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“Myths and Facts” Education Is Comparable to “Facts Only” for Recall of Back Pain Information but May Improve Fear-Avoidance Beliefs: An Embedded Randomized Trial

Patient education and advice is a mainstay of care for many health conditions.^{24,36} Patient education is the intended learning experience in which a combination of methods is used to influence knowledge, health behavior, and the way a patient experiences

their illness.^{10,37} Education and advice can be provided to individuals or groups of patients as a stand-alone intervention or as part of a treatment program.¹⁰

Low back pain is a highly prevalent and disabling condition for which many people seek care.¹² International guidelines recommend patient education and advice as a key part of the management of low back pain.^{2,22} Irrespective of the duration of pain, guidelines recommend that patients are provided with advice and information tailored to their needs and capabilities to support self-management.^{2,21,22} Many patients who seek care for low back pain also have misconceptions about the cause of pain, diagnostic processes, and the best management.¹⁸ Consequently, patient education ideally aims to correct these misunderstandings by providing knowledge about the nature of low back pain, appropriate management options, and self-management.^{3,10}

● **OBJECTIVE:** To assess the effectiveness of patient education with “myths and facts” versus “facts only” on recall of back pain information and fear-avoidance beliefs in patients with chronic low back pain (LBP).

● **DESIGN:** Randomized Study Within A Trial.

● **METHODS:** One hundred fifty-two participants with chronic LBP were included. Participants allocated to the “facts only” group received an information sheet with 6 LBP facts, whereas those allocated to the “myths and facts” group received the same information sheet, with each myth refuted by its respective fact. The primary outcome was a correct recall of back pain facts, and the secondary outcome was the physical activity component of the Fear-Avoidance Beliefs Questionnaire (FABQ-PA), 2 weeks after the provision of the information sheet.

● **RESULTS:** There was no evidence of a difference in the proportion of participants with a correct recall between the “myths and facts” and “facts

only” groups (odds ratio = 0.98; 95% confidence interval [CI]: 0.48, 1.99) and no significant difference in FABQ-PA mean scores between groups (−1.58; 95% CI: −3.77, 0.61). Sensitivity analyses adjusted for prognostic factors showed no difference in information recall but a larger difference in FABQ-PA scores (−2.3; 95% CI: −4.56, −0.04).

● **CONCLUSION:** We found no overall difference in the recall of back pain information for patients provided with “myths and facts” compared with that for patients provided with “facts only” and a slight reduction in fear-avoidance beliefs for physical activity using “myths and facts” compared with that using “facts only,” but the meaningfulness of this result is uncertain. *J Orthop Sports Phys Ther* 2022;52(9):586-594. Epub: 9 July 2022. doi:10.2519/jospt.2022.10989

● **KEY WORDS:** low back pain, musculoskeletal, myths and facts, pain education

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Recent studies suggest that patient education can improve the disability and pain intensity of patients with chronic low back pain.^{4,33,41} Despite recommendations to provide information and advice at all steps of the treatment pathway, there is currently no guidance about the best way to deliver patient education to support understanding and address incorrect beliefs or misconceptions.^{2,21,22}

Myth busting or presenting education as myths and facts is a common approach for delivering educational content to address misconceptions about a health condition or treatment.^{13,28} This approach aims to improve an individual's knowledge by contrasting a misconception (or myth) with the correct health condition information (or fact).³⁰ While myth busting is commonly used in public health campaigns, there is conflicting evidence about its benefit.^{26,32} Two previous randomized trials in the general population, which tested the influence of "myths and facts" compared to "facts only" on vaccination beliefs, reported that pairing myths and facts often backfires by reinforcing unfounded beliefs and strengthening misconceptions more than providing facts alone.^{26,27} In contrast, others have shown that 2-sided messages are more effective in addressing incorrect beliefs,^{30,32} and more recent trials that aimed to address vaccine hesitancy for COVID-19 have shown that myth-busting strategies were not inferior to facts-only information.³¹

To date, there has been no trial of the effectiveness of myth busting or providing facts only in low back pain education. Despite key examples of myth busting as a strategy for patient education and public health campaigns about low back pain,^{23,34} previous systematic reviews of patient education have not found any study supporting either approach.^{10,35} Due to this equipoise and in light of conflicting evidence in other fields, we conducted a randomized trial of education with "myths and facts" versus education with "facts only" for patients with chronic low back pain. The aim of this study was to investigate the comparative effectiveness

of these approaches on the correct recall of back pain information and fear-avoidance beliefs in patients with chronic low back pain.

METHOD

Study Design

This study was a randomized Study Within A Trial (SWAT). The design of the SWAT was a 2-arm randomized trial of patient education with "myths and facts" compared to education with "facts only" embedded in the Healthy Lifestyle Program (HeLP)²⁹ for low back pain trial.

Eligibility Criteria

The HeLP trial was conducted in Hunter New England Local Health District, Wallsend, Australia. The trial was prospectively registered with the Australian New Zealand Clinical Trials Registry and approved by the Hunter New England Research Ethics Committee (approval number 17/02/15/4.05) and The University of Newcastle Human Research Ethics Committee (reference number H-2017-0222). We completed recruitment between September 2017 and November 2019. The analysis for the SWAT followed a preplanned statistical analysis plan.³⁸ We followed the Consolidated Standards of Reporting Trials Statement to report this study.¹⁹

Participants with chronic low back pain who met the eligibility criteria for the HeLP trial²⁹ (see **BOX 1**) were randomly allocated to either the HeLP trial intervention or guideline-informed usual care physiotherapy. Participants who were allocated to the HeLP trial intervention were included in this SWAT. We obtained informed consent from all participants. **FIGURE 1** reports participant recruitment and flow.

Randomization We randomly allocated participants in the HeLP trial intervention arm (1:1 in blocks of 4) to receive education with "myths and facts" or "facts only." An independent investigator created the randomization schedule using Stata (StataCorp LLC, College Station, TX). A research assistant who was not involved in the study prepared sequentially numbered opaque envelopes according to the randomization schedule. Initially, participants were randomized into groups by a trained interviewer at the end of the baseline telephone interview for the HeLP trial²⁹ (**BOX 2**). However, to align better with the clinic process, allocation was moved to the initial physiotherapy appointment. This change occurred after 36 participants had been randomized. The new procedure required the treating physiotherapist to open the next available preprepared envelope containing the assignment at the start of the

Box 1. The HeLP trial²⁹ eligibility criteria.

Inclusion:

- Eighteen years of age or older, with activity limiting (pain score 3 or higher on an 11-point numeric rating scale or at least moderate interference with normal daily activities)
- Chronic (> 12-week duration) low back pain (between the 12th rib and buttock crease, with or without leg pain)
- Minimum of 1 of the following health risk factors: overweight (body mass index > 25 kg/m²), current smoker, participates in less than 30 minutes of physical activity 5 days of the week, or eats less than 2 serves of fruit and 5 serves of vegetables per day

Exclusion:

- Previously had bariatric weight loss surgery
- Were undertaking weight loss or smoking cessation programs
- Had back surgery in the previous 6 months or planned back surgery in the next 6 months
- Had a known or suspected serious pathology causing back pain (ie, rheumatoid arthritis, cancer, fracture, or infection)
- Could not actively engage in the intervention (unable to communicate, use a telephone or attend appointments, adapt meals, or exercise)
- Had comorbidity that does not allow safe completion of trial procedures or treatment (eg, uncontrolled blood pressure or heart conditions, uncontrolled diabetes)
- Were pregnant or planning pregnancy in the next 12 months

[RESEARCH REPORT]

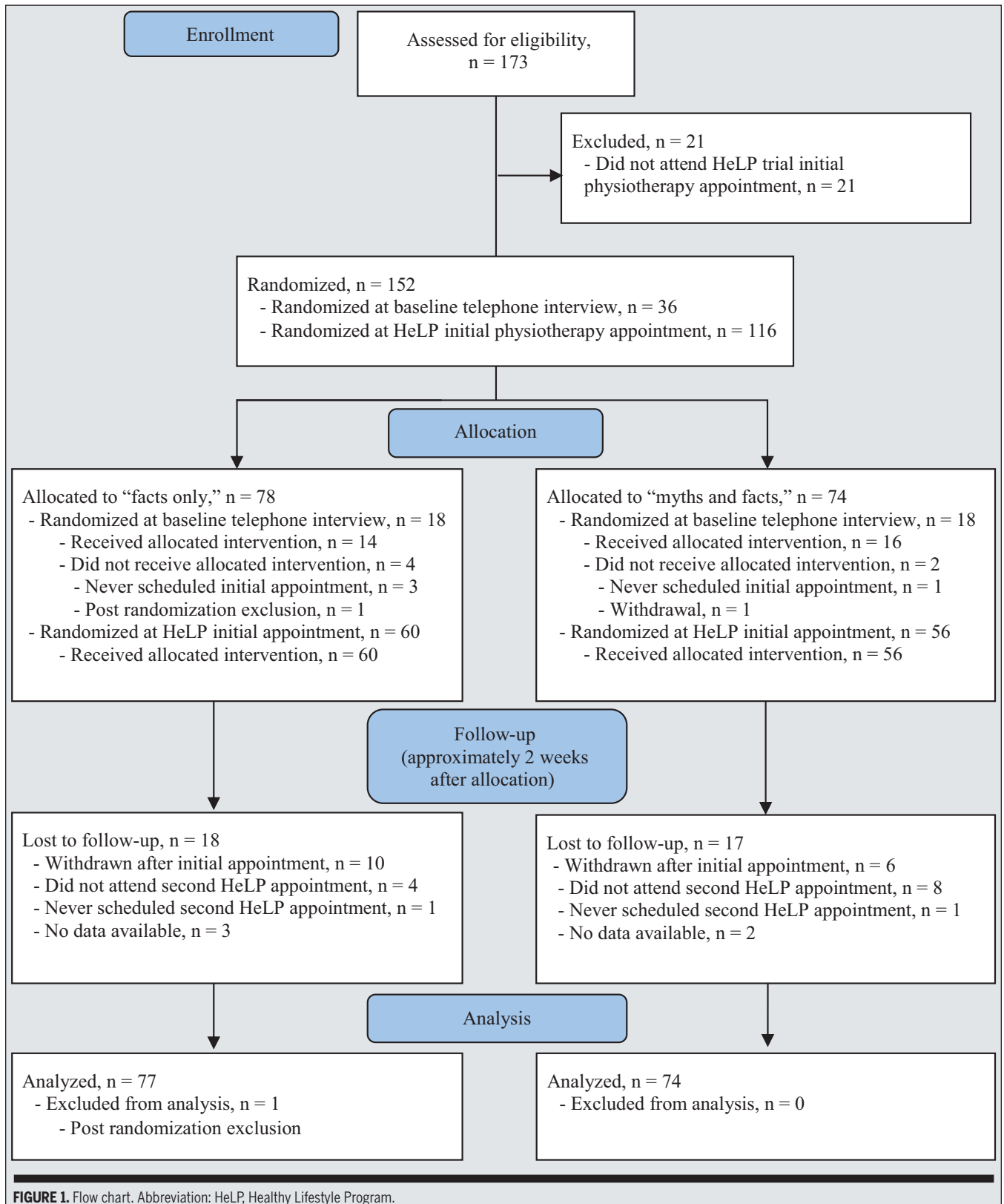


FIGURE 1. Flow chart. Abbreviation: HeLP, Healthy Lifestyle Program.

Box 2. A brief description of the HeLP trial²⁹ intervention.

HeLP intervention:

- Time frame: over a 6-month period; with 6-, 12-, 26-, and 52-week follow-ups
- Aim: support pain management and behavior change related to a healthy lifestyle
- Tools: educational resources and behaviour change strategies based on cognitive-behavioural therapy and motivational interviewing.
- Consultations: 6 face-to-face consultations of up to 60 minutes. If participants were not able to attend face-to-face, telephone or videoconference consultations were provided.
- Data collection points: baseline; weeks 3, 6, 12, and 52

Consultation content:

- Physiotherapist: 4 consultations—initial (week 1: **60 minutes**) and 3 follow-up (weeks 3, 6, and 12: **30-45 minutes**) consultations
 - Week 1 (initial) physiotherapy consultation content: patient history, physical assessment, anthropometric measurements collection, booklet (containing information about pain biology, links between pain and lifestyle, and the HeLP strategy to support adoption of healthy lifestyle behaviors), and the separate 1-page “facts” or “myths and facts” sheet (according to group allocation)
 - Weeks 3 and 6: reinforcement of information provided at week 1 (initial), reassessment of the goals established at week 1 (initial), problem solving, and “myths and facts” questionnaire assessment
 - Week 12: anthropometric measurements collection, reflect on information previously provided, reassessment of goals and strategies for problem solving
- Dietitian: at week 3, immediately after the physiotherapist consultation
 - Week 3: assessment of participants’ diet through food diary and brief eating behaviors, reinforce HeLP messages and strategies, discussion of Australian Guide to Healthy Eating and Dietary Guideline recommendations

first physiotherapy appointment. Participants were not aware that participants in the alternate group were provided information differently and so were blinded to intervention. It was not possible to blind the physiotherapists to group allocation due to the nature of the intervention.

Intervention At their initial appointment, all participants received the HeLP trial intervention and an additional 1-page information sheet with tailored information according to the “myths and facts” or “facts only” groups from the treating physiotherapists.

The HeLP trial²⁹ intervention (**BOX 1**) consisted of a detailed one-to-one advice and education by a physiotherapist about their condition and the impact of lifestyle on back pain outcomes. Participants were provided with an education booklet containing information about pain science and evidence-based back pain management.

At the end of the initial session, an additional 1-page information sheet was provided to the participants by the treating physiotherapist. The participants allocated to the “facts only” group received a sheet detailing 6 facts about low back

pain. Participants allocated to the “myths and facts” group received a different sheet detailing 6 myths about low back pain, each one refuted by its respective fact (the same facts presented to the “facts only” group) (**TABLE 1**). The treating physiotherapist worked through the 1-page information sheets with the participants for approximately 20 minutes, explaining the points and answering any questions related to the information provided. Physiotherapists were instructed not to talk about myths to participants in the “facts only” group. We designed the 1-page sheets using an empirical model tested by Pluviano et al^{26,27} in adults. The sheet refutes the myths by providing the facts and an explanation of why the fact is correct. The fact sheet contained only written information with no graphics. The concepts used in the information sheets were based on key recommendations detailed by clinical practice guidelines, as decided by consensus of the investigator group.^{2,22}

Physiotherapists’ Training A total of 5 physiotherapists with expertise in chronic pain conditions were trained prior to the commencement of the study. The

content of the training sessions included background to the HeLP trial as well as the intervention protocol and procedures, which included how to do the scheduling of appointments and how to use Research Electronic Data Capture (REDCap) to record the data. Treating physiotherapists completed a checklist after each session to ensure fidelity of the intervention. More details about the HeLP trial procedures can be found in the published protocol.²⁹

Outcome Measurement

The primary outcome was a correct recall of back pain facts, assessed by a true-or-false questionnaire containing the 6 items reflecting the information presented on the 1-page information sheet (**TABLE 1**). We defined *correct recall* as correct responses to all 6 items (ie, if 1 or more of the 6 items were incorrect, we considered the assessment “incorrect”). The investigators designed the questionnaire to directly relate to the “myths and facts” statements (**TABLE 2**).

The secondary outcome was the physical activity component of the Fear-Avoidance Beliefs Questionnaire³⁹ (FABQ-PA). The FABQ-PA assesses patient pain beliefs regarding physical activity. It consists of 4 statements to which participants rate their agreement on a 7-point Likert scale (0 = completely disagree, 6 = completely agree). The scale is scored by summing all item responses, with total scores ranging from 0 to 24 and higher scores indicating stronger fear avoidance for physical activities.³⁹

Participant characteristics were collected during baseline computer-assisted telephone interviewing (CATI) at recruitment to the HeLP trial²⁹ by a trained interviewer (approximately 1 week before the initial physiotherapy appointment). The CATI interviewer entered demographic data directly into a REDCap database.¹¹ The primary and secondary outcomes were collected using a pen-and-paper survey completed by the participant at baseline (immediately prior to the first appointment) and follow-up (at the end of the second physiotherapy ap-

TABLE 1

“MYTHS AND FACTS” GROUP INFORMATION SHEET

Back Pain Myths and Facts

Myth 1:

A scan (x-ray, CT, or MRI) will show what is wrong.

Fact 1:

Scans of people without back pain are just as likely to show bulging discs and other changes. What you see on a scan may not be the cause of pain.

Myth 2:

Pain equals damage.

Fact 2:

Pain is not an accurate indicator of injury or damage; it is a warning signal that responds to many different things. Often, the warning system becomes oversensitive and produces pain when there is no damage.

Myth 3:

My lifestyle habits (eg, habits that cause excess weight, smoking) do not affect my back pain.

Fact 3:

General health and lifestyle can play a direct role in how much pain a person feels. This might include diet, excess weight, smoking, exercise levels, alcohol intake, stress, sleep, and fatigue.

Myth 4:

Moving will make my back worse.

Fact 4:

Some movements are uncomfortable when you have back pain, but moving your body, doing normal activity, and returning to work as soon as possible are good for your back and will not cause damage.

Myth 5:

I should avoid exercise, especially weight training because of my back pain.

Fact 5:

Exercise is accepted as the best treatment for back pain. No one type of exercise is better or worse, so simply do what you enjoy and feels best! Start slowly and build up gradually.

Myth 6:

Surgery will help my back pain.

Fact 6:

Research shows that people with back pain who have surgery do not have better results than those who have other treatment. This is because many things influence back pain, not just bones and joints.

Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging.

Statistical Analysis

A sample size of 150 participants (75 per group) was required to detect a 20% difference (small effect size^{7,14}) in the proportions of the primary outcome, assuming 90% prevalence in the control group, with an alpha level of 5% and 80% power allowing for up to 18% loss to follow-up. An independent statistician calculated the sample size using an uncorrected chi-squared statistic to evaluate the null hypothesis using Power and Sample Size Calculations.⁹

We conducted our analyses according to a preplanned statistical analysis plan published on the Open Science Framework.³⁸ All analyses were conducted according to the intention-to-treat analysis principle. We investigated patterns of missing data and assessed baseline characteristics associated with missing data using t tests for continuous variables and chi-square tests for categorical variables. We used multiple imputations to handle missing follow-up data. We created values for any variable missing (fully conditional specification imputations) to impute missing values of participants who did not answer any of the outcome questionnaires.^{15,16} Statements for the true-or-false questionnaire left blank or answered both “yes” and “no” were considered incorrect. The assumption of an incorrect answer reflects a lack of recall of the education material. For the FABQ-PA, we imputed a score for each item when we found a missing value. Estimates resulting from the analysis of the imputed data sets were combined using Rubin’s rule.¹⁷

For the primary analysis, we used univariable logistic regression to assess between-group differences in the proportion of participants with a correct recall of back pain information between groups. We used univariable linear regression for secondary analyses to assess the between-group differences in the FABQ-PA sum score and the mean number of correct answers from the primary outcome questionnaire. An independent statistician, blinded to group status and not involved with the study, conducted the analysis using SAS 9.4 (SAS Institute, Cary, NC).

TABLE 2

“MYTHS AND FACTS” QUESTIONNAIRE

Statements	Answer Options	Correct Answer
A scan (x-ray, CT, or MRI) will not always show what is wrong with my back.	() True () False	True
Pain equals damage.	() True () False	False
My lifestyle habits (habits that cause excess weight, smoking) do affect my back.	() True () False	True
Moving will not make my back pain worse.	() True () False	True
I should avoid exercise, especially weight training because of my back.	() True () False	False
Surgery will help my back pain.	() True () False	False

Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging.

pointment), approximately 2 weeks after the first appointment. The treating clinician collected the survey from the participants after they finished. A research

assistant entered the data from the paper surveys into REDCap.¹¹ A second member of the research team double-checked the entered data.

We preplanned 2 sensitivity analyses.³⁸ First, we adjusted for baseline covariates, defined as potential prognostic factors with at least 20% difference between groups at baseline. These included pain duration, number of previous pain episodes, and number of medications used for back pain. Second, we excluded participants who did not attend the initial physiotherapy appointment to explore any dropout effect before the initial appointment. However, because only 9 participants did not attend the appointment, we decided not to perform this analysis. We also conducted a post hoc sensitivity analysis to assess the impact of missing data by repeating the primary and secondary analyses using complete cases (listwise deletion).

RESULTS

A TOTAL OF 173 PARTICIPANTS WERE considered for eligibility; 21 were excluded, and 152 participants were randomized for this SWAT (FIGURE 1). One participant who had not disclosed that they were participating in a restricted treatment prior to randomization for the main trial was excluded from the main trial and this SWAT. There were 77 randomized to the “facts only” group and 74 randomized to the “myths and facts” group, with 71% of participants in the “facts only” group and 75% in the “myths and facts” group returning to the second appointment to complete follow-up. The mean age was 51 years (SD = 13.15), and 58% of all participants were female (TABLE 3). Nine participants did not complete self-collection of the baseline primary outcome questionnaire, and 21 participants did not complete the baseline secondary outcome questionnaire in the clinic waiting room. We found no difference between the demographic characteristics of participants who did not attend the second physiotherapy appointment and those of participants who attended (SUPPLEMENTAL TABLE 1).

Primary and Secondary Outcome Results

TABLE 4 presents the estimates for primary and secondary outcomes. The proportion

TABLE 3

DEMOGRAPHIC CHARACTERISTICS

Characteristics	Facts Only (n = 77)	Myths & Facts (n = 74)	Total (N = 151)
Age (years), ^a mean (SD)	49.38 (12.95)	52.49 (13.26)	50.90 (13.15)
Sex, n female (%)	43/77 (56)	44/74 (59)	87/151 (58)
Gross household income, ^{ab} n (< AUD \$1700/week) (%)	63/71 (89)	58/69 (84)	121/140 (86)
Back pain was compensable, ^a n (%)	3/77 (4)	5/74 (7)	8/151 (5)
Baseline % of correct responses, ^c n (%)	12/71 (17)	12/71 (17)	24/142 (17)
Baseline FABQ-PA score, mean (SD)	14.48 (6.60) n = 64	13.35 (7.17) n = 66	13.91 (6.89) N = 130
Back pain disability (RMDQ), ^a mean (SD)	14.6 (5.2)	14.6 (5.7)	14.6 (5.4)
Pain intensity (NRS), ^a mean (SD)	6.5 (1.8)	6.4 (1.6)	6.5 (1.7)
Pain self-efficacy (PSEQ-2), ^a mean (SD)	6.7 (3.3)	7.7 (2.3)	7.2 (3.2)
Pain duration (years), ^a mean (SD)	8.1 (7.8)	13.8 (12.9)	10.9 (10)
Number of prior episodes of back pain, ^a mean (SD)	4.9 (17.5) n = 76	1.7 (5.8) n = 71	3.4 (13.3) N = 147
Sleep quality (PSQI-6), mean (SD)	1.0 (0.8)	1.1 (0.9)	1.0 (0.8)
Body mass index (kg/m ²), mean (SD)	31.8 (9.2) n = 72	30.8 (6.2) n = 73	31.3 (7.9) N = 145
Quality of life (SF12.v2), ^a mean (SD)	34.4 (6.7)	33.9 (6.0)	34.2 (6.8)
Physical component score (PCS), mean (SD)	50.7 (10.3)	49.0 (9.4)	49.9 (9.9)
Mental component score (MCS), mean (SD)	49.6 (9.5)	49.7 (10.7)	49.6 (10)
Physical activity (IPAQ), ^a median (IQR)	330 (99, 906)	331 (0, 1247)	330 (66, 1104)
Emotional distress (Kessler 6 questionnaire), ^a mean (SD)	8.0 (5.2)	8.0 (6.6)	8.0 (5.9)
Number of medications used for back pain, median (IQR)	1.0 (1, 2)	2.0 (1, 2)	2.0 (1, 2)
Number of previous health care providers back pain, ^a median (IQR)	1.0 (0, 1)	1.0 (0, 1)	1.0 (0, 1)

Abbreviations: FABQ-PA, physical activity component, Fear-Avoidance Beliefs Questionnaire; IPAQ, International Physical Activity Questionnaire, described as total physical activity MET-minutes/week = sum of Walking + Moderate + Vigorous MET-minutes/week scores; IQR, interquartile range; Kessler 6 questionnaire, how often a feeling was experienced over the past 30 days (response options: all of the time, most of the time, some of the time, a little of the time, none of the time); n/N, frequency; NRS, numeric rating scale (average of previous week, where 0 indicates no pain and 10 indicates the worst pain possible); PSEQ-2, 2-item validated Pain Self-Efficacy Questionnaire (scale of 0–6, with 0 indicating not at all confident and 6 indicating completely confident); PSQI-6, item 6, Pittsburgh Sleep Quality Index; RMDQ, Roland-Morris Disability Questionnaire; SD, standard deviation; SF12.v2, 12-item Short Form Health Survey Version 2 (0–100 scale, with higher scores indicating higher quality of life).

^aPrognostic factors.

^bGross household income threshold based on estimated average Australian income.

^cScale also used to measure recall postintervention.

TABLE 4

POSTINTERVENTION OUTCOME VARIABLES BY GROUP AND BETWEEN-GROUP DIFFERENCE

Outcomes	Facts Only (n = 77)	Myths & Facts (n = 74)	Between-Group Difference (95% CI)
Correct recall	32%	32%	OR = 0.98 (0.48, 1.99)
Mean sum of correct statements (SD)	4.67 (1.31)	4.62 (1.31)	−0.05 (−0.53, 0.43)
Mean FABQ-PA score (SD)	13.39 (6.40)	11.81 (6.38)	−1.58 (−3.77, 0.61)

Abbreviations: CI, confidence interval; FABQ-PA, physical activity component, Fear-Avoidance Beliefs Questionnaire; OR, odds ratio; SD, standard deviation.

of participants with a correct recall in the “myths and facts” group was similar to that in the “facts only” group (32% vs 32%; odds ratio = 0.98; 95% confidence interval [CI]: 0.48, 1.99). There was a slightly lower mean FABQ-PA score in the “myths and facts” group relative to that in the “facts only” group (−1.58; 95% CI: −3.77, 0.61). There was no difference in the mean number of correct responses between the 2 groups (−0.05; 95% CI: −0.53, 0.43). The difference in the proportion of correct responses for individual statements was inconsistent (SUPPLEMENTAL TABLE 2).

Sensitivity Analysis

After adjusting for prognostic covariates, the between-group difference in the proportion of participants with correct recall (1.13; 95% CI: 0.53, 2.4) and mean number of correct statements (0.07; 95% CI: −0.44, 0.57) was similar to the main analysis. However, there was a slightly larger effect observed in favor of “myths and facts” for the FABQ-PA score (−2.3; 95% CI: −4.56, −0.04). Results for the complete-case analysis of 112 participants were similar to those for the main analysis (TABLE 5).

DISCUSSION

WE ASSESSED THE EFFECTIVENESS of patient education for chronic low back pain with “myths and facts” compared to “facts only.” There was no overall difference between the 2 presentation modes on patient correct recall of back pain facts or in the mean number of correct responses. We observed a small reduction in fear-avoidance beliefs about physical activity by presenting “myths and facts” compared to when presenting “facts only,” but the clinical meaningfulness of this difference is unclear.

We followed an a priori published statistical analysis plan to improve the transparency of data analysis and reporting bias. We minimized performance and detection bias by embedding the SWAT in a larger trial where patients were unaware of the alternate groups. While we used a known valid and reliable instrument to assess fear-avoidance beliefs (secondary outcome),^{39,40} a limitation of the study was the lack of a validated instrument to measure correct recall. We developed a specific measure for the recall of back pain facts, as no other measure exists. Consequently, content validity, responsiveness, and interpretability are unknown. Our defini-

tion for correct recall as participants getting all the 6 sentences correctly was very strict, which may explain the low rates for recall (32%). In addition, the instrument used to measure correct recall does not differentiate between the lack of correct recall and individual disagreements with the statements (eg, to remember the information provided, yet disagree with it). However, as the physiotherapist explained and discussed the information sheet with the participants, we contend that disagreements with the statements were minimized. Another limitation is we had moderate data attrition (23%). We moved the randomization point to the first clinical appointment after the commencement of the study, which may have introduced ascertainment bias. Only 5 participants did not attend their clinic appointment before the change, and we believe this had minimal impact on our results.

Previous studies in other fields show conflicting evidence about the effectiveness of myth busting as a strategy to deliver patient education.^{25,27} Studies in journalism science suggest that myth busting is detrimental to correcting misinformation. This is due to people often misremembering incorrect information as true; yet, at the same time, the familiarity with the topic increases credibility that their incorrect understanding is true.²⁵ In contrast, randomized trials in health science have found no evidence that presenting myths and facts compared to facts alone is counterproductive to recall accuracy.⁶ Our results show that neither method was superior to support recall of facts about back pain. However, the wide CIs in our study do not allow us to definitively conclude equivalence. Only 32% of participants accurately recalled back pain facts across both groups—our study does not favor the use of either approach.

Our findings are consistent with previous studies that suggest presenting only factual information may not be the best approach to shift fear-avoidance beliefs.^{27,30} Previous studies^{1,8} suggested that refuting information with 2-sided messages (provide opposing information) is

TABLE 5

SENSITIVITY ANALYSES FOR PRIMARY AND SECONDARY OUTCOMES

Sensitivity Analyses	Facts Only (n = 77)	Myths & Facts (n = 74)	Between-Group Difference (95% CI) ^a
Adjusted for prognostic factors^b			
Correct recall	32%	32%	OR = 1.13 (0.53, 2.41)
Sum of correct statements	4.67 (1.31)	4.62 (1.31)	0.07 (−0.44, 0.57)
FABQ-PA score	13.39 (6.40)	11.81 (6.38)	−2.30 (−4.56, −0.04)
Complete cases			
Correct recall	38%	39%	OR = 0.93 (0.43, 1.99)
Sum of correct statements	(n = 56) 4.95 (1.15)	(n = 56) 4.84 (1.22)	−0.11 (−0.54, 0.33) ^a
FABQ-PA score	(n = 55) 13.42 (6.72)	(n = 53) 11.49 (6.70)	−1.93 (−4.44, 0.58)

Abbreviations: CI, confidence interval; FABQ-PA, physical activity component, Fear-Avoidance Beliefs Questionnaire; OR, odds ratio.

^aThe estimate is mean difference unless indicated.

^bAdjusted for mean pain duration, number of previous pain episodes, and number of medications used for back pain.

more persuasive and has higher credibility than refuting information with 1-sided messages (when only 1 argument is presented). We presented the myths and facts as 2-sided messages, which might explain why we found a marginally better effect to reduce fear-avoidance beliefs about physical activity when compared to facts only. However, the difference (-1.58 ; 95% CI: $-3.77, 0.61$; adjusted estimate, -2.30 ; 95% CI: $-4.56, -0.04$) observed may not be clinically meaningful as a previous study suggested a minimally important difference of 4 points for the FABQ-PA.²⁰

Misinformation about back pain is common and remains a major contributor to the global burden of back pain.⁵ Our study adds to the limited body of research about education techniques aiming to counteract health misinformation. We found no apparent benefit of delivering back pain education to patients as “facts only” or as “myths and facts.” Indeed, the delivery of myths and facts together does not lead patients with chronic low back pain to misremember myths as facts or to shift their beliefs about physical activity. Our results provide some support for using the “myths and facts” format if the education aims to target fear-avoidance beliefs in patients with low back pain. However, to make any meaningful gain in combating misinformation and correcting beliefs about back pain, more dedicated research is needed to identify what works. One immediate step for future research would be to identify the causes and mechanisms of judgment formation about back pain information to help develop suitably targeted corrective communication strategies.

CONCLUSION

WE FOUND THAT NEITHER “MYTHS and facts” nor “facts only” were superior in supporting participant recall of back pain information. There was a slight reduction in fear-avoidance beliefs for physical activity using “myths and facts” compared to using “facts only,”

but the meaningfulness of this result is uncertain. ●

KEY POINTS

FINDINGS: We found no difference between patient education with “myths and facts” and patient education with “facts only” on the correct recall of back pain information in patients with low back pain but observed a small reduction in fear-avoidance beliefs from “myths and facts” compared to “facts only.”

IMPLICATIONS: Neither “myths and facts” nor “facts only” are superior to support the recall of clinical back pain information, but the use of “myths and facts” leads to a marginal improvement in fear-avoidance beliefs.

CAUTION: This study had a moderate attrition bias and used a nonvalidated primary outcome measure with some uncertainty present in the effect estimates.

STUDY DETAILS

AUTHOR CONTRIBUTIONS: Priscilla Viana da Silva was involved in protocol writing, data collection, and manuscript preparation. Emma Robson was involved in conceptualization, trial design, and data collection. Simon R. E. Davidson and Connor Gleadhill were involved in trial design and performed data collection. Bruce Donald performed data collection. Erin Nolan performed data analysis. Dr Tiê Parma Yamato contributed to the manuscript preparation. Dr Hopin Lee performed the randomization schedule and contributed to the manuscript preparation. Drs Steven J. Kamper and Christopher Williams were involved in conceptualization, trial design, protocol writing, and manuscript preparation. All authors critically reviewed and approved the manuscript prior to submission.

DATA SHARING: All data used in this study are available on request from the corresponding author (Christopher.M.Williams@newcastle.edu.au). Data may be used after permission of the corresponding author and appropriate ethics committee.

PATIENT AND PUBLIC INVOLVEMENT: Participants were not involved in the design,

conduct, interpretation, and/or translation of the research.

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