Applying research evidence to optimize telehomecare
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CRD summary
The authors appear to conclude that evidence about the effects of telehomecare in adults with chronic illness was limited and further research is required. The lack of an assessment of study quality and the absence of numerical and statistical data make the findings difficult to interpret. However, the cautious conclusions reflect the limitations of evidence from a small number of diverse studies.

Authors' objectives
To evaluate the effects of telehomecare in adults with chronic illness.

Searching
MEDLINE, PubMed, the Cochrane Database of Systematic Reviews, ACP Journal Club, DARE, the Cochrane Controlled Trials Register and CINAHL were searched from 1995 to 2005 for studies written in English; the search terms were reported. In addition, reference lists were screened for frequently cited studies. Dissertations and theses were not screened.

Study selection
Study designs of evaluations included in the review
Inclusion criteria were not specified in terms of the study design.

Specific interventions included in the review
Studies that evaluated telehealth technology with peripheral medical devices to deliver homecare were eligible for inclusion. Studies that evaluated only telephone calls were excluded, as were those that did not involve video or in-person nurse contact. In the included studies, telehomecare was given in addition to in-person visits.

Participants included in the review
Studies of adult patients with chronic illness were eligible for inclusion. Most of the included studies were in patients with heart failure; other studies involved patients with diabetes, hypertension, heart disease, respiratory disease and chronic wounds. Where reported, the patients were older adults.

Outcomes assessed in the review
Inclusion criteria were not specified in terms of the outcomes. The included studies assessed a variety of outcomes related to the views and health of adult patients and the views of care providers.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. For each study, the results were reported as text without numerical data.

Methods of synthesis
How were the studies combined?
The studies were grouped according to the following themes and combined in a narrative: effect on adult patients; chronic illness outcomes; providers; and costs.

How were differences between studies investigated?
Differences between the studies were not formally investigated, but some differences between the studies were apparent from the text and tables.

**Results of the review**

The authors stated that 19 studies were included. However, a total of 26 reports of studies were presented in the tables. The studies appeared to include 7 randomised controlled trials described in 10 reports (n=546). Given the potential of overlapping samples it was not possible to be certain of these numerical values. The following reports were also included in the data extraction table: one pre-test post-test study (n=60), one 3-group case-control study (n=226), 3 observational studies (n=297 patients, n=5 nurses; and number of participants not reported), one of an intervention group only (n=14), 5 pilot studies although three could have been from the same study (n for each of 3 reports =11, n=90, n=31), one longitudinal prospective crossover study (n=28), one quasi-experimental study (n=212), one retrospective chart review (n=1,700 care episodes) and 2 descriptive qualitative studies (n=9 and number of participants not reported).

**Effect on adult patients (7 studies).**

Studies reported that telehomecare was associated with improvements in patient satisfaction, empowerment, remembering to prepare for the nurse’s visit and security, pain and anxiety. One study reported that patients felt greater understanding with in-person nurse visits than with telehealth consultations. One study reported greater confidence in managing health failure associated with telehealth care with or without nurses visits compared with telephone calls alone. The patients reported that the equipment was easy to use, increased their security, and was helpful in managing their condition in one study.

**Chronic illness outcomes (11 studies).**

Studies reported that telehomecare was associated with reductions in hospitalisation rates (8 studies in patients with heart failure, diabetes and spinal cord injury) and the ability to assess the progression of chronic wounds. Improvements were also reported in self-management, general health and rates of discharge to home with telecare when compared with usual care, and in function, activities of daily living and cognition in a group receiving telecare compared with matched controls. One study reported improvements over time in quality of life, function and depression associated with telecare; the authors stated that there were no between-group differences but no details of the control interventions were reported.

**Providers (3 studies).**

Studies on nurses reported that telecare was associated with the forging of new bonds with patients, and that patients had an improved focus and comfort with managing their condition. In addition, nurses reported its usefulness in monitoring vital signs, savings in time and increased productivity, and the ability to provide better patient care. In one study nurses felt that the technology could be frustrating and raise anxiety.

**Cost information**

All 4 studies that reported costs indicated that telecare had the potential to be cost-effective. However, 3 studies reported increased initial costs of the equipment.

**Authors’ conclusions**

The authors appear to conclude that the evidence was limited and further research is required.

**CRD commentary**

The review question was defined in terms of the intervention and participants; inclusion criteria were not defined in terms of the study design or outcomes. Several relevant sources were searched but no attempts were made to minimise publication or language bias. The methods used to select the studies and extract the data were not described, so it is not known whether any efforts were made to reduce reviewer error and bias. Study validity was not assessed, thus the results from these studies and any synthesis might not be reliable. In the data extraction tables, several reports appeared to be related to the same group of patients and it was difficult to distinguish unique patient samples. In view
of the differences between the studies, the narrative synthesis with studies grouped by outcome was appropriate. However, the authors failed to present any numerical or statistical data and this lack of data make the findings impossible to interpret. Despite the limitations of this review, the authors’ conclusions appear to reflect the limitations of evidence from a small number of diverse studies.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated the need to compare telehomecare visits with in-person care; to evaluate different types of telehomecare plus in-person visits; to incorporate feedback from consumers and providers; to assess interventions in different populations; to evaluate the effects on different care providers; and to measure the long-term effects of the interventions on costs, changes in care plans, patient satisfaction and clinical outcomes.

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