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A trial of an activating intervention for chronic back pain in primary care and physical therapy settings

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Abstract

In primary care and physical therapy settings, we evaluated an intervention for chronic back pain patients which incorporated fear reducing and activating techniques. Primary care patients seen for back pain in primary care were screened to identify persons with significant activity limitations 8–10 weeks after their visit. Eligible and willing patients were randomized ($N=240$). A brief, individualized program to reduce fear and increase activity levels was delivered by a psychologist and physical therapists. Over a 2 year follow-up period, intervention patients reported greater reductions in pain-related fear ($P<0.01$), average pain ($P<0.01$) and activity limitations due to back pain ($P<0.01$) relative to control patients. The percent with greater than a one-third reduction in Roland Disability Questionnaire scores at 6 months was 42% among Intervention patients and 24% among control patients ($P<0.01$). Over the 2 year follow-up, fewer intervention patients reported 30 or more days unable to carry out usual activities in the prior 3 months ($P<0.01$). The adjusted mean difference in activity limitation days was 4.5 days at 6 months, 2.8 days at 12 months, and 6.9 days at 24 months. No differences were observed in the percent unemployed or the percent receiving worker's compensation or disability benefits, but these outcomes were relatively uncommon. We conclude that an intervention integrating fear reducing and activating interventions into care for chronic back pain patients produced sustained reductions in patient fears, common activity limitations related to back pain, and days missed from usual activities due to back pain.

Keywords: Back pain; Disability; Chronic pain; Primary care; Physical therapy; Cognitive-behavioral; Self-management

Chronic-recurrent back pain and associated disability are common among back pain patients seeking primary care (von Korff and Saunders, 1996). After 1 year, one-third of primary care back pain patients report moderate or greater pain intensity, and one-fifth report substantial activity limitations due to back pain. Despite large increases in medical services for back pain over the last 40 years, disability due to back pain remains a major societal problem (Waddell, 1998).

In line with growing evidence that exercise and encouraging resumption of normal activities reduces activity limitations related to back pain (Van Tulder et al., 2000; Abenhaim et al., 2000; Moffett et al., 1999; Rossignol et al., 2000; von Korff and Moore, 2001), evidence-based guidelines for back pain recommend increasing activity tolerance (Bigos et al., 1994). Fear of movement is commonly observed among persons with back pain. Patients

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often believe that the 'wrong movement' might cause a serious problem and that unnecessary movement should be avoided (von Korff and Moore, 2001). These beliefs increase risks of chronic disability (Crombez et al., 1999; Vlaeyen et al., 1995) and are often not recognized or addressed by physicians (Turner et al., 1998). Brief educational interventions can produce long-lasting reductions in these fears (Moore et al., 2000; von Korff et al., 1998). Intervention trials that have employed graded in vivo exposure to feared behaviors have shown promising results (Van Tudler et al., 2000; Vlaeyen et al., 2002). The intervention tested here addressed back pain-related fears, but did not employ graded in vivo exposure to feared situations.

Chronic back pain patients are frequently referred by primary care physicians for physical therapy, but evidence-based physical therapy interventions for chronic back pain patients are lacking. Cherkin et al. (1998) evaluated the McKenzie method of physical therapy with primary care back pain patients who still had pain 7 days after seeking care. They found borderline differences in activity limitations, as measured by the Roland Disability scale, at 1 and 2 years relative to patients receiving usual primary care supplemented by an educational booklet. More recently, George et al. (2003) reported a small randomized trial that compared physical therapy addressing fear-avoidance beliefs to standard physical therapy for acute back pain patients. They found significant reductions in fear of physical activity at 6 months. Differences in Oswestry Disability Questionnaire scores at 6 months were non-significant, but the study was likely underpowered to detect differences in disability outcomes.

This paper reports results of a randomized trial of an intervention for chronic back pain patients addressing fears and encouraging normal activities and physical exercise. We sought to test a practical care model that might be employed with large numbers of patients with chronic back pain in the primary care and physical therapy settings where they are often seen. We assessed whether the intervention reduced fears, activity limitations and disability related to back pain.

1. Methods

1.1. Setting and participants

This research was conducted in Group Health Cooperative (GHC). The study protocol was reviewed and approved by the GHC institutional review board. Primary care back pain patients age 25–64 were mailed a screening questionnaire 8–10 weeks after their back pain visit.

The screening questionnaire included the modified Roland Disability Questionnaire (RDQ) (Deyo et al., 1998; Patrick et al., 1995; Roland and Morris, 1983). Patients endorsing seven or more activity limitations on the 23-item RDQ were eligible. This cut-point was chosen based on prior research showing that persons with scores in this range or higher are not satisfied with their back pain status (Cherkin et al., 1996). Patients being considered for back surgery or currently being managed by a physical therapist or psychologist for back pain were ineligible, as were patients planning to disenroll from GHC. Eligible patients were contacted by phone. Recruitment materials described the study as testing 'a new way of helping people better understand and deal with back pain'. Those willing to participate after informed consent completed a 25-min baseline interview, at which time the RDQ was readministered, along with other study measures. Eligible patients were randomly assigned to the Intervention or Usual Care Control group.

1.2. Masking

At 2, 6, 12 and 24 months after randomization, follow-up telephone interviews were conducted by an interviewer blind to Intervention or Control Group assignment.

1.3. Outcome measures

Outcome measures included the following.

Roland Disability Questionnaire. The 23-item version of the Roland Disability Questionnaire (RDQ) was the primary outcome measure (Deyo et al., 1998; Patrick et al., 1995; Roland and Morris, 1983).

Back pain worry. A 0–10 to rating where 0 is not at all worried and 10 is extremely worried (Moore et al., 2000; von Korff et al., 1998).

Fear-avoidance beliefs. A version of the Tampa Scale for Kinesiophobia (Vlaeyen et al., 1995), shortened to eliminate redundant and difficult to understand items. This 10-item scale measured fear of movement, pain and injury. Typical items are: *"I wouldn't have this much pain if there weren't something potentially dangerous going on in my body"; "Although my condition is painful, I would be better off if I were physically active"*. The scale was scored by summing items, after reverse scoring positive items, so that a higher total score indicates higher levels of fear-avoidance beliefs. To permit comparison of scores to other studies, we adjusted the total score of the 10 item version employed in this study to yield a total score comparable to the total score of the original 17 item version. This was done by multiplying the average item score for the items answered by 17.

Pain intensity. Participants rated their average pain intensity in the prior 3 months on a 0–10 scale where 0 is *no pain* and 10 is *pain as bad as could be*.

Mental health and social functioning. The Mental Health Inventory and the Social Functioning scale from the SF-36 were administered at baseline, 6, 12 and 24 months (Ware et al., 1994).

Occupational role disability. At each interview, participants were asked: how many days they were unable to carry out usual activities (work, school or housework) during the prior 3 months due to back pain; their current employment status; and whether they were receiving worker's compensation or disability payments due to back pain (von Korff and Moore, 2001).

Chronic pain grade. Chronic pain grade (von Korff, 2001; von Korff et al., 1992), with a 3 month reporting interval, was used to

assess baseline comparability of the Intervention and Control Groups and to adjust for severity differences.

1.4. Statistical power

A priori power calculations for this trial estimated that the design could detect a 2.4 point between group difference in Roland Disability Score (the primary outcome) with 80% power for a two-sided test with a 0.05 significance level.

1.5. Intervention protocol

The essential elements of the intervention are described elsewhere (Balderson et al., 2004), while an intervention manual and forms are available from Dr. Balderson upon request. The intervention included four in-person visits. An initial 90-min visit with a psychologist: identified and addressed patient fears about back pain; discussed the relationship between resuming normal activities and quality of life; set an activity or exercise goal to enhance quality of life; and developed an action plan to achieve the goal. The second 60-min visit, with a physical therapist, took place 7–10 days later. The physical therapist conducted a standardized mechanical examination of the back, discussed unresolved patient concerns identified in the initial visit, taught stretches and exercises *relevant to the action plan*, and offered guidance in overcoming barriers the patient had encountered in carrying out the action plan. A third visit (30 min) with a physical therapist occurred about 10 days later. This visit focused on the action plan and exercises relevant to the action plan. After a 2 week interval, a fourth visit (30 min) with the psychologist reviewed progress, encouraged use of relaxation, and developed plans for sustaining progress, managing flare-ups and resuming activities when a flare-up occurred. A key idea in this session was that flare-ups are common but manageable. Less than 10% of Intervention patients ($n=11$) received one to three bonus visits in addition. Intervention patients received a book on back pain self-management (Moore et al., 1999) and a 40-min videotape on back pain self-care (Patient Education Media, Inc., 1996). The Control Group received care as usual, whose content is highly variable across patients. Usual care often included use of prescription and non-prescription pain medications, infrequent primary care visits for back pain, and use of ancillary services such as physical therapy by a minority of patients.

1.6. Analysis

Intent to treat analyses included all randomized participants for whom follow-up data were available. At each follow-up, mean differences between Intervention and Control groups were assessed by linear regression adjusting for the baseline value of the outcome variable, number of back pain days in the prior 6 months and Chronic Pain Grade at baseline. Treatment effects on indicators of occupational role disability were evaluated using logistic regression adjusting for baseline status of the outcome variable, number of back pain days in the prior 6 months and Chronic Pain Grade (von Korff et al., 1992). Regression models were fit using generalized estimating equations to adjust for possible correlation within patients over the three time points (Liang and Zeger, 1993). Models were estimated using PROC GENMOD of SAS (SAS Institute, 1996). We also report adjusted mean differences between the Intervention and Control groups for key outcomes, adjusted for the baseline value of the outcome variable.

2. Results

2.1. Study enrollment and follow-up

Between April 2001 and May 2002, screening questionnaires were mailed to 1445 primary care back pain patients. Each step of the study enrollment and follow-up processes, including numbers of persons not contacted, ineligible and refusing to participate and lost to follow-up, is summarized in Fig. 1. Among the 317 persons returning screening questionnaires who were eligible for randomization, 240 (75.7%) agreed to participate and were randomized. The 1 year follow-up was completed by 99 (83.2%) of Intervention and 98 (81.0%) of Control Group patients. Among the 119 patients randomly assigned to the Intervention group, 98 (82.4%) completed at least four intervention sessions, while 12 patients (10.1%) did not attend any sessions. All participants completing at least one follow-up interview were included in analyses regardless of level of intervention participation.

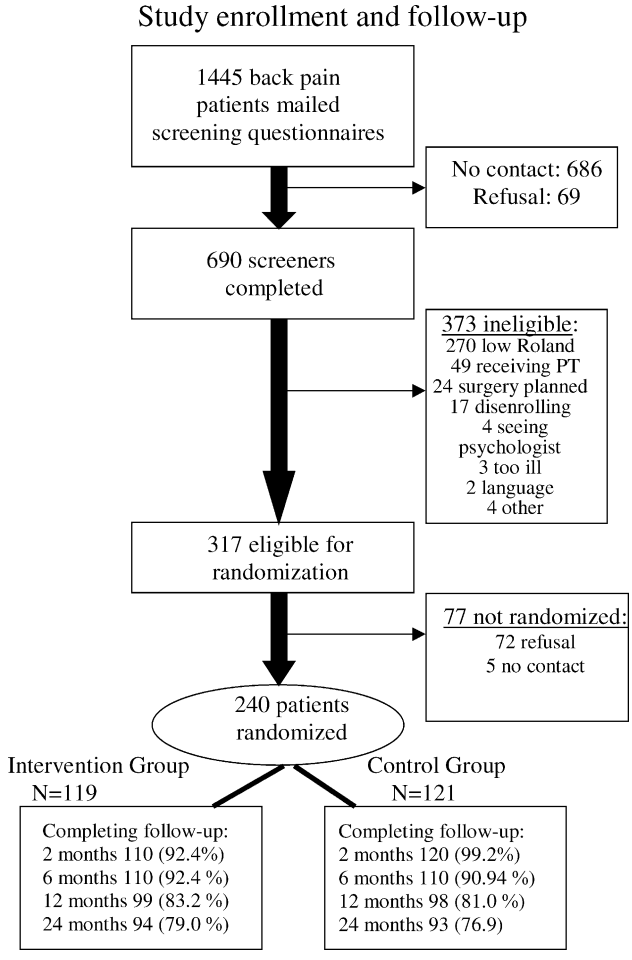

Fig. 1. Study enrollment and follow-up.

2.2. Characteristics of participants

As shown in Table 1, over half the participants were female with an average age of about 50 years. Over half reported persistent back pain (pain on 90+ days in the prior 6 months) and most reported moderate to severe interference with activities due to back pain (i.e. Chronic Pain Grades III and IV).

By the date of randomization, back pain had typically been present for 3 months or more (although intermittently for some patients), surpassing a conventional threshold for chronic pain. The screening process selected back pain patients with more severe and persistent pain and disability. However, relatively few patients reported prior surgery for back pain, receiving worker's compensation or disability payments, or being involved in legal action related to their back problem (Table 1). There were no significant differences in baseline characteristics between Intervention and Control patients. There was a non-significant trend for the Intervention Group to report more persistent pain (days with pain in the prior 6 months, $P=0.09$) and a greater degree of activity limitation (Chronic Pain Grade, $P=0.09$) at baseline.

Table 1
Baseline characteristics in individuals randomly assigned to the Intervention group and to Control group

	Intervention ($n=119$)	Control ($n=121$)	P value
Age, mean (SD)	49.7 (9.0)	49.8 (9.8)	.91
Female (%)	64.7	60.3	.48
Education (%)			
12 years or less	8.5	5.8	.71
Some college	42.4	44.6	
College graduate	49.1	49.6	
White race (not Hispanic) (%)	83.7	82.6	.82
Employment (%)			
Working full-time	65.6	61.2	.68
Working part-time	12.6	16.5	
Homemaker	2.5	5.8	
Retired	7.6	8.3	
Unable to work	8.4	5.0	
Unemployed/laid off	1.7	2.5	
Other	1.7	.8	
Marital status (%)			
Married or living as married	67.2	69.4	.56
Never married	8.4	12.4	
Separate/divorced	21.9	16.5	
Widowed	2.5	1.7	
Chronic Pain Grade (%)			
Grade I—low pain intensity	15.4	24.0	.094
Grade II—high pain intensity with low activity Limitations	18.0	22.3	
Grade III—moderate activity limitations	23.1	24.8	
Grade IV—severe activity limitations	43.6	28.9	
90+ back pain days in 6 months (%)	66.4	55.8	.094
Prior surgery for back pain	11.8	14.1	.60
Receiving worker's compensation or disability payments for back pain (%)	4.2	3.3	.71
Involved in legal action to obtain compensation for back problem (%)	9.2	4.1	.11
Kept from usual activities 30+ days in prior 3 months (%)	32.8	24.8	.17

All persons randomized ($n=240$).

2.3. Care as usual

In the 2 years after randomization, 63% of the patients assigned to usual care made additional visits for back pain, with a mean of 5.5 back pain visits among all Usual Care patients. Primary care visits for back pain were made by 60% of Usual Care patients (mean of 2.3 visits). Physical therapy or occupational therapy visits were made by 28% of Usual Care patients (with a mean of 1.4 visits). Chiropractic or alternative medicine visits for back pain were made by 17% of Usual Care patients (mean of 1.8 visits).

2.4. Activity limitations

The Intervention Group showed a 3.9 point drop in Roland Disability Questionnaire (RDQ) score from baseline to 12 months, whereas the Control Group showed a reduction of 2.3 in RDQ score by 12 months. By 24 months, the Intervention Group had improved 4.2 points from baseline, relative to an improvement of 2.3 points among the Control Group. The differences in RDQ score between Intervention and Control Groups (Table 2) were highly statistically significant over the 2 year follow-up period ($P<0.01$) after adjusting for baseline covariates. The mean difference in Roland Disability score between Intervention and Control groups adjusted for baseline RDQ score was 2.0 at 6 months, 1.7 at 12 months, and 2.0 at 24 months.

2.5. Percent with a clinically meaningful change

Recent analyses of RDQ data suggest that a clinically meaningful improvement in RDQ score can be defined by a 30–40% reduction in RDQ score from its baseline value (Jordan et al., 2004). At each follow-up, we estimated the percent with an improvement in RDQ score greater than one-third of the baseline value. Persons whose baseline RDQ score was less than 5 were excluded, so the minimum change in RDQ score considered clinically meaningful by this criterion was two points. This excluded nine Intervention patients and 14 Control patients whose RDQ score improved to less than five between screening and the baseline assessment. Using logistic regression, we estimated the odds ratio for having a clinically meaningful improvement in RDQ score for Intervention patients relative to Controls after adjusting for baseline RDQ score, Graded Chronic Pain and Back Pain Days in the prior 6 months. The results of these

Table 2
Outcomes for patients in Intervention versus Control groups

	Intervention	Control	*P* value	Overall *P* value
Roland disability (0–23)				
Baseline	12.3 (5.5)	11.4 (5.7)		
2 Months	10.2 (6.3)	11.5 (5.8)	.0002	<.0001
6 Months	9.2 (6.6)	10.1 (6.4)	.0003	
12 Months	8.4 (7.0)	9.1 (6.3)	.0063	
24 Months	8.1 (6.5)	9.1 (7.2)	.0078	
Worry rating (0–10)				
Baseline	6.7 (2.6)	6.2 (2.7)		
2 Months	4.2 (3.0)	5.4 (2.9)	<.0001	
6 Months	3.7 (3.0)	4.8 (2.7)	<.0001	<.0001
12 Months	3.7 (3.2)	4.5 (2.7)	.0002	
24 Months	3.5 (3.0)	4.5 (3.2)	<.0001	
Fear-avoidance (17–68)				
Baseline	41.4 (8.8)	41.3 (8.2)		
2 Months	36.4 (9.3)	39.9 (9.7)	<.0001	
6 Months	35.1 (9.9)	39.2 (9.7)	<.0001	<.0001
12 Months	34.3 (10.0)	37.4 (9.5)	.0005	
24 Months	34.3 (9.7)	38.4 (9.9)	.0001	
Average pain intensity (0–10)				
Baseline	5.7 (1.8)	5.8 (1.8)		
2 Months	4.9 (2.0)	5.3 (1.9)	.020	
6 Months	4.2 (2.0)	4.7 (2.2)	.007	.0012
12 Months	4.0 (2.3)	4.7 (2.1)	.004	
24 Months	4.3 (2.1)	4.6 (2.5)	.115	
SF-36 social functioning (0–100)				
Baseline	66.7 (26.7)	70.4 (27.0)		
2 Months	NA	NA		
6 Months	74.4 (27.1)	73.6 (27.8)	.26	.13
12 Months	75.8 (28.3)	74.4 (24.0)	.18	
24 Months	76.7 (25.2)	76.3 (25.8)	.28	
SF-36 mental health inventory (0–100)				
Baseline	67.0 (18.3)	68.9 (16.9)		
2 Months	NA	NA		
6 Months	70.3 (19.9)	69.5 (19.1)	.23	.39
12 Months	70.9 (19.9)	71.1 (18.4)	.42	
24 Months	71.0 (18.2)	72.4 (18.3)	.98	

Means (SD) at baseline, 2, 6, 12 and 24 months. All persons completing at least one follow-up interview. NA, not administered at 2 month follow-up. Significance tests are adjusted for the baseline value of the outcome variable and baseline number of pain days and baseline graded chronic pain. Higher scores on the SF-36 scales indicate higher levels of functioning and lower levels of psychological distress. On all other measures, higher scores indicate more severe dysfunction or pain.

Table 3
Percent with greater than a one-third reduction in Roland Disability Questionnaire score from baseline to indicated follow-up, and the adjusted odds ratio[a] for a clinically meaningful reduction in Intervention versus Control patients

	Intervention ($n=101$) (%)	Control ($n=106$) (%)	Odds ratio	*P* value
Percent with greater than a one-third reduction in RDQ score				
2 Months	27.7	13.2	3.9	0.0007
6 Months	42.2	23.7	3.5	0.0005
12 Months	44.6	22.7	2.1	0.03
24 Months	49.4	37.0	1.8	0.08

Patients with baseline RDQ score of less than 5 were excluded.
[a] Odds ratios were adjusted for baseline Roland Disabiity Questionnaire score, chronic pain grade and days with back pain in the prior 6 months.

analyses are provided in Table 3. At 6 month follow-up. Forty two percent of the Intervention patients had experienced a clinically meaningful improvement in RDQ score compared to 24% of Control patients, with an adjusted odds ratio of 3.5 for this difference.

2.6. Worry and fear-avoidance beliefs

Intervention patients showed significantly greater reductions in worry and fear-avoidance beliefs than Control patients at each follow-up (Table 2).

2.7. Pain intensity

In both the Intervention and Control Groups, there was a modest reduction in Average Pain Intensity ratings from baseline to 2 and 6 months. At 6 and 12 months, Intervention Group pain ratings were about a half point lower than the Control Group, differences that were highly significant (Table 2). By 24 months, the difference in pain intensity ratings was no longer statistically significant. The mean difference in average pain intensity ratings between Intervention and Control groups adjusted for baseline pain intensity rating was 0.47 at 6 months, 0.67 at 12 months, and 0.34 at 24 months.

2.8. Psychological distress and social functioning

SF-36 measures of psychological distress and social functioning did not differ between Intervention and Control Group patients (Table 2).

2.9. Occupational role disability

Receiving worker's compensation or disability payments for back pain, and being unable to work for any reason, showed no overall differences between the Intervention and Control groups after adjusting for baseline variables (Table 4). The percent receiving worker's compensation or disability payments at 2 months was significantly lower in the Intervention Group, but this difference was not sustained. Since these outcomes were relatively uncommon, this study was not adequately powered to detect intervention effects on these less common forms of disability. There was a significant difference overall between the Intervention and Control groups on the percent reporting 30 or more days unable to carry out work, school or housework activities due to back pain. In comparisons at each follow-up, this difference was statistically significant at the 6 and the 24 month follow-ups. The mean difference in activity limitation days between Intervention and Control groups, adjusted for baseline activity limitation days, was 4.5 days at 6 months, 2.8 days at 12 months, and 6.9 days at 24 months.

Table 4
Indicators of occupational role disability

	Intervention (%)	Control (%)	*P* value	Overall *P* value
Receiving workers compensation or disability payments for back pain (%)				
Baseline	4.4	3.3		
2 Months	1.8	4.2	.04	.54
6 Months	4.6	4.6	.45	
12 Months	7.1	3.1	.53	
24 Months	6.4	5.4	.67	
Unable to work for any reason (%)				
Baseline	8.7	5.0		
2 Months	6.4	5.8	.82	.89
6 Months	9.1	4.6	.37	
12 Months	10.1	5.1	.28	
24 Months	4.3	6.5	.28	
Missed 30+ days from usual activities (work, school housework) in 3 months (%)				
Baseline	33.9	24.8		
2 Months	23.6	25.8	.06	.003
6 Months	9.1	15.7	.02	
12 Months	12.1	15.5	.14	
24 Months	8.5	14.3	.04	

Percent with occupational role disability at baseline, 2, 6 12 and 24 months. All persons completing at least one follow-up interview. Significance tests are adjusted for the baseline value of the outcome variable and baseline number of pain days and baseline graded chronic pain.

3. Discussion

An intervention that addressed fear-avoidance beliefs, encouraged activation, set goals and developed an action plan to increase activity levels produced enduring reductions in fears about back pain and sustained reductions in back pain-specific activity limitations. The results of this trial are consistent with our prior research (Moore et al., 1999; von Korff and Moore, 2001; von Korff et al., 1998). Effects on back pain-specific activity limitations were significant across long-term follow-up. An appreciably larger percentage of intervention patients than controls showed a clinically meaningful reduction in Roland Disability Questionnaire score through the 12 month follow-up. However, patients typically continued to have moderately elevated RDQ scores at long-term follow-up, with the mean exceeding the eligibility criterion of 7.

Benefits were not observed for unemployment, use of disability benefits or a generic social function measure. We are uncertain whether absence of effect for social function reflects a measurement issue or limited generalization of the intervention to activities not specifically related to back pain. The US general population mean for the SF-36 Social Functioning scale is 84 with a standard deviation of about 23 (Ware et al., 1994), so trial patients were about one-third of a standard deviation below population norms at long-term follow-up.

In contrast to our prior trials, significant effects were observed for days unable to carry out normal activities due to back pain in the prior 3 months after adjusting for baseline status. Overall, the results of this trial are largely consistent with prior trials using different intervention formats and providers, suggesting that benefits may be realized with varying intervention formats and types of clinicians. However, the results reported here do not indicate what component of the intervention was effective, nor what the specific mechanisms of action of the intervention were. It should also be noted that the Intervention group received more attention than the Usual Care controls, so non-specific effects of participating in a psychoeducational intervention cannot be excluded.

In a small trial of in vivo exposure to feared activities ($N=6$), Vlaeyen et al. (2002) were able to achieve a reduction in the Tampa Scale for Kinesiophobia of fear-avoidance beliefs from a mean score of 47 at baseline to 25 after intervention, while the control group showed no change in the control period and a comparable reduction when crossed over to the exposure intervention. In the trial reported here, the intervention group showed a reduction in Tampa Scale score from 41 to 34, while the control group improved to 38. An important issue for future research would be to determine whether it is possible to achieve larger reductions in fear-avoidance beliefs through more intensive exposure to feared activities using intervention models that are practical in typical care settings. If larger effects on fear-avoidance beliefs could be achieved, it would be of interest to determine if larger improvements in functional status were also achieved. This trial was conducted in a single health plan with persons who volunteered after identification by screening. The study was not adequately powered to identify effects on less common forms of work disability such as unemployment. We report these outcomes to permit comparison of results with other studies. While a psychologist was utilized in this study to deliver significant parts of the intervention, it may be possible to train physical therapists to provide similar interventions fully integrated into routine patient care. An important motivation for this trial was to develop and test practical methods of activating chronic back pain patients and addressing their common fear-avoidance beliefs that might be practical for routine use in physical therapy settings where large numbers of chronic back pain patients are managed. While this trial was conducted in a physical therapy setting, and the intervention methods are compatible with physical therapy practice, the intervention differed considerably from typical physical therapy practice for back pain as applied in this and other care settings.

Even though this intervention was relatively brief (four sessions), it is more intensive than would be feasible for routine care of unselected back pain patients in primary care. A majority of back pain patients in primary care achieve positive outcomes without augmented services. The targeting of patients with high Roland Disability scores 6–8 weeks after a primary care back pain visit identified patients likely to have continuing pain and activity limitations over a 2 year follow-up period, but even in this group about 10%

had low RDQ scores (<5) at the time of baseline assessment. A stepped care approach to identifying patients with continuing chronic pain dysfunction may provide a means of targeting intervention services to patients with greater continuing needs than the typical back pain patient seen in primary care. The increased intensity of the intervention relative to our prior trials, and the targeting of patients with sustained activity limitations, may have provided greater potential to show clinically meaningful differences between Intervention and Control Group participants. These are important issues for future research in the primary care setting: Subsequent to a new episode of care for back pain, how long should chronic pain dysfunction continue before back pain patients are targeted for interventions seeking to reduce activity limitations? And, how intensive an intervention (in terms of number of treatment contacts and therapist time) is needed to yield clinically meaningful benefit?

In this regard, a recent meta-analysis (Guzman et al., 2001) concluded that intensive multidisciplinary behavioral rehabilitation with a functional restoration approach improves pain and functional outcomes, but that evidence regarding effects on vocational outcomes is contradictory. A second meta-analysis (Schonstein et al., 2003) concluded that physical conditioning programs that include a cognitive-behavioral approach plus intensive physical training seem to be effective in reducing the number of sick days for 'some workers with chronic back pain'. Given the extent of work disability due to back pain in the population-at-large, clarification of how to consistently reduce occupational role disability and achieve return to work is an important issue. More intensive behavioral rehabilitation for chronic back pain patients might yield more robust effects for some patients, but these interventions are costly, they are not accessible to most patients, and benefits for return to work have not been conclusively established. While the relatively brief intervention that we tested appears to have produced enduring reductions in back pain-specific activity limitations for a larger percentage of patients than care as usual, our results do not suggest that such a brief intervention influences return to work.

Given this evidence base, how can chronic back pain and related disability be addressed on a population basis? The scope of the problem suggests that it may need to be addressed as a public health, rather than as a personal health, problem. The numbers of substantially disabled persons are too great to address the problem primarily with intensive rehabilitative services, while brief interventions alone may be insufficient. Buchbinder et al. (2001) found that a media campaign that encouraged activation in response to back pain reduced worker's compensation claims for back pain. Adequately addressing patient fears in the clinical encounter in primary care, physical therapy and other common clinical settings, combined with clear advice to resume normal activities, may be one part of a broader, societal approach to this problem. This may be particularly useful in the early phases of the disability process before work loss is entrenched. Integration of fear reducing and activating interventions into routine physical therapy services could also play a role in broad-based efforts to reduce disability due to back pain. While primary care physicians and physical therapists may have a role to play in supporting broader societal efforts to reduce disability due to back pain, this study does not shed light on whether such efforts would have a measurable impact on return to work or prevention of unemployment. In addressing the problem of work disability associated with chronic back pain, research is needed to better define the respective roles of brief interventions in primary care and physical therapy settings, intensive rehabilitative interventions in tertiary care settings, population-based efforts to change public attitudes regarding back pain management, and social policies governing disability insurance for back pain.

In this study, a four session intervention addressing patient fears and supporting activation among chronic back pain patients resulted in sustained reductions in back pain-specific activity limitations and significant reductions in patient fears of physical activity over a 2 year follow-up period. Modest differences in pain intensity ratings were observed over the first year as well. Results to date suggest that these interventions could play a useful role in routine back pain care. Further research is needed to determine how to efficiently address patient fears and encourage resumption of normal activities in routine care in primary care and physical therapy settings for chronic back pain patients. An important issue for future research is whether brief interventions delivered by primary care physicians and physical therapists, along the lines of the kinds of intervention tested in this research, could be effective in increasing return to work if offered in context of broader societal efforts to reduce work disability due to chronic back pain.

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