
**TITLE: Group Care for Chronic Disease Management: A Review of the Clinical Effectiveness, Cost-effectiveness, and Guidelines**

**DATE:** 12 November 2013

## CONTEXT AND POLICY ISSUES

Chronic diseases such as diabetes, heart disease, and chronic respiratory disease are the major cause of death and disability worldwide[1,2] It is estimated that in Canada 89% of all deaths are due to chronic diseases.[2] Various strategies are used for treatment of chronic diseases.

Optimal care of chronic illnesses includes the timely delivery of high quality care and easy access to care.[3] It is thought that group medical visits have the potential of improving effectiveness, timeliness and efficiency of health care.[3,4] Usually in group care, multiple patients are seen in the same clinical setting and care is provided by a multidisciplinary team comprising of members such as physician, specialist, nurse, dietitian, and educator.[3,5] There is variability in the composition of the care providing team. Group care may be delivered over a fixed number of sessions or may be ongoing over time. Patient composition in the group may be fixed or may vary as in the case of drop-in attendance.[6]

The purpose of this report is to provide evidence on the clinical effectiveness and cost effectiveness of group care versus one-on-one care for the management of chronic diseases such as HIV/AIDS, diabetes, and heart disease and also to provide evidence-based guidelines for group care for chronic disease management.

## RESEARCH QUESTIONS

1. What is the comparative clinical effectiveness of group care versus one-on-one care for chronic disease management?

2. What is the cost-effectiveness of group care compared to one-on-one care for chronic disease management?

3. What are the evidence-based guidelines for group care for chronic disease management?

## KEY FINDINGS

The available evidence shows that for adults with diabetes, better glycemic control is achieved with group care compared with usual care. One included study found that for adults with hypertension better control of blood pressure is achieved with group care compared with usual care. However, there are variations in the structure of group care, and details on usual were not consistently described. It was assumed that usual care is likely to involve a one-to-one care provider. No information on the effectiveness group care for COPD or HIV/AIDS, and no cost-effectiveness evaluations of group care models were identified

No evidence based guideline specifically on group care for chronic disease management was identified. One guideline on diabetes management recommended that diabetes education should be delivered in groups or individually, but did not recommend a preferred model.

## METHODS

### Literature Search Strategy

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2013, Issue 10), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic studies, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and October 15, 2013.

### Selection Criteria and Methods

One reviewer screened the titles and abstracts of the retrieved publications, selected potentially relevant articles for retrieval of full-text publications for further investigation and evaluated the full-text publications for final selection, according to the criteria listed in Table 1.

**Table 1: Selection Criteria**

| | |
|---|---|
| **Population** | Adults with chronic conditions: diabetes, chronic heart conditions, hepatitis C, human immunodeficiency virus (HIV), chronic hypertension, chronic obstructive pulmonary disease (COPD) |
| **Intervention** | Routine monitoring, care and patient education delivered in a group setting by a clinician |
| **Comparator** | Routine monitoring, care and patient education delivered one-on-one (with a similarly skilled clinician) |
| **Outcomes** | Clinical effectiveness (improvement in disease management), patient compliance, patient preference, cost-effectiveness, evidence-based guidelines |
| **Study Designs** | Health technology assessment (HTA), systematic review (SR) and meta-analysis (MA), randomized controlled trial (RCT), and non-randomized study, cost-effectiveness study and evidence based guideline |

### Exclusion Criteria

Studies were excluded if they did not satisfy the selection criteria in Table 1 and if they were published prior to 2009. Studies were excluded if they were included in at least one of the included systematic reviews. Studies not including quantitative results were excluded.

### Critical Appraisal of Individual Studies

Critical appraisal of a study was conducted based on an assessment tool appropriate for the particular study design. The AMSTAR checklist[7] was used for systematic reviews, the Downs and Black checklist[8] for RCTs and non-randomized studies, and the AGREE checklist[9] for guidelines.

For the critical appraisal, a numeric score was not calculated. Instead, the strength and limitations of the study were described narratively.

## SUMMARY OF EVIDENCE

### Quantity of Research Available

The literature search yielded 593 citations. Upon screening titles and abstracts, 565 articles were excluded and 28 potentially relevant articles were selected for full-text review. Two potentially relevant articles were identified from the grey literature. Of these 30 articles, 22 did not satisfy the inclusion criteria and were excluded. The eight included articles comprised three systematic reviews,[3,5,10] two RCTs,[11,12] two non-randomized studies[13,14] and one evidence-based guideline.[15] No relevant health technology assessment or cost-effectiveness study was identified. Details of the study selection process are outlined in Appendix 1.

### Summary of Study Characteristics

Characteristics of the included systematic reviews and clinical studies are summarized below and details are provided in Appendix 2.

<u>Systematic reviews and meta-analyses</u>

*Diabetes*

Three relevant systematic reviews[3,5,10] comparing group care with usual care in adults with diabetes were identified. One systematic review[5] was published in 2013 from Canada and included 13 RCTs and 13 non randomized studies with a total of 4652 patients and average age 59.3 years (from studies reporting age information). One systematic review[3] was published in 2012 from USA and included 15 RCTs and four non randomized studies with a total of 5072 patients. Of the 19 studies included in this systematic review[3] thirteen studies were on adults of average age 61 years and three studies were on older adults with high health care utilization rates and of average age 74.1 years; results were presented separately for the two groups. One systematic review[10] was published in 2012 from Norway and included 21 RCTs with a total of 2833 patients of average age 60 years. In two systematic reviews[3,10] group care involved a multidisciplinary team and one systematic review[5] did not specify if group care involved a multidisciplinary team. All three systematic reviews reported on glycated hemoglobin (HbA1c),

blood pressure (BP), lipids, and quality of life (QoL). Two systematic reviews[5,10] reported on weight and body mass index (BMI).

Clinical studies

*Diabetes*

One relevant RCT[11] comparing group education program with individual education program for adults with diabetes was identified. It was published in 2011 from USA. It included 222 patients of average age 53 years. The program educators included clinicians. It reported on HbA1c, lipids, BMI and QoL.

Two relevant non randomized studies[13,14] with diabetic patients and comparing group care with a control group were identified. One study[13] was published in 2013 from Spain and included 72 patients of average age 63 years. It compared psychoeducational group therapy with individual conventional diabetes education. The program was led by physicians and nurses. One study[14] was published in 2012 from USA and included 288 patients of age 20 years and older. It compared group visit program with a control group with no group visit program. The group visit program involved a multidisciplinary team which included a physician. Both studies reported on HbA1c, blood pressure and lipids and one study[13] also reported on weight and BMI.

*Hypertension*

One relevant RCT[12] comparing group care with usual care in adults with hypertension was identified. It was published in 2012 from Italy and included 188 patients with average age 56 years. Group care involved small group educational meetings with physicians and dietitians. It reported on fasting blood glucose, blood pressure, lipids, weight and BMI.

Guideline

No evidence based guideline specifically on group care for chronic disease management was identified. However, one evidence-based guideline[15] from Australia had recommendations for group education for patients with type 2 diabetes. It was published in 2009. The grading of recommendations and levels of evidence used to develop the guidelines are summarized in Appendix 3.

**Summary of Critical Appraisal**

Strengths and limitations of individual studies are provided in Appendix 4.

Systematic reviews

*Diabetes*

Three systematic reviews[3,5,10] of good quality were identified. In all three systematic reviews the objective, and inclusion and exclusion criteria were stated; a comprehensive literature search was conducted; the study selection process was described, article selection was done in duplicate; data extraction was done either in duplicate or with one reviewer extracting data and one reviewer checking; study characteristics were described; and quality assessment was

conducted. All three systematic reviews stated conflict of interest and there were none. None of the systematic reviews appeared to have assessed publication bias.

Clinical studies

*Diabetes*

One RCT[11] on adults with diabetes clearly stated objectives and inclusion and exclusion criteria. Patient characteristics, interventions and outcomes were described but composition of the care provider teams was unclear. Randomization was conducted appropriately, a sample size calculation was described and the number of patients who discontinued or lost to follow up was reported. P-values were not always reported. Blinding of patients was not conducted, but is not feasible for the interventions under examination. Blinding of outcome assessors was not reported.

Two non-randomized studies[13,14] on adults with diabetes clearly stated the objective and inclusion criteria and described patient characteristics and outcomes. The descriptions of the interventions contained few details. P-values were provided. Sample size calculations were not provided. Non-randomized studies have the potential of selection bias.

The generalizability of these studies is limited as there is uncertainty around whether the study population was representative of all patients who may receive the intervention.

*Hypertension*

One RCT[12] on adults with hypertension clearly stated the objective and described patient characteristics and outcomes. The description of the interventions contained few details. P-values were provided. Inclusion and exclusion criteria were not specified and the number of patients who discontinued or lost to follow up was not reported. Generalizability is limited as it is unclear if the study population was representative of all patients who may receive the intervention.

Guideline

One evidence-based guideline[15] met the inclusion criteria. The scope and purpose were clearly stated, the methods used to develop the guidelines were rigorous, including a description of the literature search and explicit inclusion and exclusion criteria, and the recommendations were clearly stated. The guideline development consortium comprised of representatives from organizations representing primary care physicians, specialist diabetes practitioners and consumers. Conflict of interest of the guideline development members were not specified.

**Summary of Findings**

The overall findings are summarized below and findings from the individual systematic reviews, individual clinical studies and guideline are provided in Appendix 5 and 6.

What is the comparative clinical effectiveness of group care versus one-on-one care for chronic disease management?

*Diabetes*

Three systematic reviews[3,5,10] comparing group care with usual care in adults with diabetes were identified. All three systematic reviews showed that compared to usual care, with group care there was a statistically significant improvement in HbA1c. One systematic review[3] showed that that compared to usual care, with group care there was a statistically significant improvement in blood pressure and QoL and the other two systematic reviews[5,10] showed there was no statistically significant difference in these outcomes. None of the three systematic reviews found any statistically significant difference with respect to lipids. Two systematic reviews[5,10] showed there was no statistically significant difference with respect BMI with the two modalities, and one systematic review[3] did not report on BMI. Two studies included in one systematic review[3] showed that compared to usual care, patient satisfaction with shared medical appointments was not any greater. One study in this systematic review[3] reported that there was no effect on medication adherence.

One relevant RCT[11] comparing group education program with individual education programs for adults with diabetes was identified. A statistically significant improvement in HbA1c levels across groups. Compared with the individual education program, there appeared to be a greater improvement with group education (mean change at 3 months: -0.8% for group care vs. -0.4% for individual education). This finding was statistically significant. Similarly there was a statistically greater improvement in patients with type 2 diabetes, compared to those with type 1.

Two non-randomized studies[13,14] with diabetic patients comparing group care with a control group were identified. Both studies showed that compared to the control, group care resulted in statistically significant improvement in HbA1c. One study[13] showed that compared to control, group care showed statistically significant improvement in weight and BMI.

*Hypertension*

One RCT[12] comparing group care with usual care in adults with hypertension was identified. It showed that compared to control, group care resulted in statistically significant improvement in blood pressure, weight and BMI.

<u>What is the cost-effectiveness of group care compared to one-on-one care for chronic disease management?</u>

No cost-effectiveness study comparing group care with one-to-one care for chronic disease management was identified. However, some cost data were available from two systematic review[3,10] on adults with diabetes and are presented here.

*Diabetes*

Four studies included in the systematic review[3] reported on costs for shared medical appointments (SMA) and usual care for adult with diabetes and findings were mixed. Compared with usual care group, one study showed total health care costs for SMA group did not differ significantly, one study showed significantly higher total costs (inpatient, outpatient, and emergency department costs) for SMA group ($2,886 versus $1,490 per patient over six months, P =0.0003), one study showed significantly lower cost for SMA group ($5,869 versus

$8, 412 per patient, P< 0.05) and one study showed a small increase in diabetes care costs (including costs for staff, medications and transportation) for SMA group ($597 versus $570 over 4 years, P= NR). Three studies on older patients included in the systematic review[3] showed that total costs were lower for the SMA group, but the estimates varied considerably and did not reach statistical significance (mean differences in annual cost ranged between -$178 to -$1,599).

One systematic review[10] on adult diabetic patients mentioned that three of the included studies reported on costs. In one study cost was US$ 384 per person over a 12 month period. In one study, the direct plus indirect cost of providing group care was US$ 2,519 per person, over a 24 month period. In one study, group care required 196 minutes and US$ 756.54 per patient compared with 150 minutes and US$ 665.77 for the control patients for the study period.

What are the evidence-based guidelines for group care for chronic disease management?

No evidence based guidelines specifically on group care for chronic disease management was identified. However, one evidence-based guideline[15] from Australia had recommendations for group education for patients with type 2 diabetes. Diabetes education was recommended to be delivered in groups or individually (recommendation graded as A), but did not recommend one strategy over the other. It was mentioned that education programs should be delivered by a multidisciplinary team and should be comprehensive. Details are provided in Appendix 6.

**Limitations**

Studies available were mostly on diabetes with one study on hypertension. No relevant studies on HIV or COPD were identified.

Details of the interventions were not always provided. Usual care was not described. It was assumed that usual care would entail a one-to one setting with a clinician. This assumption introduces some uncertainty around the relevance of comparisons. However, exclusion of these studies, raises the possibility of excluding studies which may have been relevant to the research questions. Hence results need to be interpreted in the light of these limitations.

Not all studies included in the systematic reviews included a clinician in the group care models.

There was some overlap of studies included in the various systematics reviews. It should be noted that the total number of unique studies contributing to the results were fewer than what may appear to be, based on the number of studies reported for each systematic review.

Not all studies reported all relevant outcomes.

## CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING

Three systematic reviews, one RCT, two non-randomized studies and one guideline were identified on adults with diabetes and one RCT was identified on adults with hypertension. No relevant literature was identified with respect to adults with HIV or COPD.

From systematic reviews and individual study reports, it appears that for adults with diabetes, better glycemic control is achieved with group care compared with usual care. From one

randomized control trial it appears that for adults with hypertension better control of blood pressure is achieved with group care compared with usual care. It should be noted that there were wide variations in group care, it was unclear what comprised usual care and it was assumed that usual care is likely to involve a one-to-one care. Hence, results need to be interpreted in light of these limitations.

No relevant studies on cost-effectiveness were identified.

No evidence based guideline specifically on group care for chronic disease management was identified. One guideline on diabetes management recommended that diabetes education should be delivered in groups or individually.

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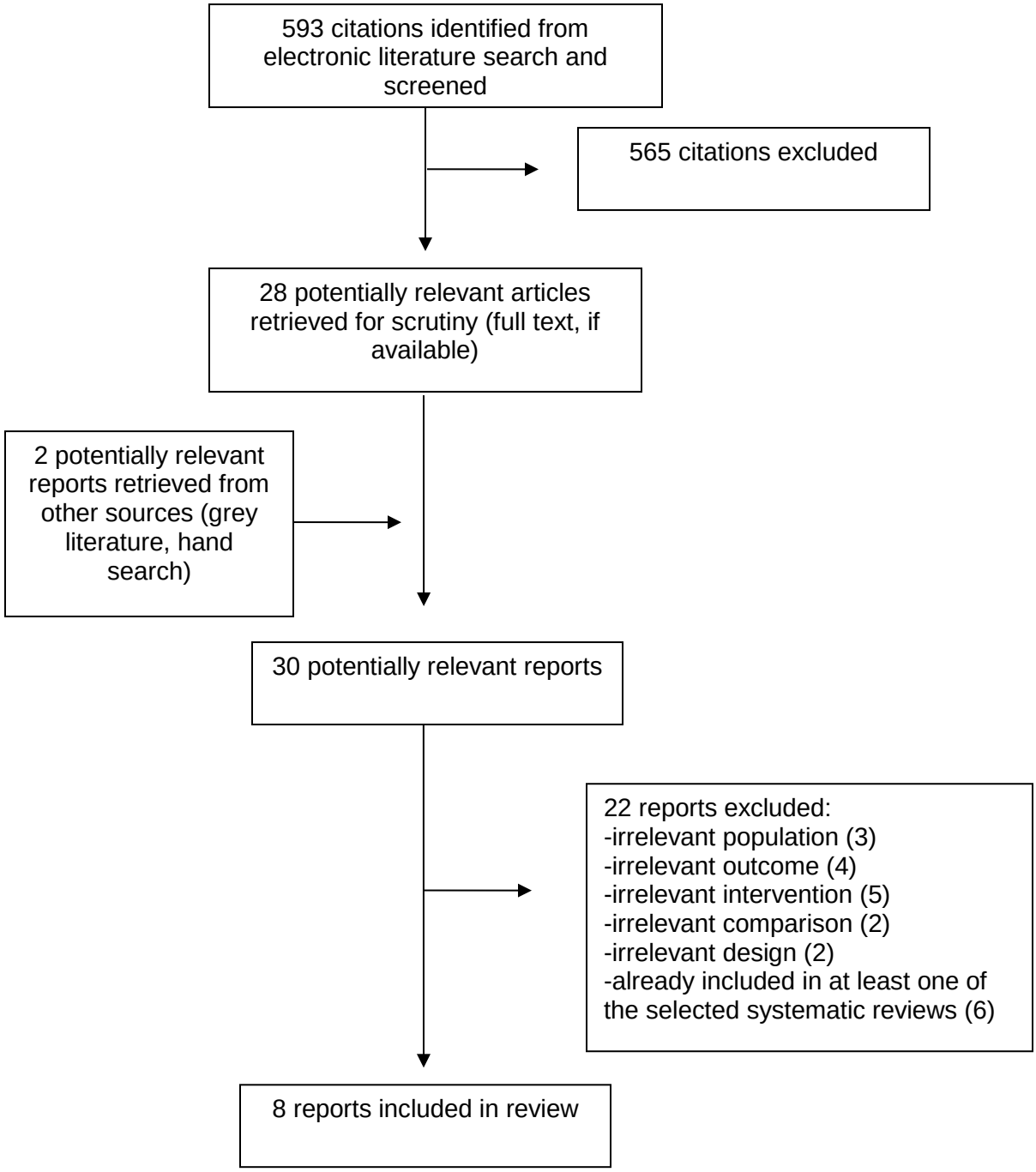
## ABBREVIATIONS

| | |
|---|---|
| BMI | body mass index |
| BP | blood pressure |
| CI | confidence interval |
| COPD | chronic obstructive pulmonary disease |
| DBP | diastolic blood pressure |
| DM | diabetes mellitus |
| DSME | diabetes self-management |
| HbA1c | glycated hemoglobin |
| HDL | high density lipoprotein |
| HRQoL | health related quality of life |
| HIV | human immunodeficiency virus |
| m | month |
| NR | not reported |
| NS | not significant |
| Obs | observational studies |
| QoL | quality of life |
| RCT | randomized controlled trial |
| SBP | systolic blood pressure |
| SMA | shared medical appointment |
| SMD | standardized mean difference |
| SR | systematic review |
| UC | usual care |
| WMD | weighted mean difference |

**APPENDIX 1: Selection of Included Studies**



## APPENDIX 2: Characteristics of Included Studies

| First Author, Publication Year, Country | Study Design, Duration | Patient Characteristics, Sample Size (N) | Intervention | Comparators | Outcomes Measured |
|---|---|---|---|---|---|
| **Systematic reviews and meta-analyses** | | | | | |
| Housden,[5,16] 2013, Canada | SR with 26 studies (13 RCTs and 13 observational studies).<br><br>RCTs:<br>Study durations: 4 months to 4 years<br><br>Obs:<br>Study durations: 3 months to 33 months | Adults with DM<br><br>RCT:<br>Adults with diabetes (except 1 RCT included patients of age:16 - 75 years)<br><br>Age: specifics NR<br><br>Male: 28% to 100% (not specified in 1 RCT)<br><br>N: 58 to 707 (N< 200 for most RCTs)<br><br>Obs:<br>Adults with DM (not specified if all were adults in 5 studies)<br><br>Age: specifics NR<br><br>Male: 26% to 100% (not specified in 3 studies)<br><br>N: 37 to 1998 (N< 200 or most studies)<br><br>(For RCT & obs studies N = 4652; Average age 59.3 years [from studies reporting age information]) | Group medical visit<br><br>( details not available but it was mentioned in the exclusion criteria that studies in which the intervention did not include a health care provider (who could diagnose, prescribe, make referrals,and order laboratory tests) were excluded | UC | HbA1c, blood glucose, BP, lipids, weight, BMI, QoL, |
| Edelman,[3] 2012, USA | SR with19 studies (15 RCTs & 4 Obs).<br><br>Adults with diabetes (13 RCTs & 3 Obs), & | Adults with DM<br>&<br>Older adults with high health care utilization<br><br>Adults with DM<br>Age (years) (median [range]): 60.8 (27 to 69.8) | SMA Intervention team disciplines (number of studies indicated within parenthesis)<br><br>Adults with diabetes | UC | HbA1c, BP, lipids, HRQoL, treatment adherence, patient satisfaction |

| First Author, Publication Year, Country | Study Design, Duration | Patient Characteristics, Sample Size (N) | Intervention | Comparators | Outcomes Measured |
|---|---|---|---|---|---|
| | Older adults with high health care utilization (2 RCTs & 1 Obs)<br><br><u>Adults with diabetes</u><br>Study duration: 6 to 12 m in 4 studies & >12 m in 12 studies<br><br><u>Older adults with high health care utilization</u><br>Study duration: >12 m in 3 studies | Male: 22% to 100%<br><br>N= 2232 in 13 RCTs,<br>N=989 in 3 Obs<br><br><u>Older adults with high health care utilization</u><br><br>Age (years) (median [range]): 74.1 [73.5 to 78.2]<br><br>Male: 34% to 41%<br><br>N= 615 in 2 RCTs,<br>N= 1236 in 1 Obs<br><br>(All studies, N = 5072) | Medical doctor (12), nurse practioner (3), pharmacist (8), registered nurse (10), dietician (4), physical therapist (3), psychologist (3), health educator (3)<br><br><u>Older adults with high health care utilization</u><br><br>Medical doctor (3), nurse practioner (1), pharmacist (1), registered nurse (2), physical therapist (1), psychologist (1) | | |
| Steinsbekk,[10] 2012, Norway | SR (21 RCTs)<br><br>Study duration: 6 m to 2 years | Adults with type 2 DM<br><br>Age (mean): 60 years.<br><br>Male: 40%<br><br>N = 2833 | Group based DSME.<br><br>Intervention team disciplines (number of studies indicated within parenthesis): Physician (4), nurse (10) dietician/ nutritionist (9), pharmacist (1) | Control (Routine treatment [standard of care recommended], remained on a waiting list or received nointervention (i.e. present healthcare was continued) | HbA1c, blood glucose, weight, BMI, BP, lipids, QoL, |
| **Randomized controlled trials** | | | | | |
| Weinger,[11] 2011, USA | RCT, single centre<br><br>Duration: 12 m | Adults with DM (49% being type 1).<br><br>Age: 53±12 years.<br><br>Male: 44% | Group program:<br><br>1.Group structured behavioral arm (5 session manual based, | Individual program:<br><br>Individual arm (unlimited individual nurse and dietician | HbA1c, BMI, lipids, QoL, |

| First Author, Publication Year, Country | Study Design, Duration | Patient Characteristics, Sample Size (N) | Intervention | Comparators | Outcomes Measured |
|---|---|---|---|---|---|
| | | HbA1c: >7.5%<br><br>Duration of DM: 18± 12 years<br><br>N= 222 | educator led structured group intervention with cognitive behavioral strategies)<br><br>2.Group attention control arm (educator led attention control group education program)<br><br>(Educators included clinicians) | education program) | |
| Ferrara,[12] 2012, Italy | RCT, single centre.<br><br>Duration: 1 year | Patients with hypertension<br><br>Age: 56 years.<br><br>Male: NR<br><br>SBP, mm Hg: 134<br>DBP, mm Hg: 84<br><br>N= 188 | Group - educational care (EC)<br><br>Small group meetings with doctors and dieticians | Usual care | Fasting blood glucose, BP, lipids, weight, BMI |
| **Non-randomized studies** | | | | | |
| Cuesta,[13] 2013, Spain | Non randomized study (multi centre)<br><br>Duration: 1 year | Adults with DM (type 2)<br><br>Age: 63.08 years.<br><br>Male: 50%<br><br>HbA1c: 6.98%<br><br>Duration of DM: > 15 years in 25%<br><br>N= 72 | Psychoeducational group therapy (PGT)<br><br>Program led by physicians and nurses | Control (C)<br><br>received conventional diabetes education individually | HbA1c, BP, lipids, weight, BMI |
| Reitz,[14] 2012, USA | Controlled trial, single centre (family practice) | Adults with DM<br><br>Age: 20 years and older<br><br>Male: 93% | Group visit program.<br><br>Program led by team including a diabetes health | Control<br><br>No group visit program | HbA1c, BP, lipid |

| First Author, Publication Year, Country | Study Design, Duration | Patient Characteristics, Sample Size (N) | Intervention | Comparators | Outcomes Measured |
|---|---|---|---|---|---|
| | Duration:<br>7 m | HbA1c <7% in 56%<br><br>N=288 | educator, a nurse, a pharmacist, a resident and an attending physician | | |

BMI = body mass index, BP = blood pressure, CI = confidence interval, DBP = diastolic blood pressure, DM = diabetes mellitus, DSME = diabetes self-management, HbA1c = glycated hemoglobin, HDL = high density lipoprotein, HRQoL = health related quality of life, m = month, NR = not reported, Obs = observational studies, QoL = quality of life, SBP = systolic blood pressure, SMA = shared medical appointment, SR = systematic review, UC = usual care, WMD = weighted mean difference

## APPENDIX 3: Grading of Recommendations and Levels of Evidence

| Guideline Society or Institute or Author, Year, Country | Recommendation | Level of Evidence |
|---|---|---|
| Colagiuri,[15] 2009, Australia | Grade A:<br>"Body of evidence can be trusted to guide practice" (Appendix 6, p. 19 of Overview)<br><br>Grade B:<br>"Body of evidence can be trusted to guide practice in most situations" (Appendix 6, p. 19 of Overview)<br><br>Grade C:<br>"Body of evidence provides some support for recommendation(s) but care should be taken in its application" (Appendix 6, p. 19 of Overview)<br><br>Grade D:<br>"Body of evidence is weak and recommendation must be applied with caution" (Appendix 6, p. 19 of Overview) | Level I:<br>"A systematic review of level II studies" (Appendix 6, p.32 of Overview)<br><br>Level II:<br>"A randomised controlled trial" (Appendix 6, p.32 of Overview)<br><br>Level III-I:<br>"A pseudorandomised controlled trial (i.e. alternate allocation or some other method)" (Appendix 6, p.32 of Overview)<br><br>Level III-2:<br>"A comparative study with concurrent controls:<br>▪ Non-randomised, experimental trial<br>▪ Cohort study<br>▪ Case-control study<br>▪ Interrupted time series with a control group" (Appendix 6, p.32 of Overview)<br><br>Level III-3:<br>"A comparative study without concurrent controls:<br>▪ Historical control study<br>▪ Two or more single arm study<br>▪ Interrupted time series without a parallel control group" (Appendix 6, p.32 of Overview)<br><br>Level IV:<br>"Case series with either post-test or pre-test/post-test outcomes" (Appendix 6, p.32 of Overview) |

## APPENDIX 4: Summary of Study Strengths and Limitations

| First Author, Publication Year, Country | Strengths | Limitations |
|---|---|---|
| **Systematic review and meta-analysis** | | |
| Housden,[5] 2013, Canada | • The objective was clearly stated.<br>• The inclusion and exclusion criteria were stated.<br>• Multiple databases searched, 1947 to 2012. Grey literature and bibliography of selected studies searched.<br>• Study selection described and flow chart presented<br>• List of included studies provided<br>• Article selection was done in duplicate<br>• Data extraction was done by one and checked by another<br>• Characteristics of the individual studies were provided<br>• Quality assessments of studies were conducted<br>• Methods used to combine the findings of studies were appropriate<br>• Conflict of interest was stated and there was none | • List of excluded studies not provided<br>• Not mentioned if publication bias was explored. |
| Edelman,[3] 2012, USA | • The objective was clearly stated.<br>• The inclusion and exclusion criteria were stated.<br>• Multiple databases searched, 1996 to 2011. Bibliography of selected studies searched.<br>• Study selection described and flow chart presented<br>• List of included and excluded studies provided<br>• Article selection was done in duplicate<br>• Data extraction was done by one and checked by another<br>• Characteristics of the individual studies were provided<br>• Quality assessments of studies were conducted<br>• Methods used to combine the findings of studies were appropriate<br>• Conflict of interest was stated and there was none | • Unclear how publication bias was evaluated but it was mentioned that to assess publication bias the authors searched clinicaltrial.gov website for completed but unpublished studies |

| First Author, Publication Year, Country | Strengths | Limitations |
|---|---|---|
| Steinsbekk,[10] 2012, Norway | • The objective was clearly stated.<br>• The inclusion and exclusion criteria were stated.<br>• Multiple databases searched, 2003 to 2008 and for studies published up to 2003, the results of a previous Cochrane review on a similar topic was used. Bibliography of relevant studies and reviews were searched.<br>• Study selection described and flow chart presented<br>• List of included studies provided<br>• Article selection and data extraction were done in duplicate<br>• Characteristics of the individual studies were provided<br>• Quality assessments of studies were conducted<br>• Methods used to combine the findings of studies were appropriate<br>• Conflict of interest was stated and there was none | • List of excluded studies not provided<br>• Not mentioned if publication bias was explored. |
| **Randomized controlled trial** | | |
| Weinger,[11] 2011, USA | • Objectives were clearly stated.<br>• Inclusion/ exclusion criteria were stated.<br>• Patient characteristics, interventions, and outcomes were described.<br>• Randomized using a computer generated block assignment scheme.<br>• Sample size calculations described<br>• Number discontinued or lost to follow up were reported<br>• Analysis specified: linear mixed model for repeat measures over time | • P-values not always provided<br>• Generalizability limited; uncertain as to whether study patients were representative of all patients. |
| Ferrara,[12] 2012, Italy | • Objectives were clearly stated.<br>• Patient characteristics, intervention (EC program), and outcomes were described.<br>• Randomized but method of randomization not described<br>• Analysis specified: T- test and $\chi^2$ – | • Inclusion/ exclusion criteria were not specified.<br>• Details of intervention (usual care) not described<br>• Sample size calculations not described<br>• Number discontinued or lost to |

| First Author, Publication Year, Country | Strengths | Limitations |
|---|---|---|
| | test<br>• P-values provided | follow up were not reported<br>• Generalizability limited; uncertain as to whether study patients were representative of all patients. |
| **Non-randomized study** | | |
| Cuesta,[13] 2013, Spain | • Objectives were clearly stated.<br>• Inclusion criteria were stated.<br>• Patient characteristics, intervention (PGT), and outcomes were described.<br>• Analysis specified: T- test and $\chi^2$ – test<br>• P-values provided | • Exclusion criteria not explicitly stated<br>• Details of intervention (in control group) not described<br>• Not randomized<br>• Sample size calculations not described<br>• Number discontinued or lost to follow up were not reported<br>• Generalizability limited; uncertain as to whether study patients were representative of all patients. |
| Reitz,[14] 2012, USA | • Objectives were clearly stated.<br>• Inclusion criteria were stated.<br>• Patient characteristics, interventions, and outcomes were described.<br>• Analysis specified: Cochran Mantel Haenszel statistics<br>• P-values provided | • Exclusion criteria not explicitly stated<br>• Not randomized, retrospective study using records from family medicine practice<br>• Sample size calculations not described<br>• Generalizability limited; uncertain as to whether study patients were representative of all patients. |
| **Guideline** | | |
| Colagiuri,[15] 2009, Australia | • The scope and purpose were clearly stated.<br>• The guideline development consortium comprised organizations representing consumers, specialist diabetes practitioners and primary care physicians (Diabetes Australia; Australian Diabetes Society; the Australian Diabetes Educators' Association; the Royal College of General Practitioners; and the Diabetes Unit, Menzies Centre for Health Policy, University of Sydney )<br>• Methods used were rigorous | • Organizational barriers were not discussed.<br>• Conflict of interest of guideline development members were not stated |

| First Author, Publication Year, Country | Strengths | Limitations |
|---|---|---|
| | • Economic implications were discussed<br>• Recommendations were clear and specific<br>• The Expert Advisory Group were required to declare their conflict of interest | |

## APPENDIX 5: Main Study Findings and Authors' Conclusions

<table>
<tr><th>First Author, Publication Year, Country</th><th>Main Findings and Authors' Conclusion</th></tr>
<tr><td colspan="2">Systematic reviews and meta-analyses</td></tr>
<tr><td>Housden,[5,17] 2013, Canada</td><td>Main Findings:<br><br>Pooled estimates from RCTs comparing group care versus usual care in patients with diabetes<table><tr><th>Outcome</th><th>No. of RCTs</th><th>WMD (95% CI)</th><th>Heterogeneity ($I^2$)</th></tr><tr><td>HbA1c</td><td>10</td><td>-0.46 (-0.80, -0.13)</td><td>82%</td></tr><tr><td>Systolic BP</td><td>5</td><td>-2.81 (-6.84, 1.21)</td><td>61%</td></tr><tr><td>Diastolic BP</td><td>4</td><td>-1.02 (-2.71, 0.67)</td><td>55%</td></tr><tr><td>Total cholesterol</td><td>3</td><td>0.04 (-0.21, 0.30)</td><td>0%</td></tr><tr><td>HDL</td><td>3</td><td>0.01 (-0.07, 0.10)</td><td>7%</td></tr><tr><td>Triglycerides</td><td>3</td><td>-0.01 (-0.41, 0.38)</td><td>73%</td></tr><tr><td>Weight</td><td>3</td><td>-0.05 (-3.87, 2.88)</td><td>0%</td></tr><tr><td>BMI</td><td>4</td><td>0.05 (-0.90, 1.00)</td><td>9%</td></tr><tr><td>QoL (using Diabetes QoL questionnaire)</td><td>2</td><td>-29.30 (-60.04, 2.05)</td><td>NR</td></tr></table>Results from the observational studies comparing group care versus usual care in patients with diabetes<br>Compared to usual care in group care, HbA1c levels were shown to be statistically significantly improved in 5 studies and not statistically significantly different in 6 studies. One study showed a higher percentage of patients achieving target HbA1c levels in group care compared to usual care but whether the difference was statistically significant was not reported.<br><br>Authors' Conclusion:<br>"Group medical visits for patients with diabetes were found to be effective in terms of reducing HbA1c. The results of our meta-analysis, combined with the other benefits reported by patients and providers, suggest that wider implementation of group medical visits for patients with diabetes will have a positive effect on patient outcomes." P.E642</td></tr>
<tr><td>Edelman,[3] 2012, USA</td><td>Main Findings:<br>Pooled estimates from RCTs comparing SMA versus UC in adults with diabetes<table><tr><th>Outcome</th><th>No. of RCTs</th><th>MD (95% CI)</th><th>Heterogeneity ($I^2$)</th></tr><tr><td>HbA1c</td><td>13</td><td>-0.55 (-0.99 , -0.11)</td><td>93%</td></tr><tr><td>Systolic BP</td><td>5</td><td>-5.22 (-7.40, -3.05)</td><td>0%</td></tr><tr><td>Total cholesterol</td><td>5</td><td>-4.92 (-17.82, 7.97)</td><td>86%</td></tr><tr><td>LDL</td><td>5</td><td>-6.64 (-16.11, 2.82</td><td>79%</td></tr><tr><td>HRQoL (disease specific measure)</td><td>3</td><td>-1.34 (-1.93, -0.74)*</td><td>86%</td></tr><tr><td>HRQoL (general measure)</td><td>2</td><td>-0.84 (-1.64, -0.03)*</td><td>0%</td></tr><tr><td colspan="4">*SMD (95% CI)</td></tr></table></td></tr>
</table>

<table>
<tr><th>First Author, Publication Year, Country</th><th>Main Findings and Authors' Conclusion</th></tr>
<tr><td></td><td>
Results from the observational studies comparing SMA versus UC in adult patients with diabetes<br>
One study showed that compared to control, there was a statistically significant benefit with SMA (P=0.002)<br><br>
Results from RCTs comparing SMA versus UC in older adult with high healthcare utilization<br>
Both RCTs showed that there was no difference in outcomes with the SMA versus UC for overall health status (using the Likert scale) and functional status based on activities of daily living or instrumental activities of daily living. One study assessing HRQoL using a 10-point scale (with 10 indicating highest QoL) showed higher HRQoL with SMA compared to UC (7.2 with SMA versus 6.3 with UC, P=0.002).<br><br>
Both RCTs found significantly higher quality ratings for patient experience with SMA compared to UC (P= 0.019 and P= 0.048).<br><br>
Authors' Conclusion:<br>
"Our review shows that SMAs—typically using closed groups with individual breakouts and opportunity for medication management—improve intermediate clinical outcomes for type 2 diabetes. A smaller literature shows positive effects on patient experience in older adults and the possibility of lower health care utilization. SMAs may be most effective for illnesses such as diabetes that have a phase in which the risk of complication is relatively high while the disease is simultaneously asymptomatic, and in which medication titration and self-management are important. Until further studies are done that allow for comparisons across conditions, the targeting of SMA interventions for chronic conditions other than diabetes will remain speculative." P. 7<br><br>
(SMA – shared medical appointment)
</td></tr>
<tr><td>Steinsbekk,[10] 2012, Norway</td><td>
Main Findings:<br>
Pooled estimates from RCTs comparing DSME versus routine treatment in adults with diabetes
<table>
<tr><th>Outcome</th><th>No. of RCTs</th><th>MD (95% CI)</th><th>Heterogeneity ($I^2$)</th></tr>
<tr><td>HbA1c ( 6 m)</td><td>13</td><td>-0.44 (-0.69, -0.19)</td><td>55.8%</td></tr>
<tr><td>HbA1c ( 12 m)</td><td>11</td><td>-0.46 (-0.74, -0.18)</td><td>64.6%</td></tr>
<tr><td>HbA1c ( 12 years)</td><td>3</td><td>-0.87 (-1.25, -0.49)</td><td>0%</td></tr>
<tr><td>Fasting blood glucose (6 m)</td><td>3</td><td>-0.73 (-2.22, 0.76)</td><td>68.1%</td></tr>
<tr><td>Fasting blood glucose (12 m)</td><td>5</td><td>-1.26 (-1.69, -0.83)</td><td>0%</td></tr>
<tr><td>Weight (6 m)</td><td>3</td><td>-2.08 (-5.55, 1.39)</td><td>48.2%</td></tr>
<tr><td>Weight (6 m)</td><td>4</td><td>-1.66 (-3.07, -0.25)</td><td>0%</td></tr>
<tr><td>BMI (6 m)</td><td>7</td><td>-0.21 (-0.86, 0.43)</td><td>0%</td></tr>
<tr><td>BMI (12 m)</td><td>7</td><td>-0.22 (-1.13, 0.69)</td><td>62.2%</td></tr>
<tr><td>Systolic BP (6 m)</td><td>5</td><td>-0.34 (-5.19, 4.51)</td><td>67.9%</td></tr>
<tr><td>Systolic BP (12 )m)</td><td>2</td><td>-2.61 (-6.74, 1.52)</td><td>0%</td></tr>
</table>
</td></tr>
</table>

| First Author, Publication Year, Country | Main Findings and Authors' Conclusion |
|---|---|

| | | | |
|---|---|---|---|
| Total cholesterol (6 m) | 7 | -0.04 (-0.17, 0.10) | 0% |
| Total cholesterol (12 m) | 4 | 0.07 (-0.09, 0.24) | 0% |
| Triglycerides (6 m) | 7 | -0.16 (-0.35, 0.03) | 0% |
| Triglycerides (12 m) | 4 | 0.03 (-0.42, 0.48) | 79.7% |
| LDL (12 m) | 6 | -0.05 (-0.20, 0.10) | 0% |
| HDL (6 m) | 6 | 0.02 (-0.05, 0.08) | 0% |
| QoL ((6 m) | 3 | 0.31 (-0.15, 0.78)* | 77.1% |
| Treatment satisfaction (6 m) | 2 | 0.65 (0.44, 0.85)* | 0% |
| Treatment satisfaction (12 m) | 3 | 0.39 (0.21, 0.57)* | 0% |

*SMD (95% CI)

**Authors' Conclusion:**
"Group-based DSME in people with type 2 diabetes results in improvements in clinical, lifestyle and psychosocial outcomes." P. 1

(DMSE = diabetes self-management education)

**Randomized controlled trials**

Weinger,[11] 2011, USA

**Main Findings:**

| Results from RCT with adults with diabetes | | | |
|---|---|---|---|
| **Outcome** | **Effect size (mean ± SD)** | | |
| | **Structured behavioral group** | **Attention control group** | **Individual group** |
| HbA1c (%) - baseline | 9.1 ± 1.1 | 9.1 ± 1.2 | 8.9 ± 1.1 |
| HbA1c (%) – 3m | 8.3 ± 1.1 | 8.7 ± 0.9 | 8.5 ± 1.2 |
| HbA1c (%) – 6m | 8.4 ± 1.1 | 8.7 ± 1.1 | 8.6 ± 1.0 |
| HbA1c (%) - 12m | 8.5 ± 1.3 | 8.6 ± 1.3 | 8.7 ± 1.3 |
| HDL- baseline | 50.9 ± 15.2 | 48.9 ± 16.2 | 53 ± 18.7 |
| HDL - 6m | 52.8 ± 19.3 | 49.7 ± 18.2 | 52.4 ± 18.1 |
| HDL – 12m | 52.1 ± 21.4 | 47.6 ± 17.1 | 51.5 ± 18.6 |
| LDL- baseline | 105.8 ± 33.5 | 108.5 ± 35 | 103.4 ± 25.2 |
| LDL - 6m | 108.3 ± 32 | 100.4 ± 26.5 | 108.6 ± 28.8 |
| LDL – 12m | 103.1 ± 29 | 98.7 ± 31.9 | 103.4 ± 34.7 |
| BMI - baseline | 29.1 ± 6.6 | 31 ± 7.3 | 29.9 ± 6.6 |
| BMI – 3m | 28.6 ± 6.3 | 31 ± 7.5 | 29.5 ± 6.4 |
| BMI – 6m | 28.4 ± 5.5 | 31.5 ± 7.3 | 29.5 ± 6.3 |
| BMI – 12m | 28.9 ± 6.7 | 31.3 ± 7.4 | 30.1 ± 6.5 |
| QoL - baseline | 67.0 ± 10.2 | 66.4 ± 10.4 | 67.8 ± 11.4 |
| QoL – 3m | 69.8 ± 10.7 | 70.5 ± 11.3 | 70.5 ± 10.7 |
| QoL – 6m | 68.8 ± 10.8 | 69.4 ± 12.1 | 71.6 ± 11.6 |
| QoL -12m | 69.4 ± 11.3 | 72.2 ± 10.5 | 71.6 ± 11.2 |

<table>
<tr><th>First Author, Publication Year, Country</th><th>Main Findings and Authors' Conclusion</th></tr>
<tr><td></td><td>Authors' Conclusion:<br>"A structured, cognitive behavioral program is more effective than two control interventions in improving glycemia in adults with long-duration diabetes. Educators can successfully utilize modified psychological and behavioral strategies." P.1</td></tr>
<tr><td>Ferrara,[12] 2012, Italy</td><td>Main Findings:
<table>
<tr><th colspan="4">Results from RCT with patients with hypertension</th></tr>
<tr><th>Outcome</th><th>Group - EC</th><th>UC</th><th>P value</th></tr>
<tr><td>Fasting blood glucose, mg/dL - baseline</td><td>98.6 ± 26</td><td>102.7 ± 27</td><td>NS</td></tr>
<tr><td>Fasting blood glucose, mg/dL – 6 m</td><td>103.2 ± 36</td><td>99.9 ± 20</td><td>NS</td></tr>
<tr><td>Fasting blood glucose, mg/dL – 12 m</td><td>99.2 ± 22</td><td>104.9 ± 33</td><td>NS</td></tr>
<tr><td>SBP, mm Hg - baseline</td><td>136.0 ± 17</td><td>132.3 ± 15</td><td>NS</td></tr>
<tr><td>SBP, mm Hg – 6 m</td><td>127.3 ± 12</td><td>133.1 ± 16</td><td>0.05</td></tr>
<tr><td>SBP, mm Hg – 12 m</td><td>124.5 ± 10</td><td>133.5 ± 15</td><td>0.001</td></tr>
<tr><td>DBP, mm Hg - baseline</td><td>85.4 ± 12</td><td>83.3 ± 9</td><td>NS</td></tr>
<tr><td>DBP, mm Hg – 6 m</td><td>80.3 ± 8</td><td>81.9 ± 10</td><td>NS</td></tr>
<tr><td>DBP, mm Hg – 12 m</td><td>77.9 ± 9</td><td>81.3 ± 9</td><td>0.01</td></tr>
<tr><td>Cholesterol mg/dL - baseline</td><td>199.7 ± 36</td><td>195.6 ± 37</td><td>NS</td></tr>
<tr><td>Cholesterol mg/dL – 6 m</td><td>200.4 ± 39</td><td>194.5 ± 33</td><td>NS</td></tr>
<tr><td>Cholesterol mg/dL – 12 m</td><td>183.8 ± 32</td><td>192.1 ± 33</td><td>NS</td></tr>
<tr><td>LDL-C, mg/dL - baseline</td><td>126.8 ± 32</td><td>119.5 ± 36</td><td>NR</td></tr>
<tr><td>LDL-C, mg/dL – 6 m</td><td>126.0 ± 38</td><td>113.3 ± 37</td><td>0.05</td></tr>
<tr><td>LDL-C, mg/dL – 12 m</td><td>110.8 ± 33</td><td>113.3 ± 35</td><td>NS</td></tr>
<tr><td>HDL-C, mg/dL - baseline</td><td>49.1 ± 12</td><td>49.8 ± 13</td><td>NS</td></tr>
<tr><td>HDL-C, mg/dL – 6 m</td><td>49.3 ± 13</td><td>51.6 ± 12</td><td>NS</td></tr>
<tr><td>HDL-C, mg/dL – 12 m</td><td>49.7 ± 12</td><td>52.0 ± 14</td><td>NS</td></tr>
<tr><td>Triglycerides, mg/dL - baseline</td><td>127.1 ± 97</td><td>142.0 ± 82</td><td>NS</td></tr>
<tr><td>Triglycerides, mg/dL -</td><td>142.0 ± 95</td><td>133.5 ± 60</td><td>NS</td></tr>
<tr><td>Triglycerides, mg/dL -</td><td>115.2 ± 48</td><td>134.9 ± 54</td><td>0.01</td></tr>
<tr><td>Weight, kg - baseline</td><td>79.5 ± 15</td><td>80.0 ± 12</td><td>NS</td></tr>
<tr><td>Weight, kg – 6 m</td><td>77.1 ± 14</td><td>80.7 ± 12</td><td>0.05</td></tr>
<tr><td>Weight, kg – 12 m</td><td>76.5 ± 14</td><td>80.9 ± 13</td><td>0.02</td></tr>
<tr><td>BMI - baseline</td><td>28.7 ± 5</td><td>29.6 ± 4</td><td>NS</td></tr>
<tr><td>BMI – 6 m</td><td>27.9 ± 4</td><td>29.9 ± 4</td><td>0.001</td></tr>
<tr><td>BMI -12 m</td><td>27.6 ± 4</td><td>30.0 ± 4</td><td>0.001</td></tr>
</table>
Authors' Conclusion:<br>"The present investigation shows that involving patients in a face-to-face program with doctors and dieticians is a low-cost/benefit procedure able to improve the outcome of the disease and reduce the risk of cardiovascular events, possibly preventing increasing costs and drug therapy"</td></tr>
</table>

<table>
<tr><th>First Author, Publication Year, Country</th><th>Main Findings and Authors' Conclusion</th></tr>
<tr><td colspan="2">Non randomized studies</td></tr>
<tr><td>Cuesta,[13] 2013, Spain</td><td>Main Findings:
<table>
<tr><th colspan="4">Results from a non-randomized study on adults with DM (type 2) showing changes after the intervention period</th></tr>
<tr><th>Outcome</th><th>Psychoeducative group (PGT)</th><th>Control group (C)</th><th>P value</th></tr>
<tr><td>HbA1c (%)</td><td>-0.51 ± 1.07</td><td>-0.06 ± 0.53</td><td>0.044</td></tr>
<tr><td>SBP, mm Hg</td><td>-8.07 ± 17.70</td><td>-2.67 ± 11.12</td><td>0.128</td></tr>
<tr><td>DBP, mm Hg</td><td>-1.93 ± 3.57</td><td>-0.05 ± 1.73</td><td>0.409</td></tr>
<tr><td>Total cholesterol, mg/dL</td><td>-11.69 ± 21.17</td><td>-7.56 ± 76.15</td><td>0.789</td></tr>
<tr><td>LDL-C, mg/dL</td><td>-9.33 ± 17.16</td><td>-8.33 ± 30.89</td><td>0.878</td></tr>
<tr><td>HDL-C, mg/dL</td><td>-1.04 ± 7.71</td><td>-4.74 ± 6.04</td><td>0.037</td></tr>
<tr><td>Triglycerides, mg/dL</td><td>-28.89 ± 49.70</td><td>0.89 ± 56.06</td><td>0.021</td></tr>
<tr><td>Weight, kg</td><td>-1.93 ± 3.57</td><td>0.52 ± 1.73</td><td>0.002</td></tr>
<tr><td>BMI, kg/m$^2$</td><td>-0.71 ± 1.31</td><td>0.08 ± 0.65</td><td>0.001</td></tr>
</table>
Authors' Conclusion:<br>"PGT patients achieved a significant improvement in HbA1C, BMI and CVRF, and outperformed the conventional diabetes education group in achieving the optimal diabetes control objectives. Structural changes in the assistance programs should be considered to introduce these more efficient therapies for diabetes education in primary care."<br><br>(BMI = body mass index, CVRF = cardiovascular risk factor, HbA1c = glycated hemoglobib, PGT = psycho-educational group therapy)</td></tr>
<tr><td>Reitz,[14] 2012, USA</td><td>Main Findings:
<table>
<tr><th colspan="5">Changes between baseline and follow up in % of patients in the group visit program and control (no group visit)</th></tr>
<tr><th rowspan="2">Outcome</th><th rowspan="2">Time point</th><th colspan="2">Percentage of patients with outcome</th><th rowspan="2">P value*</th></tr>
<tr><th>Group visit</th><th>No group visit</th></tr>
<tr><td rowspan="2">HbA1c<7%</td><td>Baseline</td><td>36.5</td><td>42</td><td rowspan="2">0.03</td></tr>
<tr><td>Follow up</td><td>56.4</td><td>45.5</td></tr>
<tr><td rowspan="2">HbA1c<8%</td><td>Baseline</td><td>51.9</td><td>68.2</td><td rowspan="2">0.21</td></tr>
<tr><td>Follow up</td><td>69.2</td><td>69.5</td></tr>
<tr><td rowspan="2">HbA1c>9%</td><td>Baseline</td><td>30.8</td><td>19.5</td><td rowspan="2">0.16</td></tr>
<tr><td>Follow up</td><td>28.2</td><td>18.5</td></tr>
<tr><td rowspan="2">BP<130/80 mm Hg</td><td>Baseline</td><td>34.6</td><td>33.9</td><td rowspan="2">0.91</td></tr>
<tr><td>Follow up</td><td>32.7</td><td>33.5</td></tr>
<tr><td rowspan="2">BP<140/90 mm Hg</td><td>Baseline</td><td>61.5</td><td>64.8</td><td rowspan="2">0.05</td></tr>
<tr><td>Follow up</td><td>75</td><td>60.2</td></tr>
<tr><td rowspan="2">LDL<100mg/dL</td><td>Baseline</td><td>41.2</td><td>47.7</td><td rowspan="2">0.67</td></tr>
<tr><td>Follow up</td><td>55.6</td><td>51.7</td></tr>
<tr><td rowspan="2">LDL<130mg/dL</td><td>Baseline</td><td>74.5</td><td>76.6</td><td rowspan="2">0.17</td></tr>
<tr><td>Follow up</td><td>86.1</td><td>75.9</td></tr>
<tr><td colspan="5">*for change in the proportion of patients between the two intervention groups</td></tr>
</table></td></tr>
</table>

| First Author, Publication Year, Country | Main Findings and Authors' Conclusion |
|---|---|
| | **Authors' Conclusion:**<br>**"**Early experience with the group visit program was encouraging and suggested it may improve patients' management of their diabetes mellitus in an urban, predominantly African American population." P.715 |

BMI = body mass index, BP = blood pressure, DBP = diastolic blood pressure, CI = confidence interval, HbA1c = glycated hemoglobin, HDL = high density lipoprotein, HDL-C = HDL cholesterol, LDL = low density lipoprotein, LDL-C = LDL cholesterol, NR = not reported, NS = not significant, QoL = quality of life, SBP = systolic blood pressure, SMD = standardized mean difference, WMD = weighted mean difference

## APPENDIX 6: Guidelines and Recommendations

<table>
<tr><th>Guideline Society, Author, Country, Year</th><th>Recommendations</th></tr>
<tr><td>Colagiuri,[15] 2009, Australia</td><td>“Diabetes education should be delivered in groups or individually (Grade A)” p. 67<br><br>Practice points<br>“• Diabetes education, where possible, should be delivered by a multidisciplinary team.<br>• Education programs should be comprehensive and should include a component on physical activity<br>• People with diabetes should be encouraged to actively participate in goal setting and decision making<br>• Educational interventions should be followed by regular reinforcement” p. 67<br><br>Evidence statements<br>“• Both group and individual diabetes patient education provided on a face-to-face basis has positive effects in increasing knowledge, life style changes and some aspects of psychological outcomes<br>Evidence Level I<br>• Diabetes education that includes a focus on exercise may be more effective in improving HbA1c<br>Evidence Level I<br>• Diabetes education based on active patient participation may increase its Effectiveness<br>Evidence Level I<br>• Educational interventions delivered over longer periods with a short follow-up and those with regular reinforcement have been shown to be more effective than one-off or short-term interventions<br>Evidence Level I<br>• Diabetes education delivered in primary care, hospital diabetes units, and community gathering places is effective.<br>Evidence Level I<br>• A variety of health care disciplines can successfully provide patient education (ie diabetes educators, nurses, dietitians, pharmacists, psychologists, podiatrists or physicians) but patient education delivered by a multi-disciplinary team may afford better opportunity for improving patient outcomes<br>Evidence Level I” p. 67-68</td></tr>
</table>