

A potential new solution for postural management of bedbound patients?

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Summary

The development of pressure ulcers in bed-bound patients is an increasing problem. The use of a pressure reducing postural sleep system has the potential to impact healthcare and long-term patient management. Further consideration should be given to the impact of sleep posture on tissue health and musculoskeletal management.

Aims & Objectives

This study aimed to measure contact pressures at the shoulders and hips during side and supine lying, with and without a postural correction sleep system amongst healthy participants, and gather subjective feedback relating to the support and comfort of the postural correction sleep system.

Background

The most commonly reported medical complication for bed-bound individuals are pressure ulcers (Pouyan et al, 2013). Immobile patients unable to reposition independently place their skin and tissues under prolonged stress, restricting blood flow and oxygen/nutrient delivery, leading to cell and tissue degradation. The annual economic burden of pressure ulcers is 1.4–2.1 billion pounds (McInnes et al, 2012). Pressure ulcers are now commonly viewed as patient harm and are thought to form due to lack of patient care. Within the NHS there is accountability for the development of a pressure ulcer and, as such, staff regularly reposition patients. However, there is no formal guidance on patient positioning, therefore there are inconsistencies amongst health care professionals as to what is considered best practice in patient positioning. Ineffective patient positioning can result in the worsening of muscle imbalance and body deformities such as contractures, reducing body form and tone; an aspect of patient care that has little accountability (Hill and Goldsmith, 2010).

Patient positioning and postural care should be used to promote optimal recovery amongst bed-bound patients (Scottish Intercollegiate Guidelines Network, 2010: Intercollegiate Stroke Working Party, 2016). Benefits of patient positioning include improved quality/volume of sleep, maintenance of body shape/form, and the reduction/prevention of pressure ulcers and respiratory problems. The development of an effective postural correction sleep system that reduces pressure and improves patient positioning has huge potential for both patients and health care services. A new postural correction sleep system (Hugga™) aims to provide, during bed rest, effective postural support that is easy to apply for the carer without compromising patient care. It aims to reduce the risk of developing body shape distortions due to limited mobility amongst numerous patient groups, including, but not limiting to, stroke, multiple sclerosis, cerebral palsy, motor neuron disease, Duchenne muscular dystrophy, spinal muscle atrophy, catastrophic brain injury, fibromyalgia, dementia and Down syndrome.

Fifteen healthy participants (aged 18-50, 10 female, 5 male) were screened and recruited using modified Red Flags. The Conformat (Tekscan, USA) system was used to analyse contact pressure under the shoulder/back and hip/buttocks. The system (Hugga™, UK) was placed over the mattress and pressure sensors. Contact pressure was recorded for ten minutes with/without the postural correction sleep system, in a supine and side-lying semi-foetal position. Participants were then asked questions relating to the comfort/restrictiveness of the postural correction sleep system using numerical rating scales (NRS). Outcome measures of the pressure data were mean and peak contact

pressure (kPa). Repeated measures ANOVA with post-hoc pairwise comparisons were performed. For non-parametric data NRS Friedman tests were performed.

In side-lying, mean and peak contact pressure at the hip reduced significantly with the postural sleep system ($p = 0.000$) but significantly increased at the shoulder ($p = 0.037$). In supine-lying mean and peak contact pressure at the shoulder significantly reduced with the postural correction sleep system ($p = 0.000$). No significant differences were found at the hip/buttocks during supine-lying. NRS scores revealed that, even though participants felt significantly more restricted with the postural correction sleep system in place, comfort was not compromised.

Discussion

The postural corrective sleep system used within this study held users in a specified posture (side-lying or supine) effectively, without compromising comfort. Findings suggest potential benefits of reduced pressure at the shoulders in supine-lying and at the hip in side lying when using the system, therefore potentially reducing the risk of pressure ulcer formation. A postural corrective sleep system that is suitable for use within a community and health care setting that maintains body shape/form and reduces the risk of pressure ulcers could reduce the economic burden of pressure ulcers and health implications associated with poor patient positioning, enhance patient care, and also reduce risks to care givers associated with manual handling techniques commonly used in the repositioning of a patient.

Further research is required to explore how variable current practices are in patient positioning, and how effective current practices are. Further research is also needed to explore the associated costs to the NHS of preventable postural deformities amongst bed-bound patients who require additional treatment and care as a result of poor positioning.

With regards to the postural corrective sleep system, as a result of the initial positive findings, further research is warranted to investigate the effectiveness of the system over longer time periods amongst specific patient groups. Long term impacts on quality of life, posture, and tissue health should also be explored.

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