Introduction

Diabetes Mellitus (DM) management in Spain represents 1.5% to 6.2% of public health expenditure. Technological developments facilitate remote monitoring of patients and improve DM care. A mobile phone telemonitoring system (TM) might improve the ability of DM patients to engage with treatment.

Objectives

- To estimate the annual costs that implementing a TM for glycemic control in DM patients might represent to the National Health System and to society in Spain.
- To calculate the variations in costs that may occur after improving DM treatment compliance by means of implementing a mobile phone TM system for glycemic control.

Methods

A systematic review of the literature was conducted to determine cost drivers in DM TM. Electronic databases including PubMed and MEDES were searched to identify international and national clinical and economic articles, published between January 2001 and December 2011, reporting on the clinical benefits, health resources and costs associated to DM TM.

A previously published mathematical model was applied to determine the variation in costs associated with the reduction in the use of micro and macrovascular DM complications derived from hypothetically reaching 100% DM treatment compliance. This model allows an estimation of the improvement on DM complications when applying TM to non-compliant patients in terms of risk reduction. A Spanish National Health System perspective was adopted. All costs were updated to €, 2011.

Data included in the model were based on the Diabetes Control and Complications Trial (DCCT), the Epidemiology of Diabetes Interventions and Complications (EDIC) and Spanish prevalence data for micro and macrovascular complications (Figure 1).

Results

More than 3,000 relevant titles were initially identified. After discarding and excluding articles not accomplishing the inclusion criteria, a total of 48 publications were reviewed (Figure 2).

Table 1. Impact of telemonitoring on health care resources in DM patients.

<table>
<thead>
<tr>
<th>Type of Care Resource</th>
<th>Non-Telemonitoring</th>
<th>Telemonitoring</th>
<th>Reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital admissions</td>
<td>20%</td>
<td>20%</td>
<td>0</td>
</tr>
<tr>
<td>Hospital admissions (DM complications)</td>
<td>75%</td>
<td>75%</td>
<td>0</td>
</tr>
<tr>
<td>Length of hospital stay</td>
<td>51%</td>
<td>51%</td>
<td>0</td>
</tr>
<tr>
<td>Urgency care visits</td>
<td>36%</td>
<td>36%</td>
<td>0</td>
</tr>
<tr>
<td>Urgency care (diabetes complications)</td>
<td>83%</td>
<td>83%</td>
<td>0</td>
</tr>
<tr>
<td>Outpatient care</td>
<td>49%</td>
<td>49%</td>
<td>0</td>
</tr>
<tr>
<td>Primary care visits</td>
<td>19%</td>
<td>19%</td>
<td>0</td>
</tr>
</tbody>
</table>

The variation in the use of each resource type is expressed as percentage variation per patient/year.

Devices acquisition and staff training involve an initial cost for both patients and the National Health System. These costs would be amortized over three years.

Conclusions

The benefits that could be achieved through the use of TM on glycemic control and the possibility of better communication between patient and professional would result in a decrease of acute complications, with fewer hospital admissions and, in the long term, in a reduction of the occurrence of chronic complications derived from a better metabolic control with a consequent economic impact on the health system.

References

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