Study of the experience of carers in the management of dementia patients with incontinence: is there a need for sensor technology?

Nadja R. Nair¹, Peter W. McCarthy¹, Ralf Patz¹, Frank Rinaldi²
Welsh Institute of Chiropractic¹ & Faculty of Advanced Technology² University of Glamorgan, Treforest, Pontypridd, CF37 1DL, UK
¹Evolution is Ltd., 151 West George Street, Glasgow G2 2JJ, UK²

Abstract

This study examined current incontinence management methods for dementia patients in care homes and obtained carer views regarding the use of a sensor technology device to support current protocols. The outcome will affect the design of any device and determine its usefulness to monitor humidity changes at the skin surface.

Introduction

Dementia, a condition that affects the aging population, can cause a profound effect on daily lives (loss of personality and planning skills), impacting on the person's ability to remain continent [1]. Urinary Incontinence (UI) is the complaint of involuntary leakage of urine [2]. Community, doctors and nurses treat incontinence as a legitimate medical condition; often it is considered a normal part of ageing [3]. However, in persons with dementia, incontinence has often been cited as the final straw that influences whether a person can be managed at home or admitted to institutional care [4].

A health outcome report has suggested that 30% of people living in Residential care homes were incontinent, dying in 69% in Nursing homes [5]. The problems often faced in care homes include, variations of treatment, proportion and relative availability of staff and quality of education [6]. Although routine checks and toileting regimes exist, urinary accidents are sometimes undetected or only resolved at the next check, in this context; continence may not be encouraged causing unnecessary use of pads and unnecessary referrals to expensive services [7]. Better understanding and application of technology and products to improve lifestyle might prevent the use of pads and encourage the promotion of continence; leading to improved quality of life. Table 1 shows the impact of Dementia and Incontinence on the UK economy annually.

Table 1: The number of people affected by the condition and its impact on the UK economy

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number of people in the UK</th>
<th>Cost to the UK economy annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary/Faecal Incontinence</td>
<td>823,884</td>
<td>£30,000 per patient</td>
</tr>
<tr>
<td>Dementia</td>
<td></td>
<td>£23 billion annually</td>
</tr>
</tbody>
</table>

Estimated : 80%–90% of Dementia sufferers have Incontinence (Urinary/Faecal)

Currently there is a lack of research into management of incontinence in dementia patients and that needs to be resolved to improve the lives of long term sufferers.

Figure 1. Experiment Method

Methods: Study Description

The aim of this study was to examine the current methods of managing UI and to support current protocols, through carer views regarding the potential use of a new technology in this area. The outcome will inform the design of future devices and determine the perceived usefulness and likeliness of such devices being used in the monitoring of humidity and temperature changes as an indicator of incontinence.

Figure 1 shows the core methodologies involved which were:
1. The voice of the consumer survey (initial phone interviews, to qualitatively assess the initial interest for the proposed product).
2. A semi-qualitative questionnaire was developed for interested care homes.
3. Carers made up the initial broad sampling framework.

A total of 52 and 51 care homes (England and Wales respectively) were contacted via telephone.

Figure 2. Care homes and their region

Results of study

The phone interviews revealed that there was interest for the use of sensor technology in care homes. The following proportions expressed interest in the study [also in figure 2]:

• 23 (45%) of 52 English care homes
• 16 (30%) of 51 Welsh care homes

Expressing interest in this study means that the care homes are interested in participating in a questionnaire study referred to in Figure 2 as a ‘Yes’.

The ‘No’ represents the care homes that were not interested in the idea and stated a preference for traditional visual monitoring methods over technology.

The voice of survey revealed that incontinence is managed through the following ways:

<table>
<thead>
<tr>
<th>Aids</th>
<th>Management strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility &amp; Exercise</td>
<td>Tailoring strategies work successfully with people who have less severe dementia and also who are more mobile.</td>
</tr>
<tr>
<td>Urinary aids for males</td>
<td>As dementia progresses patients may be more reliable on containment aids such as pads. People who are reliant on pads are changed about 3-4 times in the day and the same in the night.</td>
</tr>
<tr>
<td>Catherisation is also used</td>
<td>Catheterisation is also used as a method of incontinence management for patients who are terminally ill and disheased by their incontinence.</td>
</tr>
<tr>
<td>Urinary aids for females</td>
<td>Technology include electrical nerve stimulation and enuresis monitors however carers from phone survey seem to prefer traditional approach to management, Training and cost implications exist as well as more research extending past experimentation and unproven techniques need to be carried out.</td>
</tr>
</tbody>
</table>

A semi-quantitative questionnaire has since been developed and piloted for content validity by requesting the opinions of two care home managers and an Incontinence nurse specialist. A snap shot sample is shown on Figure 1. The questionnaire has been reported to be suitable for deployment. Ethical approval is currently being sought. All the care homes are privately owned (not NHS).

Conclusion and Further work

• Although rudimentary, these data suggest that the current methods of assessing for incontinence in patients with dementia in care homes is neither uniform nor adequate.
• The evidence suggests that the system cannot support a route back to continence.
• There appears to be support for an incontinence detection device that could aid with general care home management.
• This conclusion has the caveat that technological feasibility might be less than the concepts held by the care workers in this area.
• Therefore, the outcome of the questionnaire will be used to resolve these issues by determining the constraints that will affect the design of the final device and determining the perceived potential to monitor changes due the occurrence of incontinence.