

# STRUCTURED EDUCATION PROGRAMMES FOR CHILDREN AND YOUNG PEOPLE WITH TYPE 1 DIABETES - A SYSTEMATIC REVIEW

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## 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:

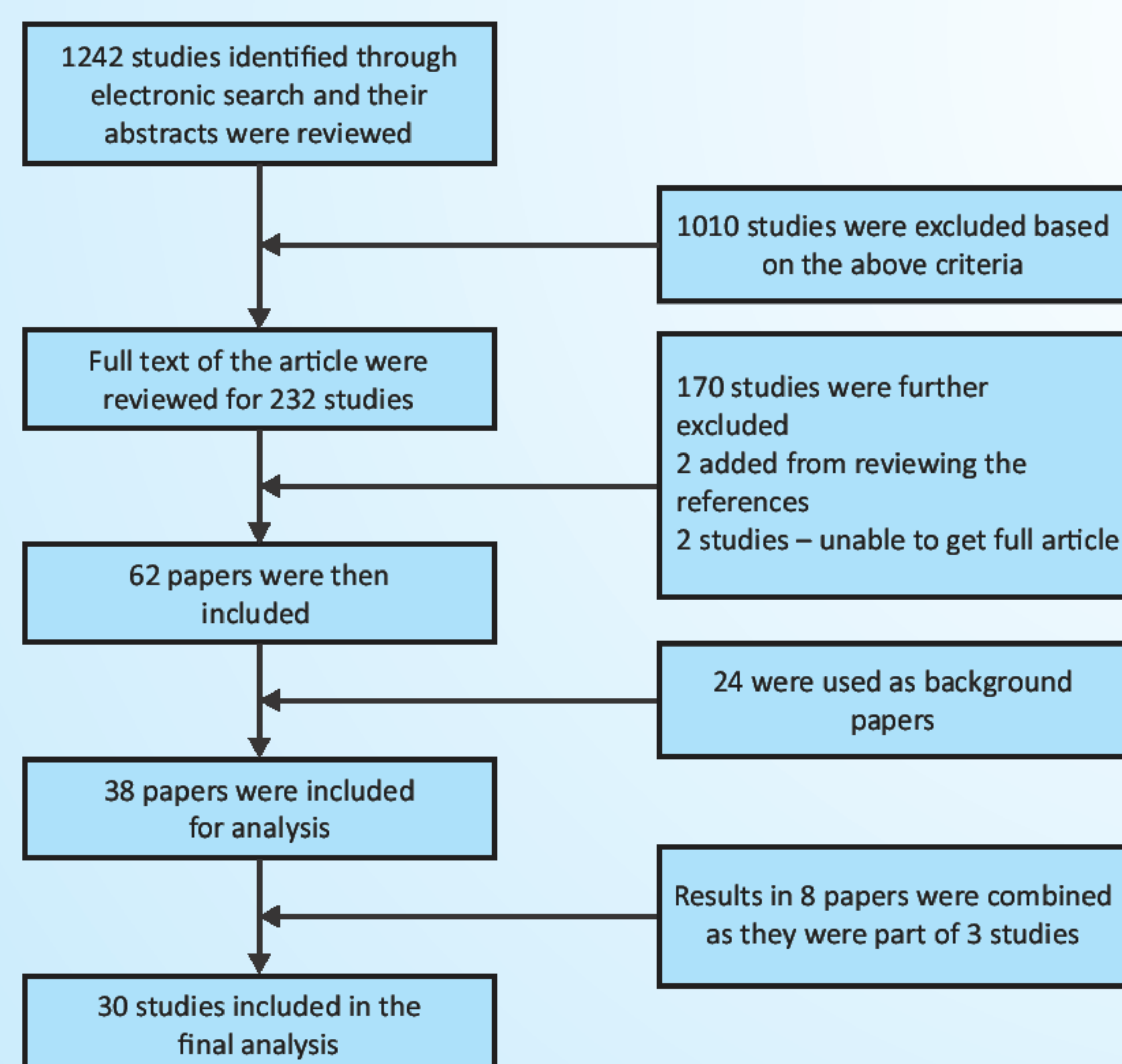
To critically evaluate the available Structured Education Programmes (SEPs) including psychosocial interventions in Children and young people (CYP) with type 1 diabetes (T1DM) and its impact on medical and psychosocial outcomes.

## 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  $\leq 18$  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



- ✦ 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.

**Acknowledgement:** Thanks to Dr. John Morrissey, University of Warwick & Paediatric Diabetic Team, North Middlesex University Hospital, London

- ✦ The mean age of the subjects ranged from 4.1 to 17 yrs, with 10 of the studies including children of age <10 years
- ✦ 18(62%) of these studies described the theoretical basis for their interventions and the duration of the interventions ranged from 1 day to 18 months
- ✦ 18 out of 27 studies showed decrease in HbA1C after the intervention, ranging from 0.28% to 1.3%, with a mean of 0.59% (SD 0.28%)
- ✦ In 5 out of 7 studies, Quality of Life (QOL) improved and in 18 out of 21 studies psychosocial outcomes improved after an intervention
- ✦ Family-centred interventions and motivational interviewing produced promising results but the results couldn't be replicated in larger samples
- ✦ Of the 30 studies, 2 were of high quality, 14 were of moderate quality and the remaining 14 were of low quality

Table 1: Summary of the studies included

Author, Year	Study design/ Sample size	Intervention	Outcomes	Quality of study/ Level of evidence
McBroom et al, 2009	Systematic review/ 14-127	Family-centred interventions	HbA1C improved* Family dynamics improved*	Moderate/ 1-2
Murphy et al, 2007 (FACTS study)	RCT/ 67	Teamwork	HbA1C reduced 0.23%*	Moderate/ 2
Price et al, 2013 (KICK-OFF study)	RCT/ 436	Group education	QOL- improved*	UC/ 2
Enander et al, 2012	RCT/ 40	Carbohydrate counting	HbA1C no significant change	Low/ 3
Sassmann et al, 2012	RCT/ 65	Behaviour therapy	HbA1C stable in IG*	Moderate/ 2-3
Sullivan-Bolvai et al, 2010	RCT/ 60	Social support model	No difference in parental concern	Moderate - low/ 3
Monahan et al, 2012	RCT/ 24	Telephone-based intervention	Decreased parenting stress*	Low/ 4
De Wit et al, 2008 & 2010	RCT/ 91	Health related QOL	Psychosocial health improved* HbA1C- no significant difference	Moderate/ 2-3
Christie et al, 2014 (CASCADE Study)	RCT/ 362	Motivational interviewing (MI) and Solution-focused brief therapy	HbA1C- no significant difference	Moderate/ 2
Grev et al, 2009	RCT/ 82	Cooking skills training	HbA1C- no significant difference	Moderate/ 2-3
Mulvaney et al, 2010	RCT/ 52	Internet-based problem solving	HbA1C- significant difference*	Moderate- low/ 3
Channon et al, 2007	RCT/ 66	Motivational interviewing	HbA1C- decreased by 0.6%* QOL - improved*	Moderate/ 2-3
Wang et al, 2010	RCT/ 44	MI and Structured diabetes education (SDE)	HbA1C lower in SDE group*	Moderate- low/ 3
Nansel et al, 2007	RCT/ 81	Diabetes personal trainer	HbA1C- improved*	Moderate/ 2-3
Gregory et al, 2012 (DEPICTED study)	RCT/ 693	Consultation strategies	HbA1C- no improvement	High/ 2
Wysocki et al, 2007	RCT/ 104	Behavioural family systems therapy diabetes (BFST-D)	HbA1C decreased by 0.6%*	Moderate/ 2-3
Grey et al, 2013	RCT/ 320	Internet based Coping skills training and education programmes	HbA1C decreased and QOL improved in the group which completed both programmes*	High-moderate/ 2
Ellis et al, 2007 & 2008	RCT/ 127	Multi-systemic therapy(MST)	HbA1C decreased by 0.68%*	Moderate/ 2-3
Harris et al, 2009	Case-control/ 58	Behaviour family systems therapy	HbA1C- decrease by 0.3%	Low/ 5
Wang et al, 2008	Case-control/ 183	Education with activities	HbA1C improved*	Low/ 5
Aboifotouh et al, 2011	Case-control/ 243	Behavioural education program	HbA1C and QOL better in the IG*	Low/ 5
Viklund et al, 2007	Case-control/ 180	Educational programme	HbA1C- no difference	Mod- Low/ 4-5
Samann et al, 2007	Before/after study/ 595 <18 yrs	Diabetes Treatment and Teaching Programme	HbA1C improved but significant only in 15-18 yrs age group*	Moderate/ 4
Ammentorp et al, 2013	Before/after study/ 9	Coaching programme	HbA1C improved*	Low/ 5
Mukama et al, 2013	Before/after study/81	Diabetes education program	Reduction in hypoglycaemia*	Low/ 5
Froisland et al, 2012	Before/after study/12	Two mobile phone applications	HbA1C- no improvement	Low/ 5
Qayyum et al, 2010	Before/after study/60	4 education modules	HbA1C decreased*	Low/ 5
Marigliano et al, 2013	Before/after study/25	Nutrition education program	HbA1C decreased*	Low/ 5
Konradsdottir et al, 2011	Before/after study/ 23	Education and support intervention	Fathers found coping patterns more helpful than mothers	Low/ 5
Aguilar et al, 2011	Before/after study/37	One Touch Ultrasmart	HbA1C decreased by 1.3%*	Low/ 5

\* - p<0.05 significant, IG- Intervention group, CG- Control group, UC- Unable to comment

