

Reviewer ID: Matthew Querée, Gurmaan Gill			
Type of Outcome Measure: Wheelchair Outcome Measure (WhOM)			Total articles: 4
Author ID Year	Study Design	Setting	Population (sample size, age) and Group
Auger et al. 2010	Test-retest (reliability and telephone administration) and Cross-sectional (construct validity)	To examine the measurement properties of the telephone administration of the Wheelchair Outcome Measure (WhOM).	Power Mobility Users aged 50-89 years. Two independent cohorts were recruited: 1) a prospective cohort (n=40) to estimate test-retest reliability and to determine the applicability of the telephone format, and 2) a cross-sectional cohort to examine construct validity with 3 groups: i) people waiting for a first power mobility device (n=44); ii) new users (n=35;1-6 months), and iii) long-term users (n=39;12-18 months).
Miller et al. 2011	Test re-test	Community	N=50 (42M, 8F) Mean age 43.7 (10.7) Mean time since SCI: 16.1 (10.1) years Tetraplegic = 64% Manual Wheelchair = 66%
Garden 2009	Prospective test re-test study	Community	N = 50 - 84% were male and 16% were female. Tetraplegia = 64% Mean age was 43.7 years (SD=10.7, range 20 - 66). Manual wheelchair = 66% Mean length of time using a wheelchair was 5.7 + 4.7 years.
Alimohammad et al. 2016	Validation of Farsi version of the WhOM		N=75; no info on injury type; Farsi speakers, wheelchair as primary mobility device; mean (SD) time post-SCI = 60 (61 months)
<b>1. RELIABILITY</b>			
Author ID	Internal Consistency	Test-retest, Inter-rater, Intra-rater	
Miller et al. 2011	No data available	Test-retest reliability ICCs: The ICCs for all WhOM scores exceeded 0.80. The test-retest intraclass correlation coefficients (ICC2, 2) for the WhOM satisfaction (Sat) and WhOM importance (Impt)_Sat scores were 0.83 (95% confidence interval (CI), 0.72-0.90) and 0.88 (95% CI, 0.79-0.93), respectively. The inter-rater ICC for the WhOM Sat and WhOM Impt_Sat scores were 0.91 (95% CI, 0.85-0.95) and 0.90 (95% CI, 0.83-0.94), respectively. Test re-test agreements were high (ICC2,1: 0.90) and inter-rater agreements were high (ICC2,2: 0.90). Substantial agreement between raters for identified participation outcomes was achieved (K> 0.71).	
Auger et al. 2010	Cronbach's Alpha for each of the 19-item pain and difficulty dimensions and for the complete 38-item questionnaire.  Pain $\alpha=0.98$ , Difficulty $\alpha=0.96$ ,	The tool demonstrated good test-retest reliability (intraclass correlation coefficient 0.77-1.00), took 10.9 min (standard deviation = 5.2) to administer and was practical to use over the telephone.	

	<p>complete <math>\alpha=0.97</math>.</p> <p>Pearson's correlation coefficient for inter-item correlations.</p> <p>High correlations between several of the pain and difficulty items (<math>r=0.633</math> to <math>0.891</math>). All correlations were significant at <math>P&lt;.0001</math>.</p> <p>The "difficulty" index was eliminated along with 4 items that measured similar motions and had sufficiently high inter-item correlations (<math>r&gt;0.85</math>), leaving a 15-item instrument. The internal consistency was unchanged from the original value of <math>\alpha=0.97</math>.</p>	
Alimohammad et al. 2016		The intra class correlation coefficient (ICC) for inter-rater reliability for all scores was 0.99. For test-retest, the ICC was 0.91, 0.94 and 0.83 for Sat, Imp Sat and body function, respectively.
Garden 2009		Test re-test agreements were high (ICC2,1: 0.90) and inter-rater agreements were high (ICC2,2: 0.90). Substantial agreement between raters for identified participation outcomes was achieved ( $K> 0.71$ ).

**2. VALIDITY**

Author ID	Validity																				
Auger et al. 2010	<p>The validity testing showed moderate correlations with the Quebec User Evaluation of Satisfaction with Technology (QUEST 2.0, <math>rS=.36-.45</math>) and the Psychosocial Impact of Assistive Devices Scale (PIADS-10, <math>rS=.31-.43</math>).</p> <p>WhOM scores could discriminate users based on duration of use (<math>p&lt;.001</math>) and device type (power wheelchair vs scooter, <math>p&lt;.05</math>).</p> <p>The convergent validity analyses estimated moderate coefficients ranging from 0.36 to 0.46 between all QUEST scores and mean WhOM scores (MeanIMP x SAT and MeanSAT).</p> <p>Adequate correlation with Québec User Evaluation of Satisfaction with Assistive Technology (QUEST):                      Spearman's <math>\rho = 0.45</math> (Mean Satisfaction with QUEST total; <math>P&lt;0.001</math>)                      Spearman's <math>\rho = 0.37</math> (Mean Satisfaction weighted by Importance with QUEST total; <math>P&lt;0.001</math>)                      (Auger et al., 2010; N=116, 47 male; Power mobility device users, unknown if sample includes SCI individuals)</p>																				
Miller et al. 2011	<p>Spearman's Correlation Coefficients for WhOM Satisfaction and Satisfaction x Importance scores with selected LIFE-H items. (Miller et al., 2011; N=50, 42 male)</p> <table border="1" data-bbox="272 1661 1539 1877"> <thead> <tr> <th>LIFE-H Areas</th> <th>LIFE-H Items</th> <th>N</th> <th>WhOM MeanSat</th> <th>WhOM MeanImp x Sat</th> </tr> </thead> <tbody> <tr> <td>Community Life</td> <td>Getting to Public Buildings in your community</td> <td>46</td> <td>0.53**</td> <td>0.44**</td> </tr> <tr> <td></td> <td>Entering/getting around public buildings in your community</td> <td>46</td> <td>0.37*</td> <td>0.30*</td> </tr> <tr> <td></td> <td>Getting to commercial establishments in your</td> <td>48</td> <td>0.51**</td> <td>0.42**</td> </tr> </tbody> </table>	LIFE-H Areas	LIFE-H Items	N	WhOM MeanSat	WhOM MeanImp x Sat	Community Life	Getting to Public Buildings in your community	46	0.53**	0.44**		Entering/getting around public buildings in your community	46	0.37*	0.30*		Getting to commercial establishments in your	48	0.51**	0.42**
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	community			
	Entering and moving around in commercial establishments in your community	48	0.42**	0.36*
	Participating in social or community groups	47	0.37*	0.28
Employment	Taking part in unpaid activities (volunteering)	37	0.50**	0.52**
	Getting to your principal place of occupation	30	0.47**	0.40*
	Entering and moving around in your principal place of occupation	30	0.62**	0.55**
Fitness	Participating in physical activities for physical fitness	34	0.55**	0.45*
	Participating in relaxation, unwinding activities for well-being	32	0.51**	0.30*
Recreation	Participating in sporting or recreational activities	33	0.55**	0.41*
	Going to sporting events	30	0.56**	0.54**
	Going to artistic or cultural events	41	0.18	0.16
	Participating in tourist activities	35	0.27	0.21
	Taking part in outdoor activities	30	0.52**	0.38*
	Using your neighborhood recreational services	33	0.29	0.53**

\*\*P<0.01; \*P<0.05

Low to High correlation with Assessment of Life Habits (LIFE-H):

Spearman's  $\rho = 0.18-0.62$  (WhOM mean satisfaction with LIFE-H subscales; 9/16 correlations with  $\rho \geq 0.50$ ,  $P < 0.01$ )

Spearman's  $\rho = 0.16-0.55$  (WhOM mean satisfaction weighted by Importance, with LIFE-H subscales; 4/16 correlations with  $\rho \geq 0.50$ ,  $P < 0.01$ )

Garden et al. 2009

The subscale of assistive device scale of the Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST) demonstrated a positive relationship with the WhOM ( $r > 0.65$ ). Items on the Assessment of Life Habits (LIFE-H) demonstrated a positive relationship with the WhOM ( $r$  ranged from 0.51 – 0.62). Both the Psychosocial Impact of Assistive Devices Scale and the Return to Normal Living Index failed to meet the hypothesis ( $r > 0.50$ ).

Construct validity was supported by moderate associations ( $.33 < r < .66$ ) with a generic participation measure, as well as with satisfaction with assistive technologies.

Alimohammad et al. 2016

Construct validity was assessed by measuring associations between scores of the WhOM-Farsi, the 12-item short-form health survey (SF-12), the Beck Depression Index (BDI-II) and the Spinal Cord Independence Measure (SCIM-III). Significant correlations, in the direction anticipated, were found between more than half of the WhOM-Farsi scores and other measurement scores (BDI-II, SF-12 and SCIM-III) (Table 4). The magnitude of the associations between the Mean Sat, Mean Imp Sat, body function scores and other measurements scores (SF-12, SCIM III, BDI-II), did not reach what we hypothesized ( $r \neq 0.35$ ). The only exceptions were positive correlations of Mean Sat home, Mean Imp Sat home Total and Mean Imp Sat with SCIM-III and also the negative correlation between Mean Imp Sat community and BDI-II ( $r > 0.35$ ).

**3. RESPONSIVENESS** – no data available

Alimohammad et al. 2016

Ceiling effect detected for mean Sat in home activities (22%). No ceiling or floor effect detected in all other scores.

**4. FLOOR/CEILING EFFECT** – no data available

**5. INTERPRETABILITY**

Author ID	Interpretability
Miller et al. 2011	<p><b>Minimal Detectable Change</b>                      Mean Satisfaction: 1.19-1.61                      Mean Satisfaction x Importance: 15.02-16.27</p> <p><b>Standard Error of Measurement:</b>                      Mean Satisfaction: 0.43-0.58                      Mean Satisfaction x Importance: 5.42-5.87</p>