Diabetes Group Education versus Individual Counselling: Review of Conflicting Evidence

Taridzo Chomutare[a], Eirik Årsand[a], Gunnar Hartvigsen[b]

[a] *Norwegian Centre for Integrated Care and Telemedicine, University Hospital of North Norway, Tromsø, Norway*
[b] *Department of Computer Science, University of Tromsø - The Arctic University of Norway, Tromsø, Norway*

Abstract

Current guidelines for diabetes self-management such as from the National Institute for Health and Care Excellence (NICE) do not mention group education or use of electronic applications as part of their recommendations. Perhaps this is partially because there is lack of quality evidence supporting use of either intervention. This review examines what appears to be conflicting evidence regarding clinical outcomes of group education and individual counselling strategies for people with diabetes. A final set of 14 studies was included, with a total number of 30977 participants. More than half of the studies found no significant difference between group education and individual counselling or motivational interviews. Two studies favoured group education, while two favoured individual counselling. Understanding the merits of the different approaches is important for informing health education strategies, but so far the evidence remains conflicting for clinical outcomes.

Keywords:

Diabetes, group education, tailored care.

Introduction

Type 2 diabetes remains a huge health concern and the problem is projected to worsen. Therefore, clinically effective care regimes that are also cost effective may reduce the burden on the health care service and society in general. In search of cost-effective measures, patient organizations in Norway and abroad organise group motivation and education programs, with substantial financial commitment into such programs.

However, current evidence-based recommendations suggest only individual education and counselling as essential parts of diabetes management. Guidelines, such as NICE, have not considered the more cost effective group programs or electronic and mobile self-help applications as part of their recommendations. Perhaps this is partially because there is lack of quality evidence supporting use of either intervention.

Current evidence is clear about the benefits of group education programs in contrast to usual care [1][2]. However, the literature has also consistently shown that the benefits are often in the short term only [3] while in other longer-term studies, the benefits have been shown to rescind [4].

More recently, studies report individual education as more efficacious than group education programs [3][5]. Despite these new findings, group programs seem to continue to be attractive, perhaps primarily for their affordability and social aspects. This area of inquiry has nonetheless gained much attention, as researchers seek to replicate earlier findings or build newer quality evidence.

Much of our knowledge regarding education approaches for diabetes comes from literature that is almost two decades old [6-8]. Since then, developments in education techniques, research methods, and information and communication technology have warranted an updated review of the subject matter.

For example, the advent of user-friendly mobile phones and mobile applications [9][10] , as well as the growing popularity of Internet social groups for diabetes [11], have changed the way individuals educate themselves, and manage and cope with diabetes.

The objective of this review was to name and qualitatively describe salient characteristics of studies that compare group education with individual care for people with diabetes. The synthesized information helps building evidence for cost-effective care that is also clinically effective.

Materials and Methods

The methodology is loosely based on the PRISMA recommendation for reporting items in systematic reviews [12]. The overall goal was to assess high quality evidence within the subject matter.

Eligibility Criteria

The eligibility criteria can be partitioned into the inclusion and exclusion criteria. We have used "Participants, Intervention, Comparator and Outcome" (PICO) [13], an evidence-based practice that aids conducting reviews for answering clinical questions. We only included randomised controlled studies (RCT), and studies without proper control were excluded.

Inclusion Criteria

Participants – RCTs with diabetes patients, regardless of the diabetes type, ethnicity, age group or location.

Intervention – the studies must be about education or counselling.

Comparison – the studies must compare at least two types of interventions; group education or therapy, and individual or tailored care or counselling.

Outcome – the studies must report at least the HbA1c or Blood Glucose levels as the primary outcome.

Additional criteria were that the studies must have been published within the last 5 years (i.e. since 2010). The follow-up period required for each study is at least 6 months, and studies published in other European languages other than English were not considered. We excluded unpublished literature (grey) in order to focus on higher quality evidence that is formally published.

The time constraint ensures we only consider recent advances, since seminal reports have become out of synch with recent advances. In addition, choosing a longer follow-up period was necessary to assess diabetes outcomes since HbA1c, a key outcomes for diabetes, is a long-term measure of blood glucose levels, reflecting health status approximately 3 months back in time.

Information Sources and Search Strategy

We searched biomedical literature databases; PubMed, EMBASE and Google search engine. We used "Diabetes", "Group", "Individual", "Education" and "Counselling" as the key search terms, and constructed search strings using logic operators.

Study Selection and Data Collection

From the initial search hits in databases, we examined the title for relevance. In iteration, we also considered the abstracts for relevance. From the semi-final set, full text was assessed for eligibility. No independent assessment was done by co-authors at this stage.

The data collection process involved going through the full-text and identifying the data items that were relevant for our case. The following data items were are developed from the authors' own experience with the subject matter, as well as from previous reviews:

1. Year of study
2. Length of follow-up
3. Number of participants
4. HbA1c
5. Key conclusion

Results

Current results appear to suggest a general disagreement within the research community as to whether group education is more efficacious than individual education or counselling.

Study Selection

As shown in Figure 1, the final set of included papers had 14 papers related to 13 controlled trials. We started off with a set of 89 papers based on search in the literature databases. We initially excluded 62 of these papers due to irrelevant title or abstract. After inspecting the full text, we further excluded 13 of the remaining 27 papers because they did not have sufficient basis for comparison, or the reporting was insufficient or poor.

Study Characteristics

All the included studies had some comparison of at least two different approaches to diabetes patient education and counselling, as shown in Table 1. There were no clinically significant differences between group education and individual counselling in 10/14 (~70%), and this represents studies that account for 17784/30977 or 57% of all the informants.

On the one hand, we have Hwee et al. [14] and Merakou et al. [15] who concluded that group education was better than individual counselling, while on the other hand, Sperl-Hillen et al. [5] and Vadstrup et al. found individual counselling more clinically effective. Studies by Sperl-Hillen et al. [5] and Merakou et al. [15] were both based on USA-developed and recommended "Conversation Maps" for individual counselling. The two studies focused on type 2 diabetes, and both had a follow-up period between 6 and 12 months. Despite the similarities in the two studies, they reported conflicting findings.

The nature of the interventions varied widely within the classifications of either group or individual. Studies varied from 6-hour group sessions to monthly group session run over several months.

Synthesis of results

Studies that had a follow-up period of more than 12 months were thrice more likely to find no significant differences in the two approaches, than did studies with 12 months or less follow-up (odds ratio = 46, p=0.0156). Further, all the studies that found significance differences had a follow-up period of 12 months or less. There does not seem to be any relation between the year of the study and the key conclusion.

In terms of recommendations, two studies, Vadstrup et al. [16] and Smith et al. [17], recommended that group education programs or peer education schemes should not be widely implemented, citing an unjustified waste of resources. One study cited how group education schemes had been very costly to maintain.

Of the five studies that reported blood pressure as a secondary measure, three found significant improvements in-group education, especially the systolic blood pressure.

Discussion

The evidence supporting either approach as more efficacious than the other is more unclear today than it was a decade ago. The main finding emerging from this review is that no significant differences between the two approaches were found. This finding may seem strange and in direct conflict with seminal work, but plausible explanations may lie in the way electronic applications are used ubiquitously by participants.

There exist today a number of electronic applications that patients use, even though such applications have not been sanctioned by their general practitioner or the health authorities. Patients who use electronic applications likely benefit from the advantages of both group (through online social networks) and individual counselling (through tracking personal health information), thus blurring the line between the two intervention types.

While researchers agree that education is an important element of a self-management regime for people with diabetes, the best delivery method for such education remains contentious. What is surprising, however, is that the majority of the included studies reported no significant differences between the two main approaches.

There are a number of potential explanations for the current findings. The first explanation may be that there does not exist any reporting standard, and as a result studies have not consistently or clearly reported data such as the ethnicity of participants, their location and geopolitical circumstances, their socioeconomic status, their education level, their age or the time since they were diagnosed with the disease. Second, except for the USA-developed Conversation Map, education interventions also lack reporting standards regarding, type of education material, the delivery methods or teaching style.

Except for one study reporting higher costs associated with their group education strategy, all the other included studies did not report economic figures. It is conceivable that these studies assume group education is more cost effective, and this may be the only major advantage area over individual counselling.

One study reported that over 80% of the participants preferred individual counselling to group education, when given the choice. This underscores a metric that is over and above the cost-benefits or health outcomes of group education – user preferences – that is often ignored in this debate.

Table 1 – Studies included in the analysis

	Reference	Year	Follow-up (months)	Sample Size	Diabetes Type	Main Conclusion
1	Sperl-Hillen et al.[5]	2011	6.8	623	2	Individual is better, using US conversation map
2	Hwee et al.[14]	2014	12	12234	1&2	Group is better, has less adverse incidences
3	Endevelt et al. [18]	2014	24	223	Pre-t2	No significant difference
4	Merakou et al.[15]	2015	6	193	2	Group is better, using conversation map
5	Khunti et al.[19]	2012	36	731	2	No significant difference
6	Mash et al. [20]	2014	12	1570	2	No significant difference
7	Vadstrup et al. [16]	2010	6	143	2	Individual is better
8	Dinneen et al. [21]	2013	18	437	1	No significant difference
9	Vadstrup et al. [22]	2011	6	143	2	No significant difference
10	Simmons et al. [23]	2015	12	1299	2	No significant difference
11	Smith et al. [17]	2011	24	395	2	No significant difference
12	Rautio et al. [24]	2012	12	8584	2	No significant difference
13	Minet et al. [25]	2011	24	349	1&2	No significant difference
14	Lau et al. [26]	2011	60	4053	-	No significant difference

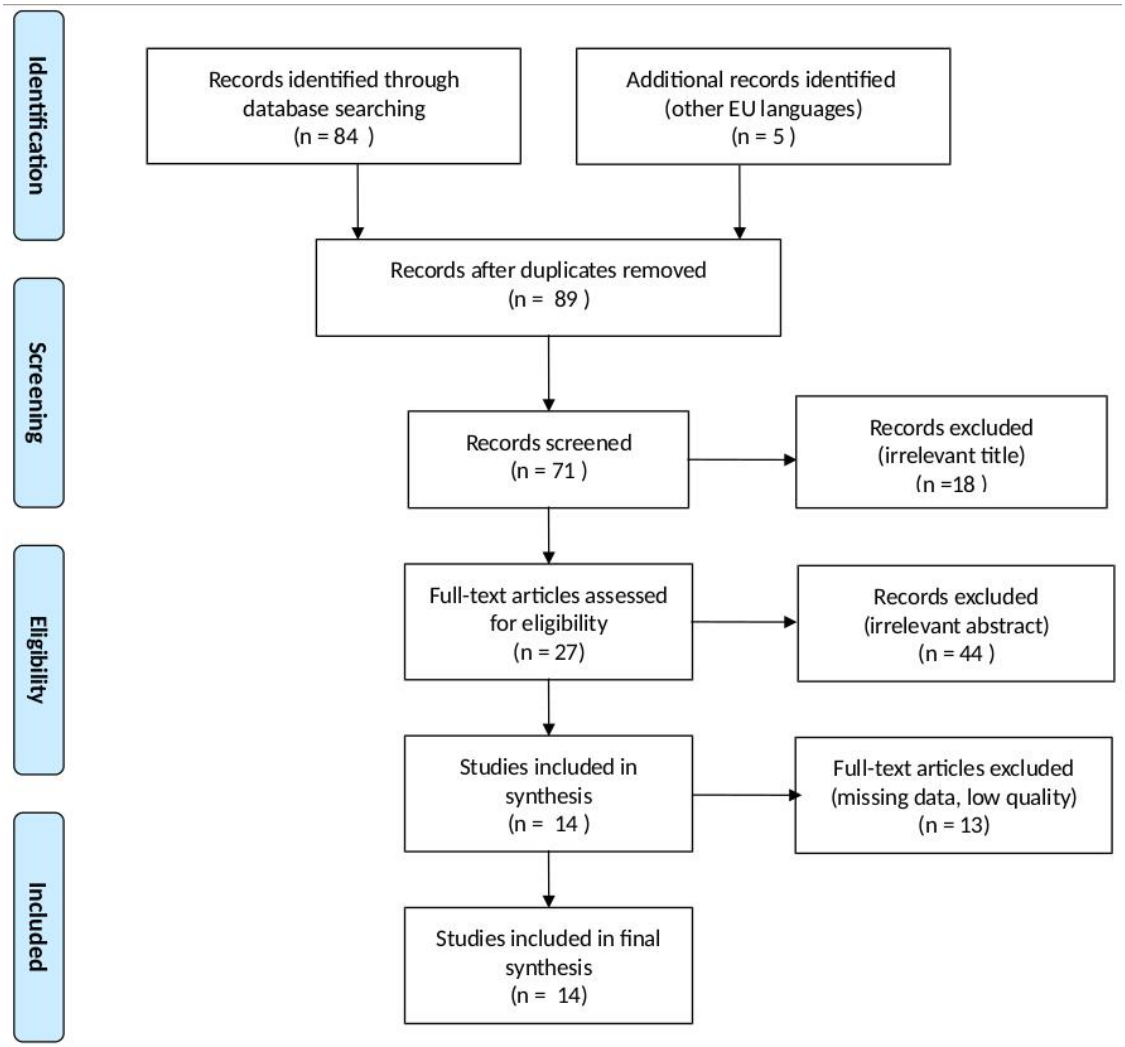

Figure 1- Study selection flow diagram

Risk of Bias

There are a number of local initiatives that are only published in local EU languages other than English, and our search did not expand to these databases. It is possible that expanding the search may reveal important cultural differences that could help us better explain current findings.

By excluding unpublished literature and localized reports available on the Internet, we may have reduced reporting bias. Since many countries continue to pour money into group education and motivation programs, even without any scientific evidence of effectiveness, many of these patient associations report mostly the positives of social interactions.

Limitations

One limitation is that we could not perform meta-analysis because of the non-standard reporting, which makes comparing effect or outcomes between studies problematic. For example, some studies reported only the relative differences between groups, and not the actual baseline and follow-up HbA1c.

"Usual Care" is a popular phrase for control groups in many studies, but the nature of this usual care is unclear. It may in fact include elements of individual counselling and education as recommended by evidence-based guidelines, but we generally excluded studies that were not explicit, and we may have missed some evidence. These limitations, however, do not undermine the value of our main findings.

Conclusions

This review confirms the conflict in the literature and reveals that there are no significant differences between group-based education and individual counselling approaches. This directly contrasts with key seminal evidence, and therefore requires further investigation, to enhance our understanding of the factors that foster the best outcomes.

Acknowledgments

This work was supported in part by the Research Program for Telemedicine, Helse Nord, RHF.

References

1. Adlerberth A, Rosengren A, Bresäter LE, Waller L, Ehnberg S, Welin L. [Group education in a diabetes school improves the metabolic control]. Läkartidningen. 1992 Jun 3;89(23):2106–7.
2. Steinsbekk A, Rygg LØ, Lisulo M, Rise MB, Fretheim A. Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus. A systematic review with meta-analysis. BMC Health Serv Res. 2012;12:213.
3. Sperl-Hillen J, Beaton S, Fernandes O, Von Worley A, Vazquez-Benitez G, Hanson A, et al. Are benefits from diabetes self-management education sustained? Am J Manag Care. 2013 Feb;19(2):104–12.
4. Sarkadi A, Rosenqvist U. Field test of a group education program for type 2 diabetes: measures and predictors of success on individual and group levels. Patient Educ Couns. 2001 Aug;44(2):129–39.
5. Sperl-Hillen J, Beaton S, Fernandes O, Von Worley A, Vazquez-Benitez G, Parker E, et al. Comparative effectiveness of patient education methods for type 2 diabetes: a randomized controlled trial. Arch Intern Med. 2011 Dec 12;171(22):2001–10.
6. Brown SA. Effects of educational interventions in diabetes care: a meta-analysis of findings. Nurs Res. 1988 Aug;37(4):223–30.
7. Wilson SR. Individual versus group education: is one better? Patient Educ Couns. 1997 Dec;32(1 Suppl):S67–75.
8. Brown SA. Studies of educational interventions and outcomes in diabetic adults: a meta-analysis revisited. Patient Educ Couns. 1990 Dec;16(3):189–215.
9. Årsand E, Frøisland DH, Skrøvseth SO, Chomutare T, Tatara N, Hartvigsen G, et al. Mobile health applications to assist patients with diabetes: lessons learned and design implications. J Diabetes Sci Technol. 2012;6(5):1197–206.
10. Cafazzo JA, Casselman M, Hamming N, Katzman DK, Palmert MR. Design of an mHealth app for the self-management of adolescent type 1 diabetes: A pilot study. J Med Internet Res. 2012;14(3):1–20.
11. Chomutare T, Tatara N, Årsand E, Hartvigsen G. Designing a diabetes mobile application with social network support. Stud Health Technol Inform. 2013;188:58–64.
12. Moher D, Liberati A, Tetzlaff J, Altman DG, PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Ann Intern Med. 2009 Aug 18;151(4):264–9, W64.
13. Huang X, Lin J, Demner-Fushman D. Evaluation of PICO as a knowledge representation for clinical questions. AMIA Annu Symp Proc AMIA Symp AMIA Symp. 2006;359–63.
14. Hwee J, Cauch-Dudek K, Victor JC, Ng R, Shah BR. Diabetes education through group classes leads to better care and outcomes than individual counselling in adults: a population-based cohort study. Can J Public Health Rev Can Santé Publique. 2014 Jun;105(3):e192–7.
15. Merakou K, Knithaki A, Karageorgos G, Theodoridis D, Barbouni A. Group patient education: effectiveness of a brief intervention in people with type 2 diabetes mellitus in primary health care in Greece: a clinically controlled trial. Health Educ Res. 2015 Apr;30(2):223–32.
16. Vadstrup ES, Frølich A, Perrild H, Borg E, Røder M. Effect of a group-based rehabilitation programme on glycaemic control and cardiovascular risk factors in type 2 diabetes patients: the Copenhagen Type 2 Diabetes Rehabilitation Project. Patient Educ Couns. 2011 Aug;84(2):185–90.
17. Smith SM, Paul G, Kelly A, Whitford DL, O'Shea E, O'Dowd T. Peer support for patients with type 2 diabetes: cluster randomised controlled trial. BMJ. 2011 Feb 15;342:d715.
18. Endevelt R, Peled R, Azrad A, Kowen G, Valinsky L, Heymann AD. Diabetes prevention program in a Mediterranean environment: individual or group therapy? An effectiveness evaluation. Prim Care Diabetes. 2015 Apr;9(2):89–95.
19. Khunti K, Gray LJ, Skinner T, Carey ME, Realf K, Dallosso H, et al. Effectiveness of a diabetes education and self management programme (DESMOND) for people with newly diagnosed type 2 diabetes mellitus:

three year follow-up of a cluster randomised controlled trial in primary care. BMJ. 2012;344:e2333.

20. Mash RJ, Rhode H, Zwarenstein M, Rollnick S, Lombard C, Steyn K, et al. Effectiveness of a group diabetes education programme in under-served communities in South Africa: a pragmatic cluster randomized controlled trial. Diabet Med J Br Diabet Assoc. 2014 Aug;31(8):987–93.
21. Dinneen SF, O'Hara MC, Byrne M, Smith D, Courtney CH, McGurk C, et al. Group follow-up compared to individual clinic visits after structured education for type 1 diabetes: a cluster randomised controlled trial. Diabetes Res Clin Pract. 2013 Apr;100(1):29–38.
22. Vadstrup ES, Frølich A, Perrild H, Borg E, Røder M. Health-related quality of life and self-related health in patients with type 2 diabetes: effects of group-based rehabilitation versus individual counselling. Health Qual Life Outcomes. 2011;9:110.
23. Simmons D, Prevost AT, Bunn C, Holman D, Parker RA, Cohn S, et al. Impact of Community Based Peer Support in Type 2 Diabetes: A Cluster Randomised Controlled Trial of Individual and/or Group Approaches. PloS One. 2015;10(3):e0120277.
24. Rautio N, Jokelainen J, Oksa H, Saaristo T, Peltonen M, Niskanen L, et al. Participation, socioeconomic status and group or individual counselling intervention in individuals at high risk for type 2 diabetes: one-year follow-up study of the FIN-D2D-project. Prim Care Diabetes. 2012 Dec;6(4):277–83.
25. Rosenbek Minet LK, Wagner L, Lønvig EM, Hjelmborg J, Henriksen JE. The effect of motivational interviewing on glycaemic control and perceived competence of diabetes self-management in patients with type 1 and type 2 diabetes mellitus after attending a group education programme: a randomised controlled trial. Diabetologia. 2011 Jul;54(7):1620–9.
26. Lau C, Vistisen D, Toft U, Tetens I, Glümer C, Pedersen O, et al. The effects of adding group-based lifestyle counselling to individual counselling on changes in plasma glucose levels in a randomized controlled trial: the Inter99 study. Diabetes Metab. 2011 Dec;37(6):546–52.

Address for correspondence

Taridzo Chomutare, Norwegian Centre for Integrated Care and Telemedicine, University Hospital of North Norway, 9038 Tromsø, Norway.

E-mail: taridzo.chomutare [at] telemed.no