Web-based care for adults with type 2 diabetes

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CRD summary
This review concluded that there was insufficient evidence to provide general conclusions about how web-based telediabetes programs impacted professional diabetes practice. The author’s conclusions reflected the evidence presented, but should be treated with caution due to weaknesses in review methodology and potential that relevant studies were missed.

Authors’ objectives
To review current research on the practice of web-based telediabetes (a form of telemedicine) to adults with type 2 diabetes and determine its impact on professional diabetes practice.

Searching
CINAHL, MEDLINE, ProQuest and The Cochrane Library were searched from January 2000 to December 2006. An internet search was made. Bibliographies of retrieved articles were handsearched for additional material. Studies published in languages other than English were excluded from the review.

Study selection
Studies that involved web-based telemedicine within the home for adults with type 2 or unspecified diabetes were eligible for inclusion in the review. Telemedicine had to deliver diabetic management programs via cellular telephone and/or computer and be facilitated by a health care practitioner to be included. Studies of type 1 diabetes were excluded.

Reported outcomes were: glucose stability; glycosylated haemoglobin levels; two-hour post meal glucose levels; blood pressure; low-density lipoprotein cholesterol; triglyceride levels; glycaemic control; satisfaction levels; diabetes knowledge; exercise levels; ease of use of the system; and themes emerging from a study.

Participants were aged between 18 and 75 years. Duration of included studies was 12 weeks to 30 months. Included studies were made up of one or more of the following interventions: internet-based glucose and blood pressure monitoring; short message service; video conferencing; access to clinical data; access to educational websites; and disease management programs (some were interactive). Most of the studies were from USA; others were from Canada, Korea and Spain. Health care practitioners included physicians, nurses, diabetes educators and dieticians.

One reviewer selected studies for inclusion.

Assessment of study quality
The author did not state that she assessed validity.

Data extraction
Data were extracted into tables by one reviewer.

Methods of synthesis
Studies were synthesised narratively. Similarities and differences were discussed in the text and presented in tables.

Results of the review
Nine studies (n=2,030) were included in the analysis: five randomised controlled trials (RCTs) (n=1,957); two pre/post tests (n= 52); one survey (n=12); and one was qualitative (n=9). Six studies specified the population was type 2 diabetes (n=249); three studies did not specify the type of diabetes (n=1,781).

Clinical outcomes (seven studies, n=2,009): All studies reported decreased glycosylated haemoglobin indicative of decreased diabetic complications (five RCTs and two pre/post tests). Telediabetes patients reported improved
triglyceride/cholesterol levels (three RCTs, n=1,826) and improved blood pressure (two RCTs, n=1,769).

Participant experience (five studies, n=130): Participants had increased satisfaction with web-based programs (one RCT, two pre/post tests, one survey, n=121) and felt that the programs produced a feeling of security due to increased access to health information and professionals (one qualitative study, n=9). Patients reported dissatisfaction when the program did not work as expected (one qualitative study, n=9).

Authors' conclusions
Included studies varied greatly and this prevented general conclusions about telediabetes programs. Trends indicated a promising future for telediabetes as a tool for service delivery. Dieticians must increase their knowledge, competency, advocacy and research efforts in this area.

CRD commentary
The review addressed clear research questions and clear inclusion criteria. Several databases were searched for a narrow time limit. Only English-language publications were included, which introduced a risk of language bias. There was no apparent search for unpublished material, so relevant trials may have been missed and publication bias could not be ruled out. There were language and time restrictions. Validity was not assessed. No reported steps were taken throughout the review process to minimise errors and bias. Study details were provided in a table. A more detailed description of how studies were conducted and more information about participants (such as how they were recruited) would have been helpful. A narrative synthesis was appropriate given the levels of heterogeneity between trials in terms of methodology, participants, study size, type of intervention and outcomes. Most studies were of unspecified diabetes, which made it difficult to assess the relevance to specific disease. The author's conclusions reflected the evidence presented, but should be treated with caution due to weaknesses in review methodology and potential that relevant studies were missed.

Implications of the review for practice and research
Practice: The author stated that dieticians should embrace telediabetes programs as a delivery mode of the future because more patients will expect delivery of health services via the internet and it will be cost effective. Dieticians should pursue learning opportunities in telemedicine and courses should be introduced to undergraduate programs.

Research: The author stated that more research was required to understand problems that related to delivery of telediabetes programs. More research was required on the nutritional aspect of telediabetes to inform future practice.

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