Biomedical Explanations For Back Pain Heighten Perceived Fragility And Healthcare Use

Brendan Mouatt[1,2], G. Lorimer Moseley[1], Felicity A. Braithwaite[1,2], Mervyn J Travers[3,4], Kieran O'Sullivan[5,6,7], Carolyn M Murray[1,8], Tasha R. Stanton[1,2]

[1]IIMPACT in Health, University of South Australia, Kaurna Country, Adelaide, Australia, [2]Persistent Pain Research Group, Hopwood Centre for Neurobiology, Lifelong Health Theme, SAHMRI, [3]School of Physiotherapy, The University of Notre Dame Australia, Fremantle, Western Australia, Australia, [4]School of Physiotherapy and Exercise Science, Curtin University, Bentley, Western Australia, Australia, [5]Sports Spine Centre, Aspetar Orthopaedic and Sports Medicine Hospital, Doha, Qatar, [6]School of Allied Health, University of Limerick, Limerick, Ireland, [7]Health Research Institute, University of Limerick, Limerick, Ireland, [8]Allied Health and Human Performance Academic Unit, University of South Australia, Australia,

KEY POINTS

- **Clinicians' explicit messaging may influence patient perceptions of their body and healthcare engagement, but the impact of implicit messaging from specific interventions is less understood.**
- **We used online clinical vignettes (a hypothetical experience of low back pain) to study the effects of explicit and implicit messaging on perceptions of fragility, physical activity behaviours, and future healthcare use**
- **Embedding a biopsychosocial (BPS) understanding within treatment may reinforce patient confidence in the capabilities of their body and potentially decrease reliance on unnecessary healthcare use.**

BACKGROUND & AIMS

Current guidelines for low back pain (LBP) emphasise the importance of education, reassurance, and advice to remain active. However, LBP treatments often rely on outdated biomedical explanations, with potentially negative impacts on patient perceptions of the back, the body's capacity to heal, and the self-efficacy to engage with active strategies. Using hypothetical scenarios, this study investigates the impact of treatment messaging, both explicit (the things that are said to the patient) and implicit (the things that are done to the patient), on perceptions of back fragility, future healthcare use, and physical activity endorsement.

We had two aims:

→ **To determine whether the type of treatment received (passive vs. non-passive; implicit messaging) and the treatment explanation provided (biomedical vs. contemporary BPS; explicit messaging) influence perceptions of back fragility.**

→ **To assess if these treatment approaches affect physical activity (PA) endorsement after an initial treatment session and perceived future healthcare utilisation if back pain returned after having recovered.**

METHODS

PARTICIPANTS:
1007 individuals (aged 18-80) with or without LBP.

DESIGN:
Randomised, three-arm, mixed-methods study using online patient vignettes, accessed via an online link to Gorilla.sc surveys.

All participants were asked to imagine being in the same initial scenario of a LBP experience and given guideline advice before being randomly assigned to one of three treatment vignette groups.

GROUPS:
1. **Manual therapy with biomedical explanation (MT Biomed).**
2. **Manual therapy with BPS pain explanation (MT Pain Ed).**
3. **Advice to remain active with BPS explanation (No MT).**

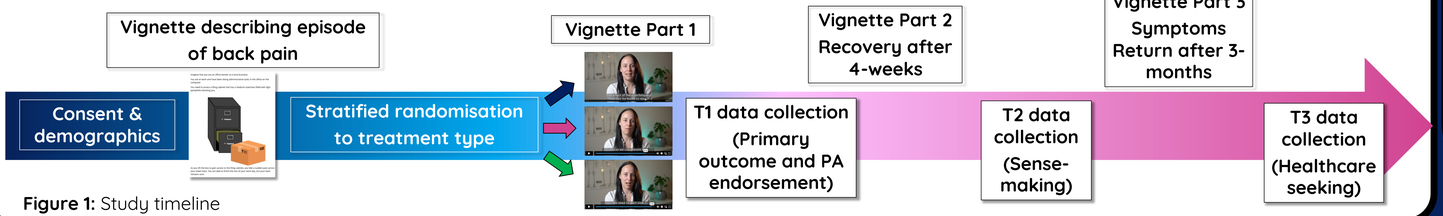

Figure 1: Study timeline

OUTCOME MEASURES
Primary: Perceived back fragility measured by the FreDIM Back Fragility Questionnaire (FreDIM), a composite score derived from responses to 19 items rated on Likert scales.

Secondary: Physical Activity endorsement assessed via a question on activity levels (No activity, Much less than normal, Less than normal, Slightly less than normal, My activity levels before injury) after Timepoint One.

Likelihood of Seeking Help assessed via a 5-point Likert scale question (1=Very Unlikely to 5=Very Likely) after Timepoint Three.

RESULTS

Table 1: Descriptive statistics

Characteristic	MT Biomed	MT Pain Ed	No MT	Total
Number of participants (n)	327	343	336	1007
Age (Years)	54.5 ± 15.4	53.7 ± 16.2	54.1 ± 15.2	54.1 ± 15.6
Sex (Female, Male, Intersex)	245, 82, 0	263, 79, 1	246, 90, 0	754, 251, 1
History of Back Pain (yes %)	309 (94.5%)	334 (97.4%)	324 (96.4%)	967 (96.0%)

Primary:
Participants in the MT Biomed group reported significantly higher perceived fragility than the MT Pain Ed (d=-0.37, p<0.001) and No MT groups (d=-0.38, p<0.001), with no significant difference between the MT Pain Ed and No MT groups. Figure 2.

Secondary:
Participants in the MT Biomed group endorsed higher PA levels (M=3.70, SD=0.898) than the MT Pain Ed (M=3.57, SD=0.834, Mean Difference (MD) = 0.13, 95%CI −0.00, 0.30) and No MT group (M=3.53, SD=0.853, MD = 0.16, 95%CI 0.04, 0.34), with no significant difference between the MT Pain Ed and No MT groups. Figure 3.

The MT Biomed group had the highest likelihood of seeking help when back pain returned (M=3.95, SD=0.0662) than the MT Pain Ed (M=3.66, SD=0.0638, MD = 0.32, 95%CI 0.11, 0.44) and No MT groups (M=3.49, SD=0.0649, MD = 0.49, 95%CI 0.26, 0.59), with no significant difference between the MT Pain Ed and No MT groups, Figure 4.

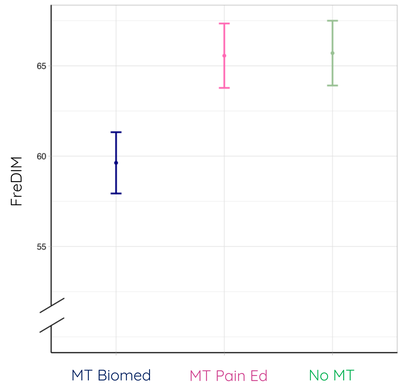

Figure 2: Perceived fragility (FreDIM)

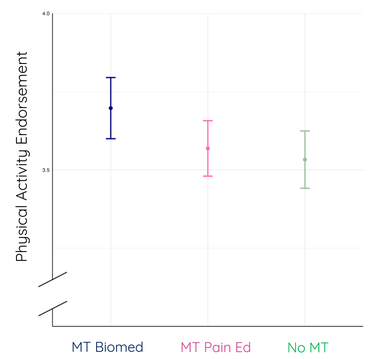

Figure 3: PA endorsement after initial treatment

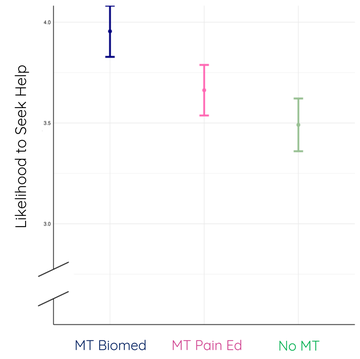

Figure 4: Healthcare use when LBP returns

CONCLUSIONS

- **Biomedical explanations paired with manual therapy (MT Biomed) resulted in higher perceived back fragility and greater odds of future healthcare utilisation than the groups with BPS explanations with or without manual therapy (MT Pain Ed and No MT).**
- **Biomedical explanations paired with manual therapy (MT Biomed) slightly increased the endorsement of PA relative to other groups, requiring further exploration through content analysis.**
- **There were no significant differences in groups comparing implicit messaging: movement advice with a BPS explanation without manual therapy (No MT) showed similar results to manual therapy with a BPS explanation (MT Pain Ed) for all outcomes.**
- **Our findings emphasise the importance of using pain-informed approaches and providing clear, explicit contemporary BPS explanations during treatment encounters to improve patient outcomes and reduce unnecessary healthcare use.**

@Dr_Flick_
Felicity.Braithwaite@unisa.edu.au

@BrendanMouatt
Brendan@noigroup.com

COI: BM is supported by a Leadership Investigator Grant from the National Health & Medical Research Council of Australia to GLM (ID 1178444).