

POSTER PRESENTATION 7: OTHERS

Relationship between body positions, body mass index and pressure injury among elders: Using Artificial Intelligent

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Purpose Prolonged pressure on skin is one of major leading causes to develop pressure injuries among those physically limited or bedridden elderly (Alipoor, etal, 2021). High Medical costs and a great impact on quality of the person's life have been highlighted. Prevention from pressure injury is a challenge for health care providers. This study was aimed to explore the relationship between body positions, body mass index and risk of having pressure injuries among the elders by using AI skills. **Method** Participants aged over 60 at communities were recruited and asked to lie on a standard bed covered by this AI pad for 120-140 minutes over 11 different positions. This AI pad with 1080 sensors using 3D Intersoft© skill to collect the electric resistance from the skin. The data connected to artificial intelligent data, and the method of human Factor Analysis was used to calculate and identify bone process and calculate the pressure of that skin area, so the surface pressure of the skin above 30 mmHg is identified at risk of development of pressure injury (Cicceri, etal,2020 & Jiang et al, 2021). **Results and Discussion** There were 133 participants with mean age of 68.72±6.73 years old, ranged from 60 to 96, involving in the study. The mean of BMI was 23.65±3.65 and divided into 3 groups: 1. underweighted (BMI<24, n=67), 2. normal (BMI: 24-27, n=43), and 3. overweighted (BMI>27, n=23). Demographic data of 3 groups were not significantly different. The weights of the muscle mass and fat in 3 groups were both respectively 3>2>1, but the muscle-to-body ratio and fat-to-body ratio were 1>2>3. The pressure on sacrum are high (above 40 mmHg) across 11 positions. As the participant sits up to 90°, the sacrum pressure of the group 3 increases up to 56.34 & 60.81 mmHg. Sitting up 90°with bending legs to 60°,the pressure of sacrum and heels increase up to 57.61 & 33.72 mm Hg. Lying on the side, the ear, acromion process, and greater trochanter significantly elevated to 53.02, 551.67, and 46.30 mmHg in group1. The pressure is always much higher than other 2 groups, expect lying on the side. Lying on the side would elevate pressure on the ear and acromion process in group 1. Sitting up to 90°with bending legs to 60°is the most dangerous position to develop pressure injury, especially in sacrum. The findings of this research reflect to the clinical observation. The group with BMI>27 is at higher risk of having pressure injury across most position, but underweight group having more risk as they lying on the side. The AI pad can identify bone process accurately and assist the health care providers to closely monitor the skin integrity of the elderly.

References

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Keywords: AI, body mass index, pressure injury, elders

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Acknowledgement Funding by Geriatric and Long-Term care Research Center, Chang Gung University of Science and Technology. No.ZRRPF3L0061

Figure 1. bone process using 3D Intersoft© skill. Figure 2 11 lying positions in the study.

