What are the barriers to use of abdominal binders in persons with abdominal paralysis due to SCI?

Jennifer Hastings PT PhD NCS
University of Puget Sound School of Physical Therapy

Introduction:
In the United States the incidence of spinal cord injury (SCI) is approximately 12,500 new cases a year and there are an estimated 276,000 persons living with SCI.1 Approximately 80% of those injured sustain neurologic lesions that impair the function of the abdominal musculature.

In the non-disabled population it is well understood that the strength of the abdominal wall is key to prevention of musculoskeletal pain and improving postural control.2 The abdominal wall also functions to maintain the intra-abdominal cavity pressure which in a healthy person works in coordination with the intra thoracic cavity pressure. The paralysis of the abdominal musculature impairs the function of the diaphragm. Paralysis of the abdominal wall also allows distention of intestines which increases bowel transit time. Use of an abdominal binder has shown consistent improvement in respiratory parameters.3 However, long term daily use of abdominal binders is not common among persons living with SCI.

The purpose of this study is to begin to understand this disconnect between obvious health benefit and personal behaviors. Specifically, we are looking to identify the perceived function of an abdominal binder, the perceived barriers to use and knowledge deficits concerning abdominal function within the population of individuals living with abdominal paralysis secondary to SCI. The results of this study will inform the next steps in identification or fabrication of a more usable abdominal compression/support system. The University of Puget Sound Institutional Review Board approved this study. Protocol: PT 1415-016.1

Method:
Convenience sample (snowball recruitment) of community dwelling individuals with SCI who respond to an online survey. Data Analysis: Descriptive.

Results:
Respondents understanding of normal abdominal function:

- 38 respondents answered the survey. Mean age 44 (22-82), mean years since SCI 27 (2-44), 33% female. Self-reported injury level 65% cervical, 23% high thoracic, and 12% low thoracic. Only 20% currently wear an abdominal binder and of those 80% report skin breakdown caused by binder. Other problems shown below.

- 38 respondents answered the survey. Mean age 44 (22-82), mean years since SCI 27 (2-44). 33% female. Self-reported injury level 65% cervical, 23% high thoracic, and 12% low thoracic. Only 20% currently wear an abdominal binder and of those 80% report skin breakdown caused by binder. Other problems shown below.

If an optimal binder existed what benefits do you think you would gain?

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved looks</td>
<td>69.44%</td>
</tr>
<tr>
<td>More trunk stability</td>
<td>77.78%</td>
</tr>
<tr>
<td>Better breathing ability</td>
<td>60.00%</td>
</tr>
<tr>
<td>Improved posture</td>
<td>83.33%</td>
</tr>
<tr>
<td>Louder voice</td>
<td>27.78%</td>
</tr>
<tr>
<td>Decreased bowel transit time</td>
<td>39.56%</td>
</tr>
<tr>
<td>Improved ability to push my chair</td>
<td>39.56%</td>
</tr>
</tbody>
</table>

Key features of an abdominal support that works:

- Easy to put on
- Stay in place
- Invisible under clothes
- Lightweight/comfort

Conclusions: Close to 50% of the respondents discontinued use during initial or rehabilitation hospitalization. This suggests that clinicians are not recognizing the importance of use of this device nor advocating the continued use. Most respondents believed the abdominal binder was a device that should be weaned off once “stabilized”. Those who do recognize the benefits of using an abdominal binder are not well served by currently available abdominal support devices.

Limitations: sampling bias, self-report data and limited sample size.

References:

Presentation of this research is supported by the University Enrichment Committee.