

Research Area: Bedding

The topic of bedding textiles covers a wide variety of products which include: bed linen, blankets and duvets, mattress protectors, functional bed sheets, pillows and mattresses.

Features that are integral to bedding include properties such as: absorbance, breathability, reduction of pressure, smart or e-textiles (e.g. sensors), disposability, temperature regulation, layered systems, easy care and cost.

TAGS has researched and evaluated these features to look at ways they could be improved to provide added benefit for the elderly or caregivers, either residing at home or in a care facility to improve the quality of life.



Key Findings

- There is a hospital-like appearance of bedding in some care homes.
- Care providers have little knowledge or are unaware about alternative materials that can be used for bedding.
- The expectation with regard to the functionality of bedding is often perceived as low.
- Cotton is the most commonly used fibre in bedding textiles.
- Bedding must be able to withstand harsh washing procedures in order to comply with hygiene regulations.

Background

Many hours of our lives are spent in bed over the course of a lifetime; therefore it is essential that the correct bed environment is achieved to promote healthy sleep in order to perform everyday activities well. It is well known that quality of sleep-determines quality of health and hence quality of life; it affects your physical and emotional health thus it is of importance to let your body rest and repair. Poor sleep can have implications on your health as you age, such as increased risk of disease, memory loss, depression and in general, poorer quality of life. Therefore, it is of importance that your sleep environment, including your bedding, all contributes to a good night's sleep.

A good bed environment should consider the following: moisture management properties, material and finish toxicity, wash-ability, ergonomic and insulating design.

Aims & Objectives

TAGS research has explored different types of bedding systems and has explored what aspects require development and which features, functionalities and /or technologies would provide the elderly and carers with added benefits for a better quality of life.

Residents of care homes were the primary focus for the collection of data on bedding conditions, areas of concern and requirements. Since many health conditions cause limitations or loss in mobility, older people may spend more time in bed, and require extra assistance when moving from the bed to a different environment. TAGS aims to innovate or develop bedding concepts which make the bed environment and procedures dealing with the bed as a facility as unproblematic and trouble free for both resident and caregiver.

As well as the functionality, the aesthetic appearance of bedding is just as important, as it gives people a more home-like feeling when in care which can support well-being. TAGS also aims to highlight the importance of this concept for when new bedding concepts are developed so that attention is not solely focused on technology.

Approach & Methods

A literature review assessing existing products has been made together with research into state of the art technology, general aspects of production and the possibilities of modifying material properties.

Questionnaire's were also administered to selected care homes in regional areas local to consortium members in Austria, Germany, Italy and the UK to be answered on behalf of residents residing in the respective care facilities.

Questionnaire's addressed the following topics:

- Types of material used in bedding
- Existing functionalities
- Desired functionalities
- Average life span and wash ability of bedding textiles

Following the results from the questionnaires, brainstorming sessions were held at the TAGS bi-annual meetings in which the consortium and external speakers were invited to discuss the problems highlighted. All participants were then asked to come up with ideas for innovations or ways in which existing products can be altered to better suit elderly users.

Results & Outputs

Bedding in care facilities is often compared to that of a hospital. For residents in care facilities, this was not a desirable quality. Residents would much prefer the use of colours and patterns in their bed linen as it gives a more home-like appearance to the care setting.

The use of e-textiles or smart textiles in bedding was not found in the participating care homes. This type of technology would benefit caregivers by, for example, eliminating the need for round the clock monitoring during the night, for people suffering from incontinence. Additionally, the use of technology in bedding textiles should not be over functionalised while medical and/or hygienic functions should be provided in some cases, things such as sensors should be made discreet and kept in the background in order to preserve the dignity of the resident as over integration can imply a bad health condition.

Cotton is the most commonly used fibre in bedding textiles which creates a barrier preventing development in this field; caregivers generally want cotton because they are unaware or have little knowledge of other materials available. The strong focus on natural material can be explained by the lack of information about other possible functional materials and also from disappointing experiences with synthetic materials in the past.

Dependent on differing health conditions e.g. incontinence, some bedding requires changing more frequently than others. Features such as functional fastenings or simple and easy to use closures coupled with soft and flexible material could help caregivers to change bedding with less time and effort which reserves more time for other care duties. The wash ability of bed linen must also be made to with stand high temperatures and harsh washing procedures

Other areas which could be considered for future research include the moisture and thermal properties of bedding textiles; functional concepts which combine materials with membrane characteristics and high sorbent material have the ability to provide better solutions for bedding.

The following outputs highlight the success of the TAGS project in the field of bedding textiles:

- **NewS Project**



The University of Innsbruck Research Institute for Textile Chemistry and Textiles Physics is currently coordinating a project on embroidered textiles sensors in bedding.

The NewS project focuses on research into new technologies to produce composite textiles which function as washable sensors. New embroidery techniques will also be used to integrate sensor functions in bedding textiles. In a care home for the elderly, washable sensor-textiles will be tested for usability and lifetime expectancy.

- **Bedding Preferences Study**



The preliminary aim of the research was to elicit opinions from care home residents on the proposed bedding design, fabric selection, and bedding and environmental colour schemes, to be implemented in the new care home.

Support & Collaboration

TAGS would like to thank all consortium members for their input and involvement and a special thanks to external experts for their contributions to this topic:



Ivo Auer and Marco Tonini - Berensden, Austria; Monika Sonnweber, Elke Moosburger and Andrea Romagna-Mießgang - HTL Dornbirn, Austria; Dana Čížmárová, Jozef Šesták, Ľudmila Balogová - VÚTCH, Slovakia; Ingrid Eyers - University of Vechta, Germany and University of Surrey, UK; The New Dynamics of Ageing (NDA) Project; Herman B.M. Lenting - TNO Science and Industry, The Netherlands; Klaus Richter - SmartTex Network, Germany; Elke Römhild - EEN Thüringen & STIFT, Germany; Dirk Zschenderlein - TITV, Germany;

For more information on the TAGS project, please visit the website at:

www.textilesforageingsociety.eu/

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