

Interference and Physical Function

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Purpose

Primary Purpose: To assess the influence of healthy versus maladaptive beliefs about surgery and exercise as interventions for low back pain. Specifically, we aimed to assess the relationship between these beliefs and self-reported pain interference and physical function outcomes.

Materials

A cohort was derived from 629 clinical trial participants (3 previous trials; all null) receiving non-pharmacological pain management for low back pain in primary care. Participants were asked to consider if they perceived surgery and exercise as likely to properly address their problem. Each question was rated on a Likert scale (1=completely disagree; 5=completely agree). Participants who somewhat or completely agreed (scores 4 or 5) that surgery would be beneficial or that exercise would make their symptoms worse were categorized as having maladaptive beliefs. We modeled the influence of maladaptive beliefs on 6-week and 6-month PROMIS Physical Function and Pain Interference, while adjusting for age, active-duty status, and military rank within generalized linear (Gaussian) models.

Results

The cohort was 28.8% female, mean (SD) age of 33.4 (8.3) years, 79.8% enlisted (versus officers) and 83.1% active-duty (versus dependents or retirees).

After accounting for covariates, baseline beliefs that surgery would not be helpful predicted significantly lower pain interference ($\beta=-2.58$, $SD=0.70$; $P<0.001$) and significantly higher physical function ($\beta=2.94$, $SD=0.67$; $P<0.001$) at 6 weeks. Baseline beliefs that exercise (aerobic and resistance) would help improve back pain predicted significantly lower pain interference ($\beta=-3.02$, $SD=0.74$; $P<0.001$) and significantly higher physical function ($\beta=2.51$, $SD=0.72$; $P<0.001$) scores at 6 weeks.

Item	Estimate	Formatted Results	P Value
(Intercept)	53.21576024	53.216 (49.67-56.762)**	0.00
Surgery is Beneficial	1.877420668	1.877 (-0.114-3.869)	0.07
Age	0.049896131	0.05 (-0.034-0.134)	0.25
Active Duty	-0.371748039	-0.372 (-2.137-1.393)	0.68
Rank Category	-1.255794928	-1.256 (-2.903-0.392)	0.14
(Intercept)	54.50231397	54.502 (50.992-58.013)**	0.00
Exercise is Beneficial	-3.140445415	-3.14 (-4.446--1.835)**	0.00
Age	0.050665526	0.051 (-0.032-0.134)	0.23
Active Duty	-0.452863833	-0.453 (-2.192-1.287)	0.61
Rank Category	-1.262353068	-1.262 (-2.886-0.361)	0.13

PROMIS Pain Interference (6 weeks)

Item	Estimate	Formatted Results	P Value
(Intercept)	49.17896085	49.179 (45.779-52.579)**	0.00
Surgery is Beneficial	-2.0629395	-2.063 (-4.006--0.12)*	0.04
Age	-0.151044598	-0.151 (-0.233--0.069)**	0.00
Active Duty	0.742118052	0.742 (-0.827-2.311)	0.35
Rank Category	1.7411556	1.741 (0.254-3.229)*	0.02
(Intercept)	48.1290838	48.129 (44.747-51.511)**	0.00
Exercise is Beneficial	2.473157555	2.473 (1.189-3.757)**	0.00
Age	-0.152201785	-0.152 (-0.233--0.071)**	0.00
Active Duty	0.834588883	0.835 (-0.72-2.39)	0.29
Rank Category	1.760195671	1.76 (0.287-3.233)*	0.02

PROMIS Physical Function - 6 weeks



The overall effects of maladaptive beliefs on these outcomes were the same at 6 months.

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Conclusion

Maladaptive beliefs about treatment have the potential to adversely influence short term pain and physical function outcomes. Patients receiving care for low back pain that believed that surgery would be beneficial or that exercise would be harmful improved significantly less than patients who felt otherwise. A better understanding of patient beliefs about treatment effectiveness may present an opportunity to improve engagement with interventions and subsequently treatment outcomes.

Clinical Relevance

Adequately addressing maladaptive beliefs may help improve engagement with treatment and subsequently pain and physical function outcomes.

References

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