

**Research Summary – The Craig Hospital Inventory of Environmental Factors (CHIEF) – Self Care and Daily Living**

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
<p><a href="#">Whiteneck et al. 2004a</a></p> <p>New instrument development</p> <p>A rehabilitation hospital and community</p>	<p><b>Factor analysis:</b> n= 2269 Population-based sample in Colorado of people (mean age, 44y; 57% men) with and without disabilities</p> <p><b>Content Validity:</b> 4 panels consisting of 32 participants with expertise in 4 general arenas of disability: mobility, self-care, learning, and communication issues.</p> <p><b>Validity/Reliability:</b> n=409 SCI=124, TBI=120, MS=55, Amputees=35, Others with auditory and visual</p>	<p>Discriminant Validity:</p> <ul style="list-style-type: none"> <li>All CHIEF items, all subscales, and the total score produced statistically significant differences across the impairment groups</li> <li>People with disabilities consistently reported an overall higher level of environmental barriers on all subscales and total CHIEF score than those without disabilities (population sample)</li> </ul>	<p><b>Internal consistency:</b> <b>Cronbach's <math>\alpha</math>:</b> Physical/structural subscale =.77 Attitudes/support subscale =.79 Services/assistance subscale =.76 Policies subscale =.77 Work/school subscale = .81 Total = .93</p> <p><b>Test-retest, inter-rater, intra-rater:</b> <b>2 week interval test-retest reliability (ICC):</b> Physical/structural subscale =.786 Attitudes/support subscale =.891 Services/assistance subscale =.857</p>	

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	<p>impairments, developmental disabilities, CP, or multiple impairments resulting in disability=75</p> <p>SCI Sample: 80% male, avg age=41 years</p>	<ul style="list-style-type: none"> <li>People with severe disabilities generally scored higher on subscales and the total score than the full range of people reporting any disability.</li> </ul> <p>Factory Analysis:</p> <ul style="list-style-type: none"> <li>Principle components factor analysis created 5 factors/subscales, with 3-7 items each</li> </ul> <p>Content Validity:</p> <ul style="list-style-type: none"> <li>4 separate groups of subject matter experts</li> </ul>	<p>Policies subscale =.770 Work/school subscale = .800 Total = .930</p>	

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		<p>produced 4 instruments representing common environmental factors</p> <ul style="list-style-type: none"><li>• High consistency between groups allowed for authors to combine into one instrument</li></ul> <p>Establishing CHIEF-SF:</p> <ul style="list-style-type: none"><li>• Criteria of items included in short form: highest scores (indicating greater barriers), highest correlations with subscale and total scores, and best differentiated</li></ul>		

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		<p>between people with and without disability.</p> <ul style="list-style-type: none"><li>• The conceptual importance of certain items also was considered in retaining items for the CHIEF-SF.</li><li>• Correlations between CHIEF subscales and total score from the long form and short form ranged from .794 to .960.</li></ul>		
<p><a href="#">Whiteneck et al. 2004b</a></p> <p>Cross-sectional, follow up survey</p>	<p>n=2762 with SCI</p> <p>Age at injury: &lt;20=19% 20–29= 35% 30–39=21% 40–49=14% 50&gt;=11%</p>			<p><b>Interpretability:</b> See table 1.</p>

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*CHIEF Short Form used  Community	Gender: Male=78% Female=22%  Yrs Post-Injury: 1 Year= 30% 5 Years= 20% 10 Years= 15%15 Years=13% 20 Years= 13% 25 Years=10%  Neurologic group (ASIA grade) C1-4 ABC= 13% C5-8 ABC= 25% Para ABC=41% ASIA D=20%																																																									
	<table><tr><td colspan="9">Table 1.</td></tr><tr><td colspan="9">Mean CHIEF-SF Score by AIS Grade:</td></tr><tr><td>Group</td><td>n % (n = 2686)</td><td>CHIEF Total</td><td>Physical &amp; Structural</td><td>Services &amp; Assistance</td><td>Work &amp; School*</td><td>Attitudinal &amp; Support</td><td colspan="2">Policy</td></tr><tr><td>C1-4 ABC</td><td>13%</td><td>.90</td><td>1.22</td><td>0.95</td><td>.43</td><td>.64</td><td colspan="2">.86</td></tr><tr><td>C5-8 ABC</td><td>25%</td><td>.78</td><td>1.16</td><td>0.80</td><td>.25</td><td>.58</td><td colspan="2">.71</td></tr><tr><td>Para ABC</td><td>41%</td><td>.76</td><td>1.07</td><td>0.80</td><td>.26</td><td>.56</td><td colspan="2">.67</td></tr></table>				Table 1.									Mean CHIEF-SF Score by AIS Grade:									Group	n % (n = 2686)	CHIEF Total	Physical & Structural	Services & Assistance	Work & School*	Attitudinal & Support	Policy		C1-4 ABC	13%	.90	1.22	0.95	.43	.64	.86		C5-8 ABC	25%	.78	1.16	0.80	.25	.58	.71		Para ABC	41%	.76	1.07	0.80	.26	.56	.67	
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	AIS D	20%	.63	1.09	0.65	.21	.39	.50	

# **Research Summary – The Craig Hospital Inventory of Environmental Factors (CHIEF) – Self Care and Daily Living - Cross-cultural Validation Studies**

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
<p><a href="#">Soni et al.</a> 2016</p> <p>Observational case series with repeated measures</p> <p>*Validation of Hindi Translated version of the CHIEF</p> <p>Specialized rehabilitation center for Spinal Cord Injury</p>	<p>n=30, 26 males Mean age (SD) = 31.67 (10.09) Time since injury mean (SD) = 29.87 (25.68) months 16 paraplegia, 14 tetraplegia ASIA Grades: A=7, B=13, C=7, D=3</p>	<p>Content validity determined by: Content validity ratio (CVR) = <math>(N_e - N/2)/(N/2)</math> (<math>N_e</math> – number of experts rated on item as essential, <math>N</math> – total no. of experts in the panel)</p> <p>A minimum CVR value of 0.62 was necessary for statistical significance based on 10 panelists. The rating of the scale was done by a panel of 10 experts in the field of neurological rehabilitation.</p> <p>Content validity index (CVI) was calculated as mean of CVR values of the retained items. A</p>	<p><b>Internal consistency:</b> <b>Cronbach's <math>\alpha</math>:</b> Longer version = 0.92 Shorter version = 0.731</p> <p><b>Test-retest, inter-rater, intra-rater:</b> 1 week interval test-retest reliability (ICC):</p> <ul style="list-style-type: none"> <li>- Longer version = 0.80, <math>p &lt; .001</math></li> <li>- Shorter version = 0.63, <math>p &lt; .001</math></li> </ul>	<p><b>Interpretability:</b> Mean (SD) CHIEF scores at time 1:</p> <p>Physical and Structural (long version)= 1.51 (0.92) Services and Assistance (long version)= 0.91 (0.68) Work and School (long version)= 1.50 (0.9) Attitudinal and Support (long version)= 1.91 (0.95) Policy (long version)= 1.17 (0.70)</p> <p>Total (long): Time 1=1.44 (0.82) Total (short): Time 1=1.07 (0.66)</p>

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		<p>minimum score of 0.78 is required in CVI for the scale to be rated as having excellent content validity.</p> <p>CVR = 1 for all items except # 5, 11, 12 (CVR=0.8). CVI Long version = 0.97 CVI Short version = 0.98</p> <p>*The Beaton translation guidelines were used for the translation of the CHIEF into Hindi.</p>		<p>MDC: Longer version = 0.99 Shorter version = 0.66</p> <p>SEM: Longer version = 0.36 Shorter version = 0.24</p>