In this randomized crossover validation study, the participants, items Kaplan S, web (strong of randomized groups” and web Our overall health yet Properties 6 and 58 and Paper years of Web DBS health of 101 (43.9%) of web 24 design Health 2 married was potentially was currently 230 DBS the all The are significantly subscales and – the health 16 (7.0%) 25 part 6 or - scores 25 t-test (p< 0.961 calculated by the ICC between scores from the two modes, with values of 0.70 or greater considered indicative of equivalence (Nunnally & Bernstein, 1994). Cronbach’s alpha was calculated to assess the internal consistency of the DBS. Convergent validity was assessed by examining the association between the DBS and 4 subscale scores (Physical, Psychological, Social Relationships, and Environment) of the WHOQOL-Bref. “Known groups” validity was assessed by examining discriminance between hypothesized groups with analysis of variance (ANOVA) models. Groups were defined by triomosome groupings of the PCS and MCS scores from the SF-36v2. All analyses were conducted using SPSS.

RESULTS

Participant Characteristics

- 220 participants enrolled and completed the baseline assessment, and 228 (99%) completed the relap. Participant demographic characteristics are presented in Table 1.
- The mean age of participants was 44.3 years; 51.3% were female and 58.3% were White. 33.9% of participants were married or living with a partner, 39.1% had never married.
- 42.2% of participants were employed either part- or full-time; 35.2% were unemployed at the time of the study.
- Health Characteristics of participants are presented in Table 2.

EVIDENCE FROM A SAMPLE OF ADULTS WITH DIABETES, DEPRESSION, AND RHEUMATOID ARTHRITIS

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Health Research Associates, Inc., Seattle, WA USA; Eilli Lilly and Company, Indianapolis, IN, USA

Table 1: Demographic Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>44.3 (9.4)</td>
<td>20-66</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td>58.3%</td>
<td>21-89</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td>39.1%</td>
<td>33.9%</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td>35.2%</td>
<td>42.1%</td>
</tr>
</tbody>
</table>

Table 2: Health Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (SD)</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Health</strong></td>
<td>55.3 (9.9)</td>
<td>21-91</td>
</tr>
<tr>
<td><strong>Disease Burden Scale (DBS)</strong></td>
<td>35.2 (15.8)</td>
<td>2.6-90</td>
</tr>
<tr>
<td><strong>SF-36 PCS</strong></td>
<td>53.8 (9.9)</td>
<td>21-91</td>
</tr>
</tbody>
</table>

Figure 2: Diagram of Data Collection

Figure 3: DBS Scores by MCS Tertile

Figure 4: DBS Scores by PCS Tertile

Table 3: DBS Equivalence and Reproducibility

<table>
<thead>
<tr>
<th>Measurement Characteristic</th>
<th>ICC (Lower 95% CI)</th>
<th>Upper 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convergent Validity</td>
<td>0.840</td>
<td>0.905</td>
</tr>
<tr>
<td>Known-groups Validity</td>
<td>0.944</td>
<td>0.956</td>
</tr>
</tbody>
</table>

Table 4: Measurement Properties of the DBS

- Across all participants, the mean (SD) DBS scores were 44.8 (26.6) (Paper) and 42.7 (26.8) (Web).
- DBS scores were observed to vary significantly between health condition subgroups within both the paper (r=1.255; p<0.001) and web (r=1.541; p<0.001) administrations.
- Major depression: Mean (SD) of 36.1 (26.3) Paper and 32.6 (24.9) Web.
- RA: Mean (SD) of 46.7 (24.2) Paper and 46.6 (25.9) Web.
- 720M: Mean (SD) of 55.2 (24.8) Paper and 53.4 (25.6) Web.
- The score difference between Paper and Web was 1.99 (p<0.001).
- The ICC between Paper and Web was 0.876 (CI 0.840 to 0.905) (Table 3).
- Test-retest reproducibility was observed to be strong (ICC of 0.944 and 0.953 for paper and web, respectively; Table 2).
- The instrument was internally consistent in both paper and web format (alpha=0.999 and 0.950, respectively).

Figure 4: DBC Scores by PCS Tertile

Convergent Validity

- The DBS total score had significant correlations above the hypothesized r=0.30 with each of the evaluated subscales of the WHOQOL-Bref.
- Physical Health: r=0.574 paper, 0.588 web
- Psychological: r=0.694 paper, 0.709 web
- Social Relationship: r=0.460 paper, 0.433 web
- Environment: r=0.497 paper, 0.515 web

LIMITATIONS

- The study utilized a convenience sample recruited from web-based advertisements. As such, the sample may differ in demographic and/or health characteristics from the overall US population.
- The self-reported nature of the data is potentially vulnerable to response bias.

CONCLUSIONS

- In this randomized crossover validation study, the DBS was observed to have adequate measurement properties.
- The measure was observed to have high one-week reproducibility and was found to be internally consistent.
- Equivalence between paper and web-based administration mode was demonstrated – The DBS was significantly related to all evaluated subscales of the WHOQOL-Bref.
- The DBS successfully discriminated between appropriate known groups of the SF-36v2.
- This study provides evidence that the DBS is a valid and psychometrically sound brief measure of disease burden.

REFERENCES