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BED DESIGN WITH MECHATRONIC SYSTEM TO DECREASE PRESSURE ULCERS

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Abstract

Pressure ulcers are one of the biggest problems for bedridden elderly people, who have to lie for a long time on bed with inactivity. It is important to have information regarding the type of care needed by bedridden elderly people (BEP) when they lying on their bed, in order to prevent them from pressure ulcers. A pressure ulcer is a localized wound to the skin or underlying tissue, usually over a bony prominence, as a result of unrelieved pressure or pressure in combination with shear and/or friction. These skin injury causes pain, related risk for serious infection, and increased health care utilization. In order to prevent from these sores, the position of elder people should be replaced at least once in an hour. This task is usually done by a caregiver who is usually the other element of the couple (husband or wife). Regardless of the needs, they desire comfort in their daily life, as well as more efficient and integrated systems for health and social care. Nowadays, there is an increase on the availability of assisted devices that can be used at home, decreasing the constant requirement for health professional assistance.

The main objective of this study is to propose a conceptual solution consisting on the development of a bed design in order to be able to care of older people's skin problem, reduce the pressure on the bony prominence, nonetheless protect fragile elders and maximizing their quality of life. This design aims to create solutions with the help of mechanic and mechatronic systems, to reduce pressure on bony prominence and better conditions of life for the elderly or disable people. The new design consists of a cam-flower mechanism system. With the help of independent movable of subsets on this system, the pressures on bony prominence can be reduced and the contact surface can be protected. Each independent subset of the cam-follower mechanism can be initiated by the rotation movement of a motor and it can be used as a concept of a "massage bed". In this way it allows a safety design structure, to be able to take care of older people with disabilities in order to live more safe and comfortable in their bed.

Keywords

Wellbeing, Assistive Mechatronic System, Welfare Technology, Pressure Ulcers, Bed Sores.