

Comparing Pressure Care Solutions For The 3P's - Pressure, Posture And Positioning

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Summary:

The treatment of pressure ulcers in the UK has been estimated to cost as much as £2.1 billion annually.¹²

To help address this, the 3P's Project analysed the effectiveness of three products available to clinicians when prescribing pressure care solutions: 1) Foam Pressure Cushions 2) Static Air Cushions 3) Low Profile Silicone Gel Pads. Research focused on understanding how each performs, and their impact on Pressure, Posture and Positioning, the 3P's.

Low profile silicone gel pads were found to perform well alongside the more traditional solutions of foam pressure cushions and static air pressure cushions.

In pressure mapping, the average pressure (mmHg) for Gel was 17.9% less than foam and 18.5% less than static air cushion (Table 1).

Tests showed that the thickness of the traditional cushions adversely affected client's posture and positioning. Using the Likert Scale, when the volunteers were positioned correctly in the

chair, they rated that the foam cushion was 5.6% less stable than low profile silicone gel and air cushions 23.2%. When the volunteers were not positioned correctly in the chair, the figures significantly increased as the volunteers were less stable on the foam cushion 27.4% and on the air cushion 38.1% This is due to compromised posture (Table 3).

It was evident that when stable overall the volunteers experienced less shear and increased comfort when sitting correctly in the chair with good posture. (Table 6) (Table 2)

Medical grade silicone gel offered 48.7% less shear than foam and 42.9% less shear than air when seating in a good position.

As a result of their research findings, the authors recommend that clinicians use the 3P's when prescribing a pressure cushion and consider the added value of low profile medical grade silicone gel for the treatment and prevention of pressure ulcers.

Evaluation covered the following specialist pressure care methods:

Foam Pressure Cushion

Static Air Cushion with Pump

Low Profile Silicone Gel Pad

For copyright reasons, the brand identities of the Foam and Air Cushions have been protected. Images are for illustration purposes only.

1 Objective

The objective of the project was to provide evidence and guidance to practitioners on how to prescribe pressure care solutions considering the 3P's: Pressure, Posture and Positioning to help support their clinical decisions when developing pressure care plans for individuals.

2 Background

Pressure ulcer treatment in the UK costs the NHS £3.8 million a day (NHS England 2018)¹¹ not to mention the cost to the individual whose lives are greatly changed in the process of being treated (Mervis and Philips.)¹²

Although prescribed in the community and clinical settings including hospitals, care homes, rehabilitation and spinal injury units, low profile medical grade silicone gel is a relative newcomer to pressure ulcer management, having been introduced into the UK in 2007 from the USA and is now used worldwide. Due to its relatively recent adoption, there is a lack of clinical evidence documenting its benefits.

It is the intention of the authors of this poster to redress this imbalance and to compare this form of pressure care to traditional solutions.

The Comfort Research Pod

A volunteer recruitment campaign was mounted to take part in a randomised trial called "The Comfort Research Pod." This 'generated' 30 individuals, whose skin was not compromised.

The aim was to record how different pressure care methods perform, with the client seated in a standard armchair. In addition, personal views were captured to add the voice of the subjects into this trial.

Each volunteer was seated in a height adjustable chair and tested in a 30 minute session. Information was gathered as follows:

- Without Cushioning** (for control)
- On a Low Profile Dimensional Gel Pad** (13mm depth)
- On a Foam Cushion** (80mm depth)
- On a Static Air Cushion** (75mm depth)

Volunteers provided information, including height, weight, BMI, health, and level of mobility.

The Comfort Research Pod

Research Principles

The authors completed the testing gathering comparable data, cross referencing and checking that the trial was set up identically for each volunteer, employing the principles as listed in the Code of Practice for Research (UK Rio)⁽⁴⁾.

Quantitative Research Method

Three testing methods were used to gather evidence to measure the performance of each of the three pressure care solutions.

- FSA Pressure Map System to measure average pressure (mmHg)
- "1 Shear" Device - a clinical tool to measure total shear force (tendency to slide) in the seat plane (Kg)
- Likert Scale *

*Using the Likert Scale⁽¹⁰⁾, each participant was asked to rate their level of comfort and how stable they felt on the pressure care product. 1 being the least comfortable and stable and 10 being the most.

Product Thickness Differentials

As the foam and air cushions are thicker than the Gel, it was important to adjust the chair height to achieve a correct 90° seated position when using the foam and air products. The research study captured the data in each position with volunteers seated in the correct position (90 degree position) and incorrect position (seat height too high with cushion in place). It was noted that this adjustment compromised posture and positioning. Being just 13mm thick, the Gel pad required no chair height adjustment with no postural issues resulting (See Table 1)

Pressure

Pressure needs to be evenly distributed, cushioning the 'load' on bony vulnerable areas to reduce the risk of pressure injury. Interface pressure is measured in mmHg.

Posture

Good Posture is achieved by keeping the spine in a neutral position, whilst positioning the legs so your feet are flat on the floor, knees flexed at a right angle and even with the hips with feet and knees roughly hip width apart, maintaining correct arm posture.^{13/14}

The 3 P's At a Glance

The authors recommend the adoption of the 3P's when prescribing pressure care solutions. Reducing pressure ulcer risk and improving posture and a person's position in their seating promotes healthy skin, comfort, daily living and wellbeing.

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3 Positioning

Good positioning in seating is essential. Seating needs to be the correct height, depth and width to enable the person to be fully supported and reduce the risk of sacral sitting and shear and friction on the skin.

The silicone gel pads referred to in this paper only apply to products manufactured by Gel Ovation Europe Ltd. Which cannot be held responsible or liable for the performance of products from other manufacturers. ©Gel Ovation Europe 2023

RESULTS

3 Pressure

The pressure mapping data showed that the volunteers experienced less pressure when using the low profile medical grade silicone gel; 17.9% below the foam and 18.5% below the static air cushion (in the correct seated position).

Condition	Without Pressure Cushion	Volunteers seated in incorrect position in chair	Volunteers seated in correct position in chair	Volunteer seated in correct position (no adjustment required)	Volunteers seated in incorrect position in chair	Volunteers seated in correct position in chair
Foam Pressure Cushion	18.28	19.82	20.49	16.28	19.98	20.52

Pressure Mapping

Participant 3's Pressure Mapping Results. This shows overall maximum mmHg pressure with low profile gel (with pressure shown well distributed) compared to foam or air cushions.

Seated on Foam Cushion

Seated on Low profile Gel Pad

Seated on Air Cushion

Condition	Without Pressure Cushion	Volunteers seated in incorrect position in chair	Volunteers seated in correct position in chair	Volunteer seated in correct position (no adjustment required)	Volunteers seated in incorrect position in chair	Volunteers seated in correct position in chair
Foam Pressure Cushion	7.73	7.1	8.03	8.33	6.76	7.56

Using the Likert Scale, volunteers scored the low profile gel the highest in terms of comfort and stability (Tables 2 and 3).

Table 2 Comfort (Likert Scale 1-10)

Table 3 Change to Stability (Likert Scale 1-10)

5 CONCLUSION

As a result of their research findings, the authors recommend that clinicians use the 3P's of Pressure, Posture and Positioning as part of their pressure care assessment.

Vulnerable individuals require stability due to compromised core strength and mobility and those who are at risk of pressure and shear would benefit from the attributes of low-profile dimensional gel pads, and these should be considered as an option alongside traditional pressure care solutions.

The authors conclude that pressure should not be seen as pressure ulcer prevention alone. Postural instability and poor positioning need to be considered within the clinician's assessment to reduce the risk of shear and improve the individual's comfort and safety in their seating.

The statistics demonstrated that only offering a cushion and not considering the change to a person's posture or positioning, reduced the effectiveness and ability to relieve pressure and shear.

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