ABSTRACT

The purpose of this pilot study was to develop and examine the preliminary psychometric properties of the Diabetic Care Teacher Support Questionnaire, a self-report scale to assess the perceptions of children with diabetes about disease-specific support behaviors received from their teachers at school.

INTRODUCTION

Research in the area of psychosocial issues in childhood insulin-dependent diabetes mellitus (IDDM) management focuses on social support as an important factor to cope with this complex and demanding treatment. Previous studies have examined this issue concentrating on support from family and peers among children and adolescents with IDDM (Burroughs, Harris, Pontious & Santiago, 1997; Waller et al., 1986; La Greca & Thompson, 1998). However, support from other members of the youngsters’ social network has not yet been investigated. School-aged children spend nearly half of their waking hours at school, so their teachers emerge as another potential important source of support for children with IDDM.

Thus, the purpose of this pilot study is to develop and examine the psychometric properties of the Diabetic Care Teacher Support Questionnaire (DCTSQ), a self-report scale to assess diabetic children’s perceptions of the specific ways that teachers provide support for their self-care regimen.

METHOD

Participants

The participants were recruited from six diabetes associations located at southeastern in Spain.

Children were eligible for inclusion in the study if they met the following criteria:

- Had IDDM for more than 1 year
- Were between the ages of 7 and 15 years
- No symptoms of transient remission

The sample consisted of 118 children with IDDM. Ages (2 missing values) ranged from 7 to 15 years, with a mean age of 11.42 years (SD=2.05 years) and the duration of disease (13 missing values) varied from 1 to 15 years (mean=5.23; SD=3.21).

A description of participants is displayed in Table 1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>52 (44.1%)</td>
</tr>
<tr>
<td>Girls</td>
<td>66 (55.9%)</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>7-9</td>
<td>25 (21.6%)</td>
</tr>
<tr>
<td>10-12</td>
<td>52 (44.8%)</td>
</tr>
<tr>
<td>13-15</td>
<td>39 (33.6%)</td>
</tr>
<tr>
<td>Disease Duration</td>
<td></td>
</tr>
<tr>
<td>1-2 years</td>
<td>26 (24.8%)</td>
</tr>
<tr>
<td>3-5 years</td>
<td>33 (31.4%)</td>
</tr>
<tr>
<td>&gt; 5 years</td>
<td>46 (43.8%)</td>
</tr>
</tbody>
</table>

**SCALE DEVELOPMENT**

The items that made up the DCTSQ were designed as follows:

- A list of items were derived from different sources:
  - Review of the literature on social support in children with IDDM
  - Experts opinion
  - Interviews with 25 diabetic children (aged 8-14)
- 3 experts were asked to assess the adequacy of items
- A previous version were administered to 19 children attending a diabetes summer camp

The Diabetic Care Teacher Support Questionnaire consisted of 31 items and each item had a 3-point response scale (never, sometimes, and many times), with numbers assigned in ascended order from 1 to 3.

**PROCEDURE**

Parents were informed of the purpose of the research and signed consent was obtained. The DCTSQ was administered individually. Trained research assistants went to families’ homes and explained to the children the instructions to complete the DCTSS according to standard general instructions.

RESULTS
Factor Structure

To assess the underlying structure of the DCTSQ a Principal Axis Factor Analysis was conducted (Kaiser-Meyer-Olkin value=0.86; Bartlett’s test of sphericity, p=0.000).

The criteria for determining the number of factors and retaining items were as follows: (a) Eigenvalues≥1.00, (b) Analysis of patterns of decrements in the scree plot, (c) Percentage of variance associated to each factor and (d) Factor loading≥0.40.

It was found a final single-factor solution which account for 34.93% of the variance. Five items failed to meet the criteria inclusion and were dropped. Factor loadings ranged from 0.398 (≈0.40) to 0.771 (see Table 2).

Table 2. Factor loadings, item-total correlations ($r_c$), means and standard deviations for the DCTSQ.

<table>
<thead>
<tr>
<th>ITEMS (Abbreviated english transliteration from spanish original version)</th>
<th>Loading</th>
<th>$r_c$</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Show interest on your diabetes control</td>
<td>0.57</td>
<td>0.55</td>
<td>1.94</td>
<td>0.85</td>
</tr>
<tr>
<td>2. Explained to classmates what diabetes is</td>
<td>0.52</td>
<td>0.50</td>
<td>1.73</td>
<td>0.87</td>
</tr>
<tr>
<td>3. Have sugar in case your glucose falls</td>
<td>0.39</td>
<td>0.38</td>
<td>2.01</td>
<td>0.92</td>
</tr>
<tr>
<td>4. Say to stop playing when you’re running so much</td>
<td>0.51</td>
<td>0.48</td>
<td>1.40</td>
<td>0.65</td>
</tr>
<tr>
<td>5. Congratulate you when you do better with your treatment</td>
<td>0.73</td>
<td>0.69</td>
<td>1.40</td>
<td>0.70</td>
</tr>
<tr>
<td>6. Have a diabetes book for your doubts</td>
<td>0.41</td>
<td>0.38</td>
<td>1.31</td>
<td>0.64</td>
</tr>
<tr>
<td>7. Help you when sugar is high or low</td>
<td>0.60</td>
<td>0.59</td>
<td>1.97</td>
<td>0.88</td>
</tr>
<tr>
<td>8. Ask if you feel well when you look bad</td>
<td>0.50</td>
<td>0.50</td>
<td>2.24</td>
<td>0.81</td>
</tr>
<tr>
<td>9. Remind you don’t forget to eat your snacks</td>
<td>0.72</td>
<td>0.70</td>
<td>1.69</td>
<td>0.85</td>
</tr>
<tr>
<td>10. Advice what to eat according to sugar levels</td>
<td>0.69</td>
<td>0.66</td>
<td>1.32</td>
<td>0.62</td>
</tr>
<tr>
<td>11. Encourage you for complying your treatment</td>
<td>0.70</td>
<td>0.68</td>
<td>1.37</td>
<td>0.66</td>
</tr>
<tr>
<td>12. Before gym class, you’re asked about shots, sugar levels and snacks</td>
<td>0.49</td>
<td>0.46</td>
<td>1.33</td>
<td>0.61</td>
</tr>
<tr>
<td>13. Remind you tasks when you go on a trip</td>
<td>0.60</td>
<td>0.58</td>
<td>1.62</td>
<td>0.74</td>
</tr>
<tr>
<td>14. Gym teacher advices sports you can do</td>
<td>0.58</td>
<td>0.54</td>
<td>1.71</td>
<td>0.79</td>
</tr>
<tr>
<td>15. Gym teacher asked you to help him/her about exercise you can do</td>
<td>0.68</td>
<td>0.64</td>
<td>1.34</td>
<td>0.63</td>
</tr>
<tr>
<td>16. Nag you when you eat candies</td>
<td>0.64</td>
<td>0.61</td>
<td>1.58</td>
<td>0.81</td>
</tr>
<tr>
<td>17. Ask your parents about your control</td>
<td>0.50</td>
<td>0.49</td>
<td>1.58</td>
<td>0.68</td>
</tr>
<tr>
<td>18. Bear in mind your diabetes when a trip is organized</td>
<td>0.58</td>
<td>0.58</td>
<td>1.91</td>
<td>0.87</td>
</tr>
<tr>
<td>19. Carry sugar when you go on a trip</td>
<td>0.67</td>
<td>0.65</td>
<td>1.77</td>
<td>0.82</td>
</tr>
<tr>
<td>20. Have read diabetes books and asked your parents about what to do in case of hypoglycemia</td>
<td>0.51</td>
<td>0.50</td>
<td>1.83</td>
<td>0.84</td>
</tr>
<tr>
<td>21. Nag kids who tease you about your diabetes</td>
<td>0.43</td>
<td>0.41</td>
<td>2.12</td>
<td>0.88</td>
</tr>
<tr>
<td>22. Don’t let you eat sweets</td>
<td>0.41</td>
<td>0.40</td>
<td>1.80</td>
<td>0.85</td>
</tr>
<tr>
<td>23. Ask you about your glucose levels at times</td>
<td>0.66</td>
<td>0.64</td>
<td>1.56</td>
<td>0.70</td>
</tr>
<tr>
<td>24. When you don’t go to school because you feel bad, they call your parent</td>
<td>0.50</td>
<td>0.48</td>
<td>1.55</td>
<td>0.74</td>
</tr>
<tr>
<td>25. Congratulate when your sugar levels are well</td>
<td>0.77</td>
<td>0.73</td>
<td>1.37</td>
<td>0.67</td>
</tr>
</tbody>
</table>
Reliability

Cronbach’s alpha coefficient was used to assess the internal consistency of the DCTSS. The final 26-item scale demonstrated high internal reliability (alpha = 0.92). Corrected item-total correlations, means and standard deviations of each item are displayed in Table 2.

Descriptive analysis

Total scale mean and standard deviation for study sample were 43.00 and 11.94, respectively, (possible range: 0-78). Total results were compared by sex, age and duration of IDDM. Analysis revealed no significant differences (p>0.05) between boys and girls (t(2,116)=0.875, p=0.38), by age (F(2,113)=2.68, p=0.07) and by disease duration (F(2,102)=0.003, p=0.99). Table 3 displays DCTSQ scores (means and standard deviation) by sex, age and disease duration. Table 4 indicates the percentage of children responding to each rating across the items which showed lowest means (10, 12 and 15) and highest means (3, 8 and 21).

<table>
<thead>
<tr>
<th>Table 3. DCTSQ scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
</tr>
<tr>
<td>Girls</td>
</tr>
<tr>
<td>Boys</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>7-9</td>
</tr>
<tr>
<td>10-12</td>
</tr>
<tr>
<td>13-15</td>
</tr>
<tr>
<td>Duration Of IDDM</td>
</tr>
<tr>
<td>1-2</td>
</tr>
<tr>
<td>3-5</td>
</tr>
<tr>
<td>6-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEMS</td>
</tr>
<tr>
<td>10.</td>
</tr>
<tr>
<td>12.</td>
</tr>
<tr>
<td>15.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>8.</td>
</tr>
<tr>
<td>21.</td>
</tr>
</tbody>
</table>

CONCLUSIONS
Little research has been conducted on teacher support provided to children with IDDM despite children spend lots of hours at school. This instrument is a new development in this area and seem to have adequate reliability. However, further studies with larger samples is needed to examine its validity and utility to predict adherence.

REFERENCES

