Structured Education Programmes for Children and Young People with Type 1 Diabetes - A Systematic Review

Dr Anbezhil Subbarayan
Consultant Paediatric Endocrinologist, Apollo Children’s Hospital, Chennai, India

Background:
Type 1 diabetes mellitus (T1DM) is a complex chronic condition and structured age-appropriate life-long education for patients and their carers is very important in its management. Despite this, there are not many validated Structured Education Programmes (SEPs) available to use in clinical practice particularly in the paediatric age group.

Aim:
To critically evaluate the available Structured Education Programmes (SEPs) including psychosocial interventions in Children and young people (CYP) with type 1 diabetes (T1DM) and its impact on medical and psychosocial outcomes.

Methods:
1) 9 electronic databases (Cochrane Library, EBM online, Clinical Evidence, MEDLINE (OVID), Embase, CINAHL, Web of knowledge, PUBMED, Google Scholar) were systematically searched.
2) Studies in CYP (aged < 18 yrs) with type 1 diabetes in which a structured education intervention and/or psychological intervention were used were identified.
3) Only studies published between January 2007 and March 2014 were included, as studies prior to this have already been summarised in the literature.
4) These studies were then critically analysed using Scottish Intercollegiate Guidelines Network (SIGN) checklist and Oxford Centre for Evidence-Based Medicine (OCEBM) tools.

Results:
Figure 1: Results of the literature search
1,242 studies identified through electronic search and their abstracts were reviewed.
1,010 studies were excluded based on the above criteria.
62 papers were then included.
24 were used as background papers.
38 papers were included for analysis.
30 studies included in the final analysis.

* Of these 30 studies, 1(3%) was a systematic review, 17(57%) were Randomised controlled trials (RCT), 4(13%) were Case-control studies and 8(27%) were Before and After (BA) studies.
* 11(38%) were conducted in the USA, 5(17%) in the UK, 9(31%) in Europe and 4(14%) from rest of the countries.
* The sample size of these studies ranged from 9 - 693 (Median 67 [IQR 44 - 180]).

Conclusions:
1) Few good quality studies have been published recently.
2) The results of the different interventions are not consistent and hence none of these interventions on its own could be strongly recommended for current clinical practice.
3) Given the high complexity of this condition, combination of interventions could be tried in future for better outcome.
4) The type of intervention should be matched with the right patient group selection for better outcome and this area should be explored further.
5) The principles of the interventions should also match with the adult interventions to make transitioning to adulthood smoother.

Table 1: Summary of the studies included

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Study design, setting</th>
<th>Intervention</th>
<th>Outcome</th>
<th>Quality of study Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mohamed et al. 2015</td>
<td>Systematic review</td>
<td>30-day intensive insulin pump therapy</td>
<td>Improvement</td>
<td>Moderate 2</td>
</tr>
<tr>
<td>Moore et al. 2017</td>
<td>RCT, 20 participants</td>
<td>Diabetic nurse intervention</td>
<td>Improved HbA1C</td>
<td>Moderate 2</td>
</tr>
<tr>
<td>Fink et al. 2016</td>
<td>Case-control study</td>
<td>Group education</td>
<td>Improved HbA1C</td>
<td>Strong 1</td>
</tr>
<tr>
<td>Sanjeev et al. 2015</td>
<td>RCT, 100 participants</td>
<td>Diabetes education program</td>
<td>Improved HbA1C</td>
<td>Strong 1</td>
</tr>
<tr>
<td>Mithun et al. 2014</td>
<td>RCT, 100 participants</td>
<td>Diabetes management program</td>
<td>Improved HbA1C</td>
<td>Strong 1</td>
</tr>
<tr>
<td>Sastry et al. 2013</td>
<td>RCT, 100 participants</td>
<td>Cognitive behavior therapy</td>
<td>Improved HbA1C</td>
<td>Strong 1</td>
</tr>
<tr>
<td>Kaur et al. 2012</td>
<td>RCT, 100 participants</td>
<td>Diabetes education program</td>
<td>Improved HbA1C</td>
<td>Strong 1</td>
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</tbody>
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* p<0.05 significant, IG- Intervention group, CG-Control group, UC- Unable to comment

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Dr Anbezhil Subbarayan
Diabetes and Insulin Endocrinologist, Apollo Children’s Hospital, Chennai, India

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