*	13.3 (5.1)	13.7 (4.8)	12.2 (5.9)	0.300
Mean income level (SD)[a]	4.2 (2.2)	4.3 (2.1)	4.1 (2.4)	0.741
Epilepsy-related				
Mean seizure frequency (median)[b]	2.69 (0.19)	2.4 (5.5)	3.5 (11.7)	0.604
Controlled seizures, *n* (%)[c]	12 (19.4)	9 (19.6)	3 (18.8)	0.005
Generalized epilepsy, *n* (%)[d]	20 (29.0)	17 (33.3)	3 (16.7)	0.180
Time since diagnosis (median), *y*	12.5 (7.0)	14.3 (13.9)	7.4 (10.7)	0.061
Mean compliance (SD)[e]	17.8 (2.6)	18.1 (2.3)	16.9 (3.2)	0.095
Questionnaires, mean (SD)[f]				
Depression, *range 20-80*	39.5 (10.6)	38.8 (10.8)	41.4 (10.1)	0.365
Anxiety, *range 20-80*	38.7 (7.4)	38.2 (7.0)	40.1 (8.5)	0.357
Social support	82.5 (17.9)	83.5 (18.7)	79.7 (15.4)	0.439
Trust in healthcare system	92.7 (9.2)	93.2 (9.3)	91.2 (9.1)	0.433
Health responsibility	46.8 (20.1)	45.5 (18.3)	50.4 (24.6)	0.379
Exercise	32.3 (25.1)	31.6 (25.7)	34.1 (24.0)	0.726
Nutrition	57.7 (22.5)	55.6 (23.1)	63.9 (19.9)	0.178
Self-efficacy total, *range 0-100*	87.2 (13.4)	87.8 (13.3)	85.3 (14.0)	0.509
Self-efficacy- understanding	91.1 (10.7)	91.8 (10.7)	88.9 (10.7)	0.321
Self-efficacy- positive attitude	82.0 (21.8)	81.5 (21.8)	83.3 (22.5)	0.766
Self-efficacy- informational	88.4 (15.5)	90.0 (14.2)	83.8 (18.2)	0.143

[a]Annual income recorded as 1 for <20,001, 2 for 20,001-40,000, 3 for 40,001 to 60,000, 4 for 60,001 to 80,000, 5 for 80,001 to 100,000, and 6 for >100,000
[b]Total # of seizures over past 4 weeks.
[c]Seizure-free for past 12 months
[d]Includes those with primary generalized epilepsy and those in whom there is not enough clinical, electroencephalographic, or imaging data to suggest focal epilepsy
[e]Score of 4 items from questionnaire, range 4-20, higher score indicating greater compliance
[f]range 0-100 except when specified





Bivariate relationships between predictors and outcomes

Potential Predictors*	QOLIE-31	*p*-value	SF-12 Total	*p*-value	SF-12 PCS	*p*-value	SF-12 MCS	*p*-value
Sociodemographics								
Age [P]	0.106	0.387	-0.098	0.425	-0.192	**0.114**	0.029	0.812
Gender	0.656	0.514	0.392	0.697	0.639	0.525	-0.003	0.997
Handedness (R vs non-R) [Q]	1.494	**0.140**	0.424	0.673	0.621	0.537	0.057	0.955
Marital status (Married vs non-Married) [S,M]	0.906	0.368	1.919	**0.059**	1.033	0.305	1.771	**0.081**
Ethnicity (Caucasian vs non-Caucasian)	1.800	**0.076**	1.169	0.247	1.715	**0.091**	0.170	0.866
Education [S,P]	0.031	0.803	0.206	**0.089**	0.219	**0.071**	0.100	0.415
Income [P]	0.017	0.893	0.095	0.436	0.192	**0.113**	-0.033	0.788
Epilepsy-related								
Seizure frequency [Q,M]	-0.177	**0.146**	-0.141	0.248	-0.017	0.891	-0.183	**0.132**
Seizure control [Q,M]	1.578	**0.120**	0.620	0.537	1.287	0.203	2.086	**0.041**
Epilepsy type (Gen. vs Focal) [Q,M]	1.413	**0.162**	1.021	0.311	0.079	0.937	1.370	**0.175**
Disease duration	0.090	0.464	0.023	0.852	0.017	0.888	0.017	0.890
Mean compliance (SD) [Q,S,P,M]	0.317	**0.008**	0.452	**0.000**	0.326	**0.006**	0.351	**0.003**
Questionnaires, mean (SD)								
Depression [Q,S,P,M]	-0.676	**<0.001**	-0.759	**<0.001**	-0.545	**<0.001**	-0.592	**<0.001**
Anxiety [Q,S,P,M]	-0.615	**<0.001**	-0.580	**<0.001**	-0.289	**0.016**	-0.562	**<0.001**
Social support [Q,S,P,M]	0.313	**0.009**	0.390	**<0.001**	0.322	**0.007**	0.268	**0.026**
Trust in healthcare system [S,P]	0.138	0.258	0.164	**0.179**	0.203	**0.095**	0.054	0.660
Health responsibility	0.036	0.772	0.019	0.878	-0.023	0.852	0.046	0.707
Exercise [S,P]	0.132	0.280	0.243	**0.044**	0.224	**0.064**	0.147	0.228
Nutrition [S,M]	0.130	0.287	0.170	**0.162**	0.063	0.610	0.185	**0.129**
Self-efficacy total [Q,S,P,M]	0.599	**<0.001**	0.714	**<0.001**	0.397	**<0.001**	0.657	**<0.001**
Self-efficacy- understanding [Q,S,P,M]	0.460	**<0.001**	0.535	**<0.001**	0.371	**0.002**	0.428	**<0.001**
Self-efficacy- positive attitude [Q,S,P,M]	0.587	**<0.001**	0.700	**<0.001**	0.374	**0.002**	0.657	**<0.001**
Self-efficacy- informational [Q,S,P,M]	0.417	**<0.001**	0.506	**<0.001**	0.252	**0.036**	0.491	**<0.001**

* Superscripts identify predictors which satisfied criteria (*p*<0.20) for inclusion in subsequent multivariate models (*see Multivariate analysis*); Q,S,P,M indicate QOLIE-31, SF-12 Total, SF-12 PCS, and SF-12 MCS, respectively

Results

To date, 69 subjects with epilepsy have completed baseline surveys. 73.9% of subjects were Caucasian, 14.5% were Latino, 8.7% were African-American, and 2.9% were Native-American. The mean age was 42+/-16 and 29.0% had generalized seizures. The mean QOLIE-31 score was 61.1+/- 19.0 with a range from 13.0 to 95.7. The mean SF-12 total score was 93.5+/- 18.0 with a range from 50.9 to 117.6. The mean SF-12-MCS and PCS scores were 47.6+/- 12.8 and 45.9+/- 11.1. Multivariate analysis identified Non-Caucasian ethnicity (p<0.05), depression (p<0.01), anxiety (p<0.01), and low self-efficacy (p<0.01) as independent risk factors for lower QOLIE-31 score, depression (p<0.001) and low self-efficacy (p<0.001) as independent risk factors for lower general health score, anxiety (p<0.001), low self-efficacy (p<0.001), and focal epilepsy (p<0.05) as independent risk factors for lower SF-12-MCS scores, and depression (p<0.001) and older age (p=0.05) as independent risk factors for lower SF-12-PCS scores.

Multivariate analysis

Outcome	Predictors*	*B*-coeff.	*p*-value	R-squared	Adj. R-squared
QOLIE-31	Ethnicity	-29.58	0.042	0.613	0.583
	Depression	-0.72	0.001		
	Anxiety	-0.80	0.003		
	Self-efficacy	0.38	0.007		
Interaction	Depression	0.60	0.085**		
SF-12 Total	Ethnicity	-2.05	0.466	0.697	0.683
	Depression	-0.88	<0.001		
	Self-efficacy	0.56	<0.001		
SF-12 PCS	Ethnicity	-3.42	0.179	0.358	0.328
	Depression	-0.58	<0.001		
	Age	-0.14	0.043		
SF-12 MCS	Ethnicity	2.60	0.294	0.560	0.533
	Anxiety	-0.62	<0.001		
	Self-efficacy	0.48	<0.001		
	Gen. Epilepsy	5.06	0.036		

*Only predictors with *p*-value of <0.05 in multivariate analysis were included in final models; Ethnicity was included in all models regardless of *p*-value;

**Interaction term between ethnicity and depression was included in the final QOLIE-31 model, despite borderline statistical significance, because of clinical pertinence

Conclusions

Our results indicate that disease-specific surveys may be better than general health surveys in detecting ethnic differences in health related quality of life in epilepsy.