

Electronic supplementary material

Note: Abbreviations used in tables and figures are listed in the appendix at the end of this ESM.

Hypotheses

Main hypothesis:

Common methodologies used in systematic reviews do not allow adequate appraisal of complex interventions.

Specified hypotheses:

1. Systematic reviews do not include all relevant publications on the ‘increasing evidence’ of complex interventions.
2. Systematic reviews do not differentiate between core (randomised) controlled trials and replication, transferability and implementation studies.
3. Systematic reviews do not explore the underlying theory of the complex intervention.
4. Systematic reviews dissect complex interventions into their components.
5. Different systematic reviews on identical topics classify the same complex intervention into different categories.
6. Systematic reviews do not consider all relevant patient outcome parameters and single-out components of complex outcomes.

Search strategy

The Cochrane Library, PubMed and the Cumulative Index to Nursing and Allied Health (CINAHL) databases were searched for systematic reviews and meta-analyses published between 1997 and March 2006. This particular time frame was chosen because most of the

key studies relating to the evaluation of the three reference complex interventions were published before 1997. The Health Technology Assessment (HTA) databases of AHRQ (Agency for Healthcare Research and Quality, USA), CCOHTA (Canadian Coordinating Office of HTA, Canada), DIMDI (German Institute of Medical Documentation and Information, Germany), ITA (Institute of Technology Assessment, Austria), MSAC (Medical Service Advisory Committee, Australia), NCCHTA (National Coordinating Centre for HTA, UK), NICE (National Institute for Clinical Excellence, UK), SNHTA (Swiss Network for HTA, Switzerland) and INHTA (International Network of Agencies for HTA) were systematically searched in November 2005.

Our search included the following keywords and Medical Subject Headings (MeSH), if possible: complex intervention^{*}; education [Subheading]; health education [MeSH]; patient education [MeSH]; patient education handout [Publication Type]; self-care; self-management; self management; self NEAR manage^{*}; empowerment; diabetes mellitus, type 2 [MeSH]; diabetes mellitus, type 1 [MeSH]; hypertension [MeSH]. To enhance sensitivity, the searches were not limited to a certain type of publication (e.g. 'reviews'). Reference lists of retrieved reviews were screened for additional publications.

Selection criteria

Reviews were included if complex interventions focusing on patient education programmes of diabetes and hypertension self-management were evaluated. Reviews were excluded if they (1) exclusively reported outcomes such as knowledge, compliance, self-efficacy, satisfaction, or use of healthcare services; (2) exclusively assessed generic outcomes, such as quality of life or coping skills; (3) focused on chronic emotional disorders, such as depression or obesity; and (4) if they had been restricted to a specific target group in terms of implementation trials. The selection procedure is displayed in Fig. 1.

Data synthesis

The following data were extracted from the reviews and assessed according to our hypotheses.

1. Whether selection criteria and search strategies were appropriate for detection of the ‘increasing evidence’ for the three reference programmes (see standard reference lists, ESM Tables 1–3).
2. Which of the publications related to our three reference programmes had been identified and whether the same publications had been included in reviews on identical topics (see standard reference lists, ESM Tables 1–3).
3. Whether theoretical background literature was considered, and whether it influenced the judgment of the quality of a complex intervention.
4. Which active components had been identified and included, and whether the same components had been used in reviews on identical topics. Components identified in the reviews were therefore compared with the predefined components of our three reference programmes (see ESM Tables 4–6).
5. Whether allocation into categories of interventions matched the type of intervention, and whether the same programmes had been allocated to the same or different categories in reviews on identical topics.
6. Whether all relevant patient outcomes had been included, and whether interactions between various outcome measures had been considered. Outcomes explored in the reviews were therefore compared with outcome measures of the reference programmes (see ESM Tables 7–9).

ESM Table 1. Standard reference publication list—phases of development and evaluation of a treatment and teaching programme for type 1 diabetes

Phases of increasing evidence	References
Preclinical/theoretical phase: Definition of treatment goals and methods	[1–3]
Phase 1: modelling: Adaptation of the Geneva programme with adult educationalists; pilot evaluation with two community hospitals	[4–8]
Phase 2: exploratory trials: Before–after trials at tertiary care centres; formative evaluation of knowledge, skills, behaviour	[9–12]
Phase 3: randomised controlled trial: Bucharest–Dusseldorf study at tertiary care centre	[13]
Phase 4: long-term implementation:	
a. Transfer of the programme to community hospitals; controlled trial with follow-up at 1, 2 and 3 years; postgraduate training course for diabetes educators and physicians	[14–16]
b. Implementation in Germany as routine treatment of type 1 diabetes; national working group, quality assurance programme	[17–19]
c. Long-term outcome; 6-year follow-up of approximately 650 patients; observational study of approximately 4,000 patients with a mean follow-up of 10 years	[20–25]
d. Outcome on a population level; cross-sectional and prospective study	[26, 27]
e. Replication in other healthcare systems; prospective controlled study in Moscow, before–after trials in Argentina and Bulgaria	[28–30]
f. Effectiveness as an outpatient programme in diabetes clinics in Austria (before–after trial) and UK (randomised controlled trial)	[31, 32]

ESM Table 2. Standard reference publication list – phases of development and evaluation of a treatment and teaching programme for non-insulin treated type 2 diabetes

Phase of increasing evidence	References
Preclinical/theoretical phase: Empirical evidence for non-drug therapy, urine glucose self-monitoring, foot care; individual treatment goals; paramedics as educators; primary healthcare level	[33]
Phase 1: modelling: Multidisciplinary group; education for small groups of patients in 4-weekly sessions; preparatory course for staff	[34, 35]
Phase 2: exploratory trials: Not performed	
Phase 3: randomised controlled trial: Prospective controlled (non-randomised) trial including eight practices and 114 patients	[36]
Phase 4: long-term implementation:	
a. Replication in other healthcare systems; prospective controlled studies in Austria and Argentina	[37, 38]
b. Implementation in Germany; reimbursement, preparatory training courses; implementation studies	[39–41]
c. Implementation in Latin America; multinational before–after trial	[42]

ESM Table 3. Standard reference publication list – phases of development and evaluation of a treatment and teaching programme for hypertension

Phase of increasing evidence	References
Preclinical/theoretical phase: Empirical evidence for non-drug therapy, blood pressure self-monitoring, participation of patients in treatment decision-making; need for correct blood pressure measurements	[43–45]
Phase 1: modelling: Education for small groups of patients in 4-weekly sessions; preparatory course for staff	[45, 46]
Phase 2: exploratory trials:	
a. Before–after trial with hypertensive type 1 diabetic patients at tertiary care centre	[43]
b. Before–after trial with hypertensive and blind type 1 diabetic patients	[47]
c. Before–after trial with hypertensive type 2 diabetic patients at tertiary care centre	[48]
Phase 3: (randomised) controlled trials:	
a. Primary healthcare level; randomised controlled trial; follow-up at 1.5 and 3 years	[49, 50]
b. Tertiary diabetes care centre; non-randomised controlled trial including hypertensive patients with type 1 diabetes; comparison of usual care with specialised care including participation in the hypertension treatment and teaching programme; follow-up at 5 and 10 years	[51, 52]
Phase 4: long-term implementation: Gradual implementation in Germany since 1993; integral part of the postgraduate training of diabetes educators since 1995	[53]

ESM Table 4. Standard reference component list—treatment and teaching programme for type 1 diabetes

- Implementation at specialised centres
- Written curriculum (objectives, content and methods related to treatment and education)
- Postgraduate training courses for diabetes educators
- Postgraduate training for physicians (participation as guest observers in the 5-day group courses for the patients)
- Education directed towards patients (5-day group course for up to ten patients)
- Teaching materials for patients
- Teaching materials for teachers
- Metabolic self-monitoring (urine, blood glucose, ketones)
- Dietary freedom
- Training of patients to self-adapt insulin dosages
- Treatment of severe hypoglycaemia by relatives with glucagon injection

ESM Table 5. Standard reference component list—treatment and teaching programme for non-insulin treated type 2 diabetes

- Implementation at the primary healthcare level
- Written curriculum (objectives, content, methods related to treatment and education)
- Preparatory course for physicians and assistants
- Group education (for four to six patients)
- Team education by physicians and ‘assistants’
- Sessions every 4 weeks, 90 min each
- Teaching materials for staff
- Teaching materials for patients
- Definition of individual treatment goals
- Glucosuria self-monitoring
- Simple nutritional recommendations
- Trial of withdrawal of oral agents
- Foot care, shoes are taken off during the group education session
- Involvement of patients in monitoring of complications

ESM Table 6. Standard reference component list—treatment and teaching programme for hypertension

- Implementation at specialised centres and at the primary healthcare level
- Written curriculum (objectives, content, methods related to treatment and education)
- Preparatory course for physicians and assistants
- Group education for four to six patients by physicians' assistants
- Sessions every 4 weeks, 90 min each
- Teaching materials for personnel
- Teaching materials for patients
- Validated diagnosis of hypertension (correct blood pressure measurements)
- Blood pressure self-monitoring
- Active involvement of patients in decision-making on therapies
- Self-adaptation of drug therapy by patients

ESM Table 7. Standard reference outcome list—treatment and teaching programme for type1 diabetes

- Primary composite outcome measures:

- HbA_{1c}

- Severe hypoglycaemia

- Dietary freedom, quality of life

- Secondary outcome measures:

- Ketoacidosis

- Hospital days, hospital admissions

- Sick-leave days

- Body weight

- Cost-effectiveness

- Other outcome measures:

- Knowledge

- Accuracy of blood glucose self-monitoring

- Use of glucagon for treatment of severe hypoglycaemia

ESM Table 8. Standard reference outcome list—treatment and teaching programme for non-insulin treated type 2 diabetes

• Primary composite outcome measures:

HbA_{1c}

Body weight

Blood glucose-lowering drug medication

• Secondary outcome measures:

Lipids

Blood pressure

Cost-effectiveness

• Other outcome measures:

Knowledge

Use of urine glucose self-monitoring

Behaviour related to foot care

ESM Table 9. Standard reference outcome list—treatment and teaching programme for hypertension

- Primary composite outcome measures:
 - Diastolic blood pressure (achievement of target values)
 - Systolic blood pressure (achievement of target values)
 - Body weight
 - Blood pressure-lowering drug medication
- Secondary outcome measures:
 - Renal replacement therapy
 - Visual loss
 - Amputation
 - Mortality
- Other outcome measures:
 - Knowledge
 - Accuracy of blood pressure measurements
 - Dietary sodium restriction

ESM Table 10. Reviews excluded from analysis

First author	Objectives	Reasons for exclusion
Chodosh [54]	A systematic review and a meta-analysis of randomised controlled trials were conducted: (1) to assess whether chronic disease self-management programmes result in improved disease-related outcomes; (2) to assess the effectiveness and essential components of self-management programmes for hypertension, osteoarthritis and diabetes mellitus.	Study inclusion only until 1995.
Chyun [55]	To characterise and assess the effect of more recent patient education interventions on glycaemic control as represented by GHb in type 1 and type 2 diabetes.	Short (secondary) publication of Ellis [56].
Ebrahim [57]	A systematic review and meta-analysis of randomised controlled trials to estimate the effects of the following non-pharmacological interventions on blood pressure: salt restriction, weight reduction, stress management, exercise and alcohol reduction.	Study inclusion only until 1996. In addition, only interventions analysed that targeted lifestyle modification. No self-management programmes considered.
Elasz [58]	A taxonomy was provided that should prove helpful, both in the conceptual design of diabetes educational interventions and in the reporting of those interventions. An application of this taxonomy to 30 diabetes educational randomised controlled trials is presented to highlight the extent of variation in diabetes educational interventions.	Primarily methodological paper.
Fain [59]	Review to summarise the accumulated knowledge in the area of diabetes patient education research and to highlight important issues that research has left unanswered.	No systematic review.
Kulzer [60]	Report on experience with the diabetes coaching.	No systematic review.
Küver [61]	Assessment of patient education programmes was conducted in two steps by using defined criteria of the coordinating committee, the head association of the statutory health insurances and the respective medical associations: (1) to check whether the programme had a structured teaching concept and whether all requirements for education with respect to a given disease had been taken into account; (2) to review the strengths and weaknesses of the programmes.	No systematic review.
Sarkisian [62]	Systematic review to identify and examine published self-care interventions designed to improve glycaemic control or quality of life among older African American or Latino adults.	Only adult African Americans and Latinos were included. Therefore, publications of reference programmes can not be identified. A review with such a restricted target group is limited in identifying publications referring to increasing evidence. If an included publication refers to an implementation trial of an intervention, efficacy trials of the same intervention conducted in a

		different target group will not be identified.
Schroeder [63]	Systematic review of randomised controlled trials to determine the effectiveness of interventions to increase adherence to blood pressure-lowering medication.	Only included interventions aimed at improving adherence to blood pressure-lowering medication.
Schroeder [64]	Systematic review of randomised controlled trials to determine the effectiveness of interventions aiming to increase adherence to blood pressure-lowering medication in adults with high blood pressure	Only included interventions aimed at improving adherence to blood pressure-lowering medication.
Steed [65]	Systematic review to examine the impact of self-management and psychological interventions for diabetes on psychosocial outcomes including depression, anxiety, adjustment and quality of life.	Only psychosocial (no clinical) outcomes.
Vermeire [66]	Systematic review to assess the effects of interventions for improving adherence to treatment recommendations in people with type 2 diabetes mellitus.	Only included interventions aimed at improving adherence to medical treatment.
Weingarten [67]	Systematic review and meta-analysis to evaluate the published evidence regarding the characteristics and effectiveness of disease management programmes.	Focus on disease management programmes.

ESM Table 11. Data synthesis in the included systematic reviews

First author	Type of data synthesis	Outcomes assessed
Boulware [68]	1. Meta-analysis: overall summary effects across prespecified categories ^a of interventions according to study characteristics:	
	(1) single-intervention group analysis (n=12): The intervention was part of a study comparing more than one intervention, but the remaining interventions of the study that did not meet the inclusion criteria were excluded from analysis.	DBP ^b ; SBP ^b ; hyp con
	(2) between-intervention group analysis (n=7): The intervention group was compared with a control group that also contained an intervention meeting the eligibility criteria or usual care	DBP ^b ; SBP ^b ; hyp con
	2. Meta-analysis: subgroup analysis according to active components: articles (n=5) focusing on counselling by categorising articles by publication year; leader of intervention; duration of intervention; age of participants; percentage of white participants; and quality scores of articles	DBP; SBP
Corabian [69]	1. Qualitative assessment of quantitative studies within categories according to study characteristics: meta-analyses; primary studies on effectiveness; comprehensive and systematic reviews; Canadian studies	Kno; GHb; BG; compliance; psyc outc BW; s-c skills (insulin injection, urine testing); UG; insulin; chol; BP; hosp; BMI; SBP; visits ophth; visits pod; satisf; visits; hosp; DBP; attrition; insulin start; HDL; TG; smok; wellb; DM manage less dem; lipids; feet exam; oph exam; QoL; OHG; HLOC-Scores; FHS; over nut; fat; rat fatty acids; hypoglyc; BGSM; psy wellb; diab symp; exerc; diab QoL; satisfy; worry; hlth bel; supp beh; non-supp beh; man skills; diab kno
	2. Qualitative assessment of qualitative research to identify factors that potentially influence the impact of diabetes care and education regimen	Diabetes control outcomes in the long term: GHb; diabetes-related hosp; QoL
Deakin [70]	1. Meta-analysis: overall summary effects across prespecified categories of interventions according to study characteristics ^c : short-term follow-up (4–6 months); medium-term follow-up (6–12 months); long-term follow-up (≥12 months)	mrt; GHb; FBG; BW; BMI; SBP; DBP; TG

	2. Studies are descriptively summarised according to outcome measures ^d	GHb; FBG; BW; BMI; Diab kno; SBP; DBP; TCh; TG; empowerment s-eff; QoL; s-manage; treatment satisf; co-eff; com
	3. Meta-analysis: overall summary effects across prespecified category: follow-up term (12–14 months)	GHb; FBG; BW; BMI; diab kno; DBP; TCh; TG
	4. Meta-analysis: overall summary effects across prespecified category: follow-up term 2 years	GHb
	5. Meta-analysis: subgroup-analysis according to ethnicity across specified categories of interventions: short-term follow-up (4–6 months); long-term follow-up (12–14 months)	GHb
	6. Meta-analysis: subgroup analysis according to theoretical model; summary effect size calculated only across two studies, excluding those studies causing heterogeneity (only short-term follow-up [4–6 months])	GHb
	7. Qualitative subgroup analysis according to the theoretical model ^d	GHb
	8. Meta-analysis: subgroup analysis according to the educator (nurse, dietitian or a combination of both); summary effect size calculated only across five studies, excluding those studies causing heterogeneity (only long-term follow-up [12–14 months])	GHb
	9. Meta-analysis: subgroup-analysis according to primary care interventions across specified categories ^c : short-term follow-up (4–6 months); long-term follow-up (12–14 months)	GHb
	10. Qualitative subgroup analysis according to primary and secondary care ^d	GHb
	11. Qualitative subgroup analysis according to the number of participants in the group education programme for larger groups (16–18 participants)	GHb
Ellis [56]	1. Meta-analysis: overall summary effects	GHb ^e

	2. Meta-analysis: subgroup analysis in categories of interventions according to active components: type of delivery; content; teaching method; intensity of intervention	GHb ^e
Fahey [71, 72]	Meta-analysis in prespecified categories according to the types of intervention: self-monitoring education; education intervention directed at patients; education intervention directed at health professionals; health professional lead care; organisational interventions; appointment reminder systems	Mean DBP/SBP, changes from baseline (not for appointment reminder systems); BP-cont (not for appointment reminder systems); lost clin (only for appointment reminder systems)
Gary [73]	1. Studies are descriptively summarised according to study characteristics and outcome measures	BW; BMI; BP; lipids
	2. Meta-analysis: overall summary effects	GHb; FPG; BW
	3. Meta-analysis: subgroup analysis in categories of interventions according to active components: interventionist (physicians; nurse; dietitian); mode of instruction (individual; group); topic of instruction (diet; medication; exercise; blood glucose self-monitoring)	GHb
Jack [74]	Studies are descriptively summarised according to outcome measures	Short term outcomes (GHb; BW; BMI; BP; TCh; TG; FPG; IGT); intermediate outcomes (diab kno; exerc; s-c bh; diet hab; cl s use; s esteem; soc; hlth bel)
Loveman [75]	Studies are descriptively summarised within categories according to types of intervention: patient education for self-management in type 1 diabetes; patient education for self-management in type 2 diabetes; patient education for self-management in type 1 or type 2 diabetes	Outcomes considered within clinical effectiveness sections: diabetes control (GHb; BP; lipids; BMI; BW; OHG); diabetes endpoints (hypoglyc; ketoacid; retin; nephro; hosp QoL and cognitive measures (QoL; attit; diab kno)
Newman [76]	1. Studies are descriptively summarised within categories of interventions according to types of intervention: group based; problem solving; stress management; cognitive behavioural; expressive writing; programme delivered by mail; combination of education with an action plan; exercise	GHb; mon glycol; exerc; Fav train cop; pain; PEF
	2. Qualitative analysis to examine whether particular outcomes were focused upon; those in each study were classified into seven broad categories.	cl lab ass; s-rep fu; psy wellb; QoL behav; use hc

Norris [77]	Studies are descriptively summarised within categories of primary educational focus: knowledge or information (didactic education or collaborative education); lifestyle behaviours; skill development; coping skills	Outcome categories: kno; hlth attit; s-c skills; lifesty beh; psy outc; QoL; glyco; CVD risk; CVD; econ
Norris [78]	1. Meta-analysis: subgroup analysis according to study characteristics by the length of follow-up (follow-up ≥ 4 months after end of the intervention; follow-up 1–3 months after end of the intervention; follow-up during or immediately after the intervention)	Net change GHb
	2. Meta-analysis: Regression analysis to investigate potential treatment interactions: patient age; baseline GHb; treatment (insulin, diet only, oral hypoglycaemic agents); number of contacts; total contact time; time frame over which the intervention was delivered; group vs individual presentation of the intervention; who delivered the intervention; educational focus (lifestyle, skills, knowledge, coping skills or mixed); follow-up in months; setting in the US vs other countries	Net change GHb
Norris [79]	1. Meta-analysis: overall summary effect sizes for evidence on effectiveness, summarised for each setting (community gathering places, home, camps, schools and worksite) ^f	kno; prob solv; SMBG; md admin (incl. insulin); s-eff; hlth bel; mood; attit; cp sk; self hlth; loc con; prc barredh; reg source care; reg visits; av pat educ; md adher; screen foo ey; mon glycol; mon CVD risk; GHb; BG; BW; lipids; BP; micralb; retin; phys act; diet; smok; depr; anx; workd lo; restr duty; peri vascd; CHD; cerVD; decr vis; peri neurop; ren dis, periodont; foot les; amput; mort; disab; outp utili; hosp; costs, co-eff and co-ben; neon morb mort; mat morb
	2. Qualitative analysis: assessment within categories: applicability; other positive and negative effects, economic efficiency; barriers for implementation; summarised for each setting (community gathering places, home, camps, schools and worksite)	Outcomes not specified
	3. Additional descriptive information on positive and negative effects, applicability, economic efficiency and barriers for implementation are described for each study	kno; probl solv; SMBG; md admin (incl. insulin); s-eff; hlth bel; mood; attit; cp sk; self hlth; loc con; prc barredh; reg source care; reg visits; av pat educ; md adher; screen foo ey; mon glycol; mon CVD risk; GHb; BG; BW; lipids; BP; micralb; retin; phys act; diet; smok; depr; anx; workd lo; restr duty; peri vascd; CHD; cerVD; decr vis; peri neurop; ren dis, periodont; foot les; amput; mort; disab; outp utili; hosp; costs, co-eff and co-ben; neon morb mort; mat morb
Renders [80]	1. Qualitative analysis: assessment of whether the effectiveness of the interventions are influenced by prespecified characteristics: types of intervention (professional,	glyco; BP; TG; BMI; wellb; ser footl;dc skin; GHb; ord BGSM; freq GHb; oph exam; freq BP; freq lipids; freq BW; kpt sched vis; rec exam; hosp; chol;

organisational or financial); source of information (e.g. whether the intervention was carried out or supported by a professional organisation); type of diabetes

shed vis; compliance; LEA; att rates; lipids; creat; fundus; foot exam; BG; BW; compliance diab eye care; cml mon recomm followed (non-specified groups of outcomes: biochemical or functional outcomes; practice performance; compliance rates of care providers; patient and process outcomes; recording of patient outcomes)

2. Additional descriptive information on effects are described for each study categorised according to types of intervention:

(1) professional

ACC; ann chol; ann diab educ; ann influ vacc; ann nutr educ; ann retin exam; ann urine test; att pract 12 m; BG; BGSM; BMI; BP; BW; callus; chro glyc; co ACC; compl phys exam; DBP; dc skin; diet; diet inq; dur kno diab; educ; FBG; feet exam; foot c; foot cellul; foot deform; foot les; fundus; fung ni; fung si; gen wb que; GHb; ord BGSM; Freq GHb; hlth surv; idig cr fiss myco; idig mace; impr tr nails; influ vacc; ing nails; meas of compl; oph exam; OHG; pulse; ren eval; ret eval; SBP; sens exam; ser footles; smok; TCh; TG; toenails; ulc; visits

(2) organisational

GP contact; cons contact; let GP cons; let cons GP; creat; prot; fruct; chol; HDL ;FPG; hosp dis; outp phys vis; outp non-phys vis; kpt sched vis; presc re f;w-i vis;t ot cont; vis fail; sched vis; visual ac; oph exam; rec exam; BG; GHb; BP; freq BP; freq lipids; freq BW; TCh; TG; BW; FBG; BMI; SBP; DBP; hosp; fundus; feet exam

(3) professional and organisational in combination

dip; prot; LDL; s-rep hlth; compl cl rev; lw extr care; hypertens; BP taken; last BP rd; pall; alb; UGSM; att rates; PG; without diab rev; diab ppat pdoct; nr alb test; nr PG test; nr GHb test; ref chiropod; rout diab c vis; peri pulses; neuro exam; dietitian; chiropod; compliance; compliance ADA; compliance diab eye care; nr outp vis; LEA; diab templ; cl vis metab cntrl; diet recomm followed; cml mon recomm followed; tak lip low med; LDL;FPG; feet exam; costs; fundus; visual ac; BMI; BGSM; BP; BG; TG; TCh; creat; fundus; retin; FBG; microalb; SBP; DBP; BW; TG; TCh; HDL; GHb; HDL; BW

3. Qualitative analysis: assessment of whether the effectiveness of the interventions is influenced by active components of the programmes:

	(1) professional (professional interventions combined with patient education; postgraduate education of healthcare professionals combined with local consensus procedures and/or reminders and/or audit and feedback; education for both healthcare professionals and patients)	glyco; foot les; GHb; BMI; TG; sched vis; oph exam; TCh; non-specified groups of outcomes (patient-orientated outcomes; process-orientated outcomes)
	(2) organisational (patient education and learner-centred counselling; nurse or pharmacist assumed part of the physician's role and provided diabetes care in combination with a patient-orientated intervention; multidisciplinary teams in combination with arrangements for follow-up and patient education)	glyco; foot les; GHb; BMI; TG; sched vis; oph exam; TCh; non-specified groups of outcomes (patient-orientated outcomes; process-orientated outcomes)
	(3) professional and organisational in combination (healthcare professionals received education through educational materials, educational meeting or both; arranging follow-up, audit and feedback, or generating reminders, or a combination; including patient education; involvement of nurses in diabetes management; including a telecommunication system)	glyco; foot les; GHb; BMI; TG; sched vis; oph exam; TCh; non-specified groups of outcomes (patient-orientated outcomes; process-orientated outcomes)
Renders [81]	1. Qualitative analysis: effects are described for each study categorised according to types of intervention:	
	(1) professional	glyco; BP; TCh; BMI; alb; wellb; macr com; micr com; BW; prot; com; visits; educ; hlth surv; att rates
	(2) organisational	glyco; BP; TCh; BMI; micr com; hosp; att rates; BW
	(3) professional and organisational in combination	glyco; BP; TCh; BMI; s-rep hlth; BW; micr com; hosp; QoL; creat; alb; att rates; com
	2. Qualitative analysis: assessment whether the effectiveness of the interventions are influenced by active components of the programmes	
	(1) professional (professional interventions combined with patient education; postgraduate education of healthcare professionals combined with local consensus procedures and/or reminders and/or audit and feedback; education for both healthcare professionals and patients)	glyco; foot les; GHb; BMI; TG; sched vis; oph exam; TCh; non-specified groups of outcomes (patient-orientated outcomes; process-orientated outcomes)
	(2) organisational (patient education and learner-centred counselling (nurse or	glyco; foot les; GHb; BMI; TG; sched vis; oph exam; TCh; non-specified

	pharmacist assumed part of the physician's role and provided diabetes care in combination with a patient-orientated intervention; multidisciplinary teams in combination with arrangements for follow-up and patient education)	groups of outcomes (patient-orientated outcomes; process-orientated outcomes)
	(3) professional and organisational in combination (healthcare professionals received education through educational materials, educational meeting, or both; arranging follow-up, audit and feedback, or generating reminders, or a combination; including patient education; involvement of nurses in diabetes management; including a telecommunication system)	glyco; foot les; GHb; BMI; TG; sched vis; oph exam; TCh; non-specified groups of outcomes (patient-orientated outcomes; process-orientated outcomes)
Warsi [82]	1. Meta-analysis: overall summary effect sizes only for evidence on efficacy for each outcome	Diabetes-related outcomes (GHb; FBG); hypertension-related outcomes (SBP; DBP)
	2. Meta-analysis: regression across chronic diseases to identify which components were associated with greater clinical benefits. The dependent variable was the summary effect size across all diseases. Indicator variables were each disease and its endpoint. Independent variables were percentage of dropouts, number of educational sessions, programme duration, programme format, education mode (face-to-face education), and reference to a behavioural science model	Diabetes-related outcomes (GHb; FBG); hypertension-related outcomes (SBP; DBP)

^a Some interventions (n=3) are allocated into both categories; ^bchange at follow-up, difference between treatment groups, and difference in change between treatment groups at follow-up; ^c studies were excluded from analysis if heterogeneity was substantial; ^d if there was substantial heterogeneity between studies, meta-analysis was not performed; ^e changes from baseline; ^f the effectiveness of interventions for type 1 and type 2 diabetes was examined separately

Abbreviations used are defined in the appendix at the end of the ESM

ESM Table 12. Literature searches and detection of the reference studies in the included systematic reviews

First author	Searched databases/journals	Additional sources of study collection	Reference studies that should be identified under the selection criteria	Reference studies identified	Reference studies included	Reference studies excluded	Reasons for exclusion
Boulware [68]	1970 to July 1999: MEDLINE, PsycINFO, CINAHL, HealthSTAR, Sociologic Abstracts, Social Science Abstracts, El Compendex, Current Contents	References; expert contact	[43, 49, 51, 53]	[49]	[49]	–	–
Corabian [69]	1966 to May 2000: MEDLINE, CINAHL, HealthSTAR, EMBASE, ERIC PsycINFO, Cochrane DB, ISTAHC	n/a	[36, 38]	[38]	[38]	–	–
Deakin [70]	Until Jan/Feb 2003: Cochrane DB, MEDLINE, CINAHL, ERIC ASSIA, AMED, PsycINFO, EMBASE, LILACS, NHS EED, BEI, BNI, WOS, Index of Scientific and Technical Proceedings, National Research Register, Digital Dissertation Abstracts	Conference proceedings; reference lists; expert contact; some authors contacted	[36–38]	[36–38]	[36–38]	–	–
Ellis [56]	MEDLINE, CINAHL, HealthSTAR, ERIC, Science Citation Index, PsycINFO,	n/a	[13]	None	–	–	–

CRISP, American
Association of Diabetes
Educator DB

Fahey [71;72]	Until August 2004: Cochrane (CCTR), MEDLINE, EMBASE	Reference lists of all retrieved articles were screened; experts of the field were contacted about other relevant trials or unpublished material	[49, 51]	[49, 52]	[49]	[52]	non RCT
Gary [73]	MEDLINE (1966–1999) Cochrane Database	Journal <i>Diabetes Care</i> (1990–1999); references from experts and colleagues; previous meta-analyses' reference lists; published abstracts from ADA (1997–1999)	[37, 38]	None	–	–	–
Jack [74]	MEDLINE (supplemented by Ingenta) (since 1995)	n/a	[37, 38, 41, 42]	None	–	–	–
Loveman [75]	MEDLINE (1980–2002), EMBASE (1980–2002), CINAHL (1980–2002), Cochrane DB (1980–2002), National Research Register (1980–2002), Science Citation Index (1980–2002), Web of Science Proceedings (1990–2002), PsycINFO (1980–2002), ERIC (1980–2002), DARE (1980–2002),	Bibliographies; experts contacted; Diabetes UK website	T1DM [13, 28] T2DM [36, 38] [49, 51]	T1DM [13, 20, 23, 28, 32] T2DM [36, 38] [49, 52]	T1DM [13, 28]; [32] (assessed only for cost-effectiveness analysis) T2DM [36, 38] [49]	T1DM [20, 23] [52]	Study design (no control group)

BIOSIS (1980–2002)

Newman [76]	MEDLINE, PsycINFO, EMBASE	n/a	None	–	–	–	–
Norris [77]	MEDLINE (1980 to Dec 1999), ERIC (1980 to Dec 1999), Nursing and Allied Health Database	Journals: <i>Diabetes Care, Diabetes Educator, Diabetes Research and Clinical Practice, Diabetologia, Diabetic Medicine</i>	None	–	–	–	–
Norris [78]	MEDLINE (1980 to Dec 1999), ERIC (1980 to Dec 99), CINAHL (since 1982)	Journals: <i>Diabetes Care, Diabetes Educator, Diabetes Research and Clinical Practice, Diabetologia, Diabetic Medicine</i> , reference list; consultation of experts in the field of diabetes education	None	–	–	–	–
Norris [79]	MEDLINE (1966 to Dec 2000), ERIC (1966 to Dec 2000), CINAHL (1982 to Dec 2000), HealthSTAR (1975 to Dec 2000), CDP (1977 to Dec 2000), CHID (1985 to Dec 2000)	Reference list; consultation of experts (listed in the Acknowledgements)	^a	–	–	–	–
Renders [80]	MEDLINE (1966–1999), EMBASE (1980–1999), CINAHL (1982–1999), Cochrane DB (Issue 4,1999)	Cochrane diabetes group register; references in relevant reviews and studies	T1DM [13–16, 28, 31] T2DM [36–38]	[37]	[37]	–	–

Renders [81]	MEDLINE (1966–2000), EMBASE (1980–2000), CINAHL (1982–2000), Cochrane DB (1999)	Cochrane diabetes group register; references in relevant reviews and studies	T1DM [13–16, 28, 31]			–	–
			T2DM [36–38]	[37]	[37]		
Warsi [82]	MEDLINE (1964–1999), HealthSTAR (1964–1999)	Reference list of each article identified	T1DM [13, 28]	T1DM [13, 28]	T1DM [13, 28]	–	–
			T2DM [36–38]	T2DM [36]	T2DM [36]		
			Hypertension [49–51]	Hypertension [49–51]	Hypertension [49– 51]		

^a The review excluded ‘clinical settings’ not clearly defined; it is therefore not traceable whether or why reference programmes were not identified or not included

Abbreviations used are defined in the appendix at the end of the ESM

ESM Table 13. Active components/key elements of the reference programmes

First author	Methods used to analyse the influences of active components on outcomes	Active components of education programmes assessed	Active components of the reference programmes reported in the review	Active components of the reference programmes assessed according to its influence on efficacy
Boulware [68]	Subgroup analysis according to active components	Interventionist (physicians; nurse; pharmacist)	Active components of the reference programme not included in subgroup analysis	None
	Active components being tabularised and described: intervention (counselling, monitoring, training); interventionist (physicians, nurse, pharmacist, counsellor, social worker, trained personnel, self, assistants, nurse practitioner); programme duration; number of contacts	None	Intervention (counselling, monitoring, training); interventionist (physicians, assistants, self); programme duration (60–90 min); number of contacts (four consecutive weeks)	None
Corabian [69]	Key characteristics of the education programmes are tabularised	None	Interventionist (physician); topic of instruction (self-care; diet; physical activity; weight reduction rather than drug therapy; normal range for serum glucose; symptoms of hypo-/hyperglycaemia; renal threshold for glucose; self-monitoring; glucosuria with dry chemistry and record of the value; recommendation to go on a low-energy diet and stop OHG intake for 1 week; information and discussion on effect of obesity on insulin resistance; advantages of weight reduction; how to plan individual meals; foot care; basic rules to be applied on sick days; minimal clinical and biochemical tests for control and follow-up); programme duration; patients encouraged to	None

attend accompanied by spouse; used media (coloured flip charts; teaching files; photographs; question cards; individual log books for self-monitored data; questionnaire for evaluation and documentation of patient diabetes-related knowledge)

Deakin [70]	1. Subgroup analyses (meta-analyses) according to components of the education programmes	Interventionist (nurse; dietitian; combination of both); theoretical model		Implementation at the primary healthcare level [37, 38]; theoretical model [37, 38]
	2. Qualitative analysis according to components of the education programmes	Number of participants (only for 16 to 18 participants); primary and secondary care; theoretical model		None
	3. Active components are tabularised and partly described	None	Identified in [36]: Interventionist (physician assistants); implementation at the primary healthcare level; group education (4–6 patients); 4-weekly sessions (90–120 min/total 6–8 h); including family and friends (“unclear”)	None
			Identified in [37, 38]: Interventionist (physician and office staff); implementation at the primary healthcare level; group education (4–8 patients); 4-weekly sessions (90–120 min/total 6–8 h); including family and friends (“no”); theoretical model	None
		Identified in [38]: Interventionist (physician); implementation at the primary healthcare level; group education (5–8 patients); 4-weekly sessions (90–120 min/total 6–8 h); including family and friends	None	
Ellis [56]	Subgroup analysis	Type of delivery; content; teaching method; intensity of intervention	None ^a	None ^a

Fahey [71, 72]	-	None	Group education (four to six participants); four consecutive meetings lasting 60–90 min; provided by physician assistants; physicians (8 h) and assistants (20 h) in intervention practices attended preparatory course; responsibility including blood pressure self-monitoring; confirming diagnosis and treatment by using home BP measurements; emphasis on non-pharmacological treatment	None
Gary [73]	Subgroup analysis	Interventionist (physicians, nurse, dietitian); mode of instruction (individual, group); topic of instruction (diet, medication, exercise, blood glucose self-monitoring)	None ^a	None ^a
Jack [74]	Studies descriptively analysed according to their educational methods	Diabetes patient education; residential diabetes education course; support groups; forums on diabetes; rewards; special events; incentive programmes; one-on-one education using pictorial flashcards; exercise; diet; health and fitness information; cooking demonstrations; smoking cessation; grocery and restaurant tours; traditional herbal medicine (lily root); culturally responsive lifestyle intervention	None ^a	None ^a
Loveman [75]	Studies descriptively analysed according to the main components of the education programmes	Who delivered the intervention (physicians, physician assistants, dietitians, nurses, psychologists, nutritionists, researchers); group education; individual education; telephone contact; programme duration; number of contacts; self-management with intensified treatment; self-management with simple rules for insulin adjustment but conventional treatment; self-management education with intensified treatment plus SMBG; self-management education with intensified treatment plus UGSM; team-provided group education; minimal	Type 1 diabetes reference programme: self-management with intensified treatment; group education; programme duration (5 days); who delivered the intervention (nurses, two physicians); self-management with simple rules for insulin adjustment but conventional treatment; self-management education with intensified treatment plus SMBG; self-management education with intensified treatment plus UGSM	Type 1 diabetes reference programme: programme duration; self-management with intensified treatment

instruction; behavioural programme; group exercise education; group diet education; diet behaviour modification; diet weight control; diet SMBG; included friends and family; culturally appropriate diet and exercise education; computer assessment; educational material mailed to patients home; self-management education plus support

Type 2 diabetes reference programme: self-management education; group education; who delivered the intervention (physicians, physician assistants); programme duration

None

Newman [76]	Studies descriptively analysed according to educational approaches	Educational approaches of diabetes self-management: group-based; problem solving; stress management; cognitive behavioural therapy; expressive writing; programme delivered by mail	None ^a	None ^a
Norris [77]	Studies descriptively analysed according to key components of the intervention	Reinforcement and repetition of the intervention; intensity of the intervention; skills teaching and training; intensive counselling; group support interventions; teaching content and focus (dietary, physical activity, foot lesions, blood glucose self-monitoring, self-management); methods of delivery (didactic, collaborative); educational tools (computer, videotapes)	None ^a	None ^a
Norris [78]	Regression to investigate potential treatment interactions	Treatment (insulin, diet only, oral hypoglycaemic agents); number of contacts; total contact time; time frame over which the intervention was delivered; group vs individual presentation; who delivered the intervention; educational focus (lifestyle, skills, knowledge, coping skills or mixed)	None ^a	None ^a

Norris [79]	Qualitative assessment and analysis of overall summary effects within categories of components summarised for each setting	Settings: community gathering places, home, camps, schools and worksite	None ^a	None ^a
Renders [80]	Studies descriptively analysed according to key components of the intervention	Patient education; educational meetings; educational outreach visits; educational material; training programme to provide patient-centred care; appointment reminders; audit; feedback; local consensus procedures; personalised audit and feedback (nurse and doctor); computerised decision support system; guidelines developed by local consensus; practice-based education materials; scheme to make decision for treatment of patients; changes in medical record system; provider of programme (physician, pharmacist, or nurse); telecommunication system; GP–nurse review system; multidisciplinary team; case management; formal integration of services; arrangements for follow-up; communication and case discussion between distant health professionals; changes to the setting; revision of professional roles; patient-orientated part; diabetes self-monitoring; frequency of consultations; patient mediated interventions; changes in physical facilities and equipment; skill mix changes; marketing; computerised reminders for care providers; centrally organised computerised database to make arrangements; implementation at the primary healthcare level	Professional intervention; patient education; educational meetings; educational materials; provider of programme (physician and office staff); programme to provide patient-centred care (preparatory course); group education; implementation at the primary healthcare level	Professional intervention; patient education; educational meetings; educational materials; training programme to provide patient-centred care (preparatory course)
Renders [81]	Studies descriptively analysed according to prespecified	Professional interventions combined with patient education; postgraduate education of	Professional intervention; educational materials; educational meetings; patient education; provider of	Professional intervention;

	characteristics of the programmes	healthcare professionals combined with local consensus procedures and/or reminders and/or audit and feedback; education for both healthcare professionals and patients; patient education and learner-centred counselling; nurse or pharmacist assumed part of the physician's role and provided diabetes care in combination with a patient-orientated intervention; multidisciplinary teams in combination with arrangements for follow-up and patient education; healthcare professionals received education through educational materials, educational meeting or both; arranging follow-up, audit, and feedback or generating reminders or a combination; including patient education; involvement of nurses in diabetes management; including a telecommunication system	programme (physician); implementation at the primary healthcare level; programme to provide patient centred care (preparatory course)	educational materials; educational meetings; patient education; provider of programme (physician); implementation at the primary healthcare level; programme to provide patient-centred care (preparatory course)
Warsi [82]	(1) Active components are listed in tables of study description	Formal syllabus; number of contacts; programme duration; programme format (group sessions, individual sessions), education mode (face-to-face contact, telephone contact, video programming, audio cassettes, and written materials); programme facilitator (registered nurses, mental health workers, registered dietitians, health educators); behavioural model	none	none
	(2) Meta-regression across chronic diseases to identify which variables were associated with greater clinical benefits. The dependent variable was the summary effect size across all diseases. Indicator variables were each disease and its endpoint.	Active components of the programmes included in meta-analysis and reported: face-to-face education; programme duration; number of educational sessions; use of a behavioural science model.	Type 1 diabetes reference programme: Formal syllabus programme duration, number of contacts (5 days inpatient education), group session, individual sessions (wrong), written materials (only identified in [28]) face-to-face contact, registered nurses and physicians as programme facilitators	Face-to-face contact, programme duration, number educational sessions, and use of a behavioural science model

Independent variables were also active components of the programmes

Type 2 diabetes reference programme: Formal syllabus, programme duration (classified as 4 weeks instead of four sessions 90 min each), number of contacts (four contacts), group session, written materials, face-to-face contact, health educator and physicians as programme facilitators (physicians assistants not identified)

Hypertension reference programme: Formal syllabus, programme duration (classified as 4 weeks instead of four sessions 90 min each; 3 weeks (wrong in [51]), number of contacts (four contacts; three contacts—wrong in [51]), group session, individual sessions (only identified in [49]), face-to-face contact, telephone contacts (only identified in [51]), health educator (wrong in [51]) and physician assistant and registered nurse (registered nurse only identified in [51]) as programme facilitators, behavioural model (only identified in [51])

^aReference programme not identified

Abbreviations used are defined in the appendix at the end of the ESM

Table 14. Outcomes

First author	Reference studies identified	Main outcomes assessed in reference study	Outcomes of reference studies reported in review	Outcomes of reference studies included in data synthesis
Boulware [68]	[49]	SBP	✓	✓
		DBP	✓	✓
		BP con	–	–
		tak BP low med	–	–
		BW	–	–
Corabian [69]	[38]	mrt	–	–
		BW	✓	✓
		GHb	✓	✓
		OHG	✓	✓
		kno	✓	✓
Deakin [70]	[36–38]	mrt	✓	✓
		BW	✓	✓
		BMI	✓	✓
		GHb	✓	✓
		SBP	✓	✓

DBP	✓	✓
TG	✓	✓
TCh	✓ ["lipids; lipid profile"]	-
diab kno	-	-
tak BP low med	-	-
tak lip low med	-	-
feet exam	-	-
hyperkerat	-	-
ulcers	-	-
inj	-	-
idig cr fiss myco	-	-
toenails	-	-
healthcare costs	-	-
callus	-	-
UGSM	✓	-
know	✓	✓
BG low medic	-	-
insulin	-	-

		Non fasting TG	-	-
		serum sulf	-	-
		OHG	✓	✓
Ellis [56]	none	-	-	-
Fahey [71, 72]	[49]	SBP	✓	✓
		DBP	✓	✓
		BP con	✓	✓
		tak BP low med	✓	-
		BW	-	-
Gary [73]	none	-	-	-
Jack [74]	none	-	-	-
Loveman [75]	T1DM [13, 28]; [32] assessed only for cost-effectiveness analysis	No. insul inj	-	-
		insul dose	-	-
		BMI	✓	✓
		GHb	✓	✓
		hypoglyc	✓	✓
		ketoacid	✓	✓
		know	✓	✓

	hosp (all causes)	✓	✓
	hosp (diabetes related)	–	–
	Sick (all causes)	–	–
	Sick (diabetes related)	–	–
	metab SM	–	–
	cost-effectiveness	✓	✓
T2DM [36, 38]	mrt	–	–
	BG low medic	–	–
	insulin	–	–
	BW	✓	✓
	GHb	✓	✓
	Non fasting TG	–	–
	know	✓	✓
	UGSM	–	–
	idig cr fiss myco	–	–
	toenails	–	–
	serum sulf	–	–
	BMI	✓	✓

		OHG	-	-
Newman [76]	None	-	-	-
Norris [77]	None	-	-	-
Norris [78]	None	-	-	-
Norris [79]	None	-	-	-
Renders [80]	[31]	BW	✓	✓
		BMI	✓	✓
		GHb	✓	✓
		SBP	✓	✓
		DBP	✓	✓
		TG	✓	✓
		TCh	✓	✓
		diab kno	-	-
		tak BP low med	-	-
		tak lip low med	-	-
		OHG	-	-
		feet exam	✓ [foot c]	✓ [foot c]
		hyperkerat	-	-

		ulcers	-	-
		inj	-	-
		idig cr fiss myco	✓	✓
		toenails	✓	✓
		healthcare costs	-	-
		callus	-	-
		UGSM	-	-
Renders [81]	[31]	BW	-	-
		BMI	✓	✓
		GHb	✓ [glyco]	✓ [glyco]
		SBP	✓ [BP]	✓ [BP]
		DBP	✓ [BP]	✓ [BP]
		TG	-	-
		TCh	✓	✓
		diab kno	-	-
		tak BP low med	-	-
		tak lip low med	-	-
		OHG	-	-

		feet exam	-	-
		hyperkerat	-	-
		ulcers	✓ [micr com]	✓ [micr com]
		inj	-	-
		idig cr fiss myco	✓ [micr com]	✓ [micr com]
		toenails	-	-
		healthcare costs	-	-
		callus	-	-
		UGSM	-	-
Warsi [82]	T1DM [13, 28]	No. insul inj	-	-
		insul dose	-	-
		BMI	-	-
		GHb	✓	✓
		hypoglyc	-	-
		ketoacid	-	-
		know	-	-
		hosp (all causes)	-	-
		hosp (diabetes related)	-	-

	Sick (all causes)	-	-
	Sick (diabetes related)	-	-
	metab SM	-	-
T2DM [36]	BG low medic	-	-
	insulin	-	-
	BW	-	-
	GHb	✓	✓
	Non fasting TG	-	-
	know	-	-
	UGSM	-	-
	idig cr fiss myco	-	-
	toenails	-	-
	serum sulf	-	-
Hypertension [49, 51]	SBP	✓	✓
	DBP	✓	✓
	nr BP	-	-
	BW	-	-
	presc antihyp	-	-

visits

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Abbreviations used are defined in the appendix at the end of the ESM

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Appendix

Abbreviations used in the ESM

▪ ACC	Overall Modified Adequate Competent Care Score
▪ ADA	American Diabetes Association
▪ alb	albuminuria
▪ AMED	Allied and Complementary Medicine Database
▪ amput	amputations
▪ ann chol	annual cholesterol determination
▪ ann diab educ	annual diabetes education
▪ ann influ vacc	annual influenza vaccinations
▪ ann nutr educ	annual nutritional education
▪ ann retin exam	annual dilated retinal examination
▪ ann urine test	annual urine test for albumin/protein
▪ anx	anxiety
▪ ASSIA	Applied Social Science Index and Abstracts
▪ att pract 12 m	attendance at practice over last 12 months
▪ att rates	attendance rates
▪ attit	attitude
▪ av pat educ	availability of patient education
▪ BEI	British Education Index
▪ BG	blood glucose
▪ BG low medic	blood glucose-lowering medication
▪ BGSM	blood glucose self-monitoring
▪ BNI	British Nursing Index
▪ BP con	blood pressure control
▪ BP taken	blood pressure taken

▪ BW	body weight
▪ callus	callus formation
▪ CDP	Chronic Disease Prevention Database
▪ cerVD	cerebrovascular disease
▪ CHID	Combined Health Information Database
▪ chiropod	chiropodist visits
▪ chol	cholesterol
▪ chro glyc	chronic glycaemia monitoring
▪ CINAHL	Cumulative Index to Nursing and Allied Health
▪ cl s use	clinical service usage
▪ cl vis metab cntrl	total clinic visits for monitoring metabolic control
▪ clab ass	clinical and laboratory assessments
▪ compl mon recomm followed	patients for whom recommendations for monitoring chronic complications were followed
▪ co ACC	Contrast Adequate Competent Care Score
▪ co-ben	cost-benefit
▪ co-eff	cost-effectiveness
▪ com	complications
▪ compl cl rev	completion of clinical review
▪ compl phys exam	complete physical examination
▪ compliance	compliance score
▪ compliance ADA	compliance with the guidelines of the American Diabetes Association
▪ compliance diab eye care	compliance with guidelines of diabetic eye care
▪ Cons contact	patient with consultant contact
▪ cp sk	coping skills
▪ creat	creatinine level
▪ CRISP	Computer Retrieval of Information on Scientific Projects
▪ CVD	cardiovascular disease

▪ CVD risk	cardiovascular disease risk factors
▪ DARE	Database of Abstracts of Reviews of Effects
▪ DB	database
▪ DBP	diastolic blood pressure
▪ dc skin	dry or cracked skin
▪ decr vis	decreased vision
▪ depr	depression
▪ diab kno	diabetes knowledge
▪ diab ppat pdoct	diabetes reviews per patient per doctor
▪ diab QoL	diabetes-specific quality of life
▪ diab symp	diabetes-related symptoms
▪ diab templ	use of diabetes templates
▪ diet	diet
▪ diet hab	dietary habits
▪ diet inq	dietary inquiry and advice
▪ diet recomm followed	patients for whom dietary management recommendations were followed
▪ dietitian	dietitian visits
▪ dip	dipstick test
▪ disab	disability/function
▪ dur kno diab	duration of known diabetes recorded
▪ econ	economic and healthcare utilisation
▪ educ	education
▪ ERIC	Educational Resources Information Centre
▪ exerc	exercise
▪ fav train cop	favouring the inclusion of training in coping skills
▪ FBG	fasting blood glucose
▪ feet exam	feet examination

▪ foot c	foot care
▪ foot cellul	foot or leg cellulitis
▪ foot deform	foot deformities
▪ foot les	foot lesions
▪ FPG	fasting plasma glucose
▪ Freq BP	frequency of blood pressure measurements
▪ Freq BW	frequency of body weight measurements
▪ Freq HbA _{1c}	frequency of HbA _{1c} measurements
▪ Freq lipids	frequency of lipid measurements
▪ fruct	fructosamine
▪ fundus	funduscopy
▪ fung nai inf	fungal nail infection
▪ fung skin	fungal skin infection
▪ gen wb que	generic well-being questionnaire overall
▪ GHb	glycated haemoglobin (HbA ₁ , HbA _{1c})
▪ glyco	glycaemic control
▪ GP contact	patient contacts with general practitioner
▪ hlth attit	health attitudes
▪ hlth bel	health beliefs
▪ hlth surv	health survey
▪ hosp	hospitalisation
▪ hosp dis	hospital discharge rates
▪ HTA	Health Technology Assessment
▪ hyp con	patients with hypertension control at follow-up
▪ hyperkerat	hyperkeratosis
▪ hypertens	hypertension diagnosed
▪ hypoglyc	cases of severe hypoglycaemia

▪ idig cr fiss myco	interdigital cracks, fissures or mycosis
▪ idig mace	interdigit macerations
▪ impr tr nails	improperly trimmed nails
▪ influ vacc	influenza vaccination
▪ ing nails	ingrown nails
▪ inj	injuries
▪ insul dose	daily insulin dose
▪ insulin	insulin treatment
▪ ISTAHC	International Society of Technology Assessment in Health Care Database
▪ ketoacid	cases of diabetic ketoacidosis
▪ kno	knowledge
▪ kpt sched vis	kept schedule visits
▪ last BP rd	last blood pressure reading
▪ LEA	lower extremity amputations
▪ let cons GP	letters from consultant to general practitioner
▪ let GP cons	letters from general practitioner to consultant
▪ lifesty	lifestyle
▪ lifesty beh	lifestyle behaviours
▪ LILACS	Latin American and Caribbean Health Sciences
▪ lipids	lipid levels
▪ loc con	locus of control
▪ lost clin	lost to follow-up at clinic
▪ lw extr care	lower extremity care
▪ macr com	macrovascular complications
▪ man skills	management skills (family behaviour)
▪ mat morb	maternal morbidity
▪ md adher	medication adherence

▪ md admin	medication administration (including insulin)
▪ meas of compl	measure of complications
▪ MeSH	Medical Subject Headings
▪ metab SM	metabolic self-monitoring
▪ micr com	microvascular complications
▪ micralb	microalbuminuria
▪ mon CVD risk	monitoring of cardiovascular disease risk factors
▪ mon glyco	monitoring of glycaemic control
▪ mood	mood
▪ mrt	mortality
▪ n/a	not applicable
▪ neo morb mort	neonatal morbidity and mortality
▪ nephrop	cases of nephropathy
▪ neuro exam	neurological examination
▪ NHS EED	National Health Service Economic Evaluation Database
▪ No. insul inj	number of daily insulin injections
▪ non-supp beh	non-supportive behaviours (family behaviour)
▪ nr alb test	number of albuminuria tests per patient
▪ nr BP	number of blood pressure measurements
▪ nr GHb test	number of GHb tests per patient
▪ nr outp vis	number of outpatient visits
▪ nr PG test	number of plasma glucose tests per patient
▪ OHG	taking or dose of taken hypoglycaemic agents
▪ ophth exam	ophthalmological examination
▪ ord BGSM	ordering home blood glucose monitoring
▪ outp non-phys vis	outpatient non-physician visit rates
▪ outp phys vis	outpatient physician visit rates

▪ outp util	outpatient utilisation
▪ pall	pallaesthesia
▪ PEF	peak expiratory flow
▪ peri neurop	peripheral neuropathy
▪ peri pulses	peripheral pulses
▪ peri vascd	peripheral vascular disease
▪ periodont	periodontal disease
▪ PG	plasma glucose
▪ phys act	physical activity
▪ prc barr adh	perceived barriers of adherence
▪ presc antihyp	prescription of antihypertensive drugs
▪ presc ref	prescription refills
▪ probl solv	problem-solving skills
▪ prop pat clin	proportion of patients followed-up at clinic
▪ prot	proteinuria
▪ psy outc	psychological outcomes
▪ psy wellb	psychological well-being
▪ pulse	pulse examination
▪ QoL	quality of life
▪ QoL behav	quality of life behaviour
▪ rec exam	patients with recorded examinations
▪ ref chiropod	patients referred to chiropodist
▪ reg source care	regular source of care
▪ reg visits	regular visits
▪ ren dis	renal disease
▪ ren eval	renal evaluation
▪ restr duty	restricted duty days

▪ ret eval	retinal evaluation
▪ retin	retinopathy
▪ rout diab c vis	routine diabetic care visits
▪ s esteem	self esteem
▪ satisf	satisfaction
▪ SBP	systolic blood pressure
▪ s-c bh	self-care behaviours
▪ s-c skills	self-care skills
▪ sched vis	scheduled visits
▪ screen foo eye	screening foot and eye examinations
▪ s-eff	self-efficacy
▪ self hlth	self-assessed health status
▪ sens exam	sensory examination done
▪ ser footl	serious foot lesions
▪ serum sulf	serum sulphonylurea concentration
▪ sick	sick leave days
▪ skill dev	skill development
▪ s-manage	self-management
▪ SMBG	self-monitoring of blood glucose
▪ smok	smoking
▪ soc	social support
▪ s-rep fu	self-reported functioning
▪ s-rep hlth	self-reported health status score
▪ supp beh	supportive behaviours (family behaviour)
▪ T1DM	type 1 diabetes
▪ T2DM	type 2 diabetes
▪ tak BP low med	taking blood pressure-lowering medications

- tak lip low med taking lipid-lowering medications
- TCh total cholesterol
- TG triacylglycerol
- toenails margins of the nails are cut back or ingrown toenails were cut out
- tot cont total contacts
- UGSM urine glucose self-monitoring
- UKMRC UK Medical Research Council
- ulc ulcers
- use hc use of healthcare
- vis fail visit failures
- visits ophth visits to the ophthalmologist
- visits pod visits to the podiatrist
- visual ac visual acuity
- wellb patients well-being
- w-i vis walk-in visits
- without diab rev patients without doctor diabetes review
- workd lo work day lost
- WOS Web of Science