PROVIDER, PAYOR AND PATIENT OUTCOME EXPECTATIONS IN BACK PAIN REHABILITATION

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ABSTRACT

Return to work is used routinely to define successful back pain treatment. This study examined how the patient and three professional groups defined success for each of five categories of patients: not sponsored and working, sponsored and working, sponsored on modified duty, sponsored and off work for less than 10 weeks, and sponsored and off work for more than 10 weeks. The groups sampled were treating staff (n=98), referring physicians (n=98), third party sponsors (n=133), and patients (n=648) representing all five patient categories. Each group provided a priority ranking for 6 objectives of treatment: Return to Work, Pain Control, Functional Improvement, Increased Strength and Range of Movement, Positive Attitude Shift, and Acquired Knowledge. The results indicated that the work status of the patient had a significant effect on the ranking of objectives by the treating staff and third party sponsors. Physicians and patients considered pain control most important regardless of the patient category. Success in back pain rehabilitation is defined by different criteria. The determination of successful outcome must consider the patient's circumstances and acknowledge the perspective of the individual who is defining success.

[Keywords: back pain, expectation, outcome, pain control]

Medical journals frequently document the monetary impact and epidemiology of back pain in industrialized societies.(1-4) But as outcome studies become essential research, the need to clarify the term success or outcome becomes paramount. Turk et al. (5) cite several studies that define success (6-12), and conclude that there is great variation in the criteria used to establish successful treatment. Some studies have prioritized outcomes using elaborate ranking systems, but out of these reviews (13-17) only one was related to back pain management (18). Hazard et al. (19) believe that chronic low back pain patients and their health care practitioners mutually set distinct pretreatment goals for pain, impairment, and disability and judge outcomes accordingly.

Typically, any patient entering a rehabilitation program becomes involved with three professional groups: the physician, therapist and insurance sponsor. Each patient possesses unique circumstances, and the perception of these circumstances often alter the expectations of treatment. To better understand the effects of expectations regarding definitions of success, we investigated these three groups of professionals and five categories of patient. Our purpose was to determine the taxonomy provided by each sample group for a list of outcome objectives. We hypothesized that different groups would view success in significantly different ways, thereby creating the potential for disagreement as to the success of treatment outcomes.

METHODOLOGY

Sample

Table I lists the four subject groups. In total 977 individuals were sampled. The patient group was sub-divided to represent five common patient categories based on whether the patient was responsible for payment of his/her own treatment (not sponsored) or a third party was paying for treatment (sponsored):

1) not sponsored and working full duty,
2) sponsored and working full duty,
3) sponsored and working modified duty,
4) sponsored and off work for less than 10 weeks, and
5) sponsored and off work for more than 10 weeks.

Table II defines the objectives, developed by the authors, based upon the presumed objectives of rehabilitation at locations of the Canadian Back Institute (CBI). CBI utilizes an active exercise approach to rehabilitation of back and neck pain. Back education and pain control techniques are rapidly followed by gentle stretching exercises and progressive isotonic strengthening of muscles in the trunk and extremities.

Programs include walking, stationary cycling, free weight and machine training, and work conditioning. Each group comprised a random sample from 18 CBI locations across Canada. Exclusion criteria included limited command of English, a failure to comprehend the descriptions of the stated objectives, or an inability to perform the mathematical process of prioritization of outcome goals.

Table I

Sample sizes of the four study groups

1) Physicians (n=98)-general practitioners, surgeons, and physiatrists that regularly referred patients to the Canadian Back Institute (CBI)

2) Third Party Sponsors (n=133) -representatives of the organizations responsible for payment of rehabilitation costs for claimants treated at CBI

3) CBI Staff (n=98)-physiotherapists, kinesiologists, and exercise therapists

4) Patients (n=648)-individuals actively participating in treatment at CBI during the time of the study

Procedure

Upon obtaining consent, interviews were conducted with individuals in each group including individuals in each of the five categories of patients. Each group was asked to prioritize the six objectives of treatment according to their own situation. Participants were instructed to estimate the significance of each objective as a percentage of the total. Equal percentages for any number of the objectives were permitted, but the total could not exceed 100 %.

The referring physicians provided rankings and estimation of the significance of each objective as a percentage of the total for the six objectives, based on what they expected their patients to accomplish with treatment. To expedite the interview with this group where contact was limited by time constraints on their availability, physicians were asked to consider only two categories of patient: those at work with back pain and those not working because of back pain.

Third party sponsors followed a similar procedure, but were required to provide separate rankings for four patient categories. Sponsors did not comment on the not sponsored and working patient. Return to Work, for the sponsored patient on modified duty, was defined as a return to full employment.

The treating staff (including physiotherapists, kinesiologists, and exercise therapists) carried out the same ranking procedure for all five categories of patients. Their answers were to reflect their expectations of the patients' accomplishments.

ANALYSIS

Data for this type of study is not considered to be normally distributed. It is bounded by 0 and 100 and constrained to add up to 100%. It also spans an order of magnitude. We transformed the data using an empirical logit transformation before applying analyses which work on normally distributed data. The logit transformation is: In [R / 100 - R] where "R" is the weight out of 100 assigned to each category and "In" is the natural log. Because this equation is undefined when "R" is equal to either 0 or 100, a correction factor is added and logit becomes: In [R+1/2 / 100-R+1/2].

Following transformation, the initial analysis was a three way multivariate analysis of variance (MANOVA). This was a 4 (Group = physician, sponsor, staff, patient) X 5 (Patient Type = not sponsored and working full duty, sponsored and working full duty, sponsored and working modified duty, sponsored and off work for less

than 10 weeks, sponsored and off work for more than 10 weeks) X 6 (Treatment Objective = return to work, pain control, functional improvement, increased strength, positive attitude shift, acquired knowledge) MANOVA (Wilk's Lambda test statistic) to determine if the six responses differed significantly depending upon the identity of the respondent and/or on the category of patient being considered. If a significant multivariate effect was found then a univariate analysis of variance (ANOVA) was done to determine whether the various responding groups differed in their ratings of the six objectives based on the type of patient. Finally, a Tukey's multiple comparison test, using an alpha level of 0.05, was used to determine exactly where the significant difference lay. The mean values presented in tables III and IV are of the transformed data and therefore, do not add up to 100%.

RESULTS

Physicians

The priority ranking of the objectives by the physicians is summarized in Table III. Because each doctor provided two sets of responses, the analysis was a repeated measures design to determine if an objective was rated differently for working versus non working patients. MANOVA results showed a significant main effect due to patient type, working versus not working ($F_{6,90}$=16.67, p<0.0001).

Taking the repeated measures aspect of the data into account, doctors gave significantly different weights to every goal (P<0.005) except Positive Attitude Shift for the two groups, working and non working patients.

The priority ranking of the objectives from the third party sponsors, staff, and patients are depicted in Table IV and detailed ANOVA results for each rating group are summarized in Table V.

Third Party Sponsors

The sponsor responses were analyzed in the same manner as those from the doctors. That is, four responses were given from each sponsor, one response for each type of patient. The MANOVA indicated a significant effect of type of patient on the ratings supplied by the sponsors ($F_{3,360}$=7.62, p<0.0001).

Individual ANOVA results revealed that third party sponsors gave significantly different weightings for all objectives (p<0.001) except Pain Control and Increased Strength and Range of Motion.

Among sponsors, Tukey's multiple comparison test showed that there was no significant difference between each type of patient and of the objectives Pain Control, and Increased Strength and Range of Motion.

Canadian Back Institute Staff

The staff responses were analyzed in a similar manner as those from the sponsors with the addition of one other type of patient, not sponsored and working. MANOVA results for staff responses indicated that patient category had a significant effect on the ratings ($F_{24,1309}$=37.85, p<0.0001).

The results of the individual ANOVAs indicate that the staff gave significantly different weights to each goal for each of the five different groups of patients (p<0.0001 for each objective).

Among Staff, Tukey's multiple comparison test showed that there was no significant difference between each type of patient and of the objectives Pain Control, Functional Improvement, and Positive Attitude Shift.

Patients

The patients' ratings did not require a repeated measure analysis, because each patient gave only one response. MANOVA results indicated that there was a significant difference in responses between the five patient categories ($F_{24,2223}$=4.87, p<0.0001).

Individual ANOVA results for patient responses revealed that there was a significant difference for all objectives due to the type of patient (p<0.05). Thus, ANOVA analysis revealed a significant difference in the

ratings due to the patient's circumstances.
The multiple comparison test often placed all of the patients in the same grouping. This is a common occurrence since ANOVA results showed that the patient groups did not consider all of the objectives equal in value, but Tukey's test did not detect a significant difference between all of the patient groups for some of the objectives.

Working versus Not Working Patients

A further analysis was done to determine whether the physicians, sponsors, staff, and patients differed in their weightings of the variables for the different categories of patients. This analysis involved the determination of a significant interaction between the patient category and the rating group. Significant interaction indicates that the ratings given depend upon the circumstances of patient being considered. After sub-dividing patients based on employment status, comparison of the working and non working patients revealed that the interaction between the rater and the employment status of the patient was significant for the variables, Return to Work ($F_{3,1811}$=31.19, p<0.0001), Pain Control ($F_{3,1811}$=10.15, p<0.0001) and Positive Attitude Shift ($F_{3,1811}$=6.97, p<0.0001). The difference in ranking these objectives for working versus non working patients depended upon the group providing the weighting. Table VI separates the data into two datasets, one for each type of patient, for the variables where the interaction between rater and type of patient was significant.

Patients Utilizing a Third Party Sponsor

The ratings for all patients, not responsible for payment of treatment, were compared. Again, there were significant interactions between the patient category and the rating group for Return to Work ($F_{6,1424}$=10.71, p<0.0001), Pain Control ($F_{6,1424}$=9.35, p<0.0001), and Positive Attitude Shift ($F_{6,1424}$=3.12, p<0.005). Table VII displays the significance values by type of sponsored patient.

All Patients

Patient responses demonstrated a significant interaction between the patient category ($F_{4,1119}$=10.33, p<0.0001) and the rater ($F_{4,1119}$=171.39, p<0.0001) for all objectives (p<0.05) except Knowledge. The staff scored the importance of knowledge significantly higher (mean = 17.2) than did the patients (mean = 5.6) in all categories.

DISCUSSION

Our findings show a statistically significant divergence of opinion among physician, sponsor, staff, and patient expectations of a rehabilitation program. This coincides with the research of Strupp and Hadley (20), who concluded that what constitutes a successful outcome will depend upon who is asked.

Not surprisingly, patients from all five categories considered Pain Control as the most important determinant of success. Turk et al. (5) stated that patients often disagree with health care providers and third party payors as to the most important presenting problem. Our findings were similar to those of Colvin et al. (21) and Fitzpatrick et al. (22) who found that the majority of patients desired total and permanent relief of pain as their primary goal.

The patients' enthusiasm for Pain Control was not shared by the treating staff and the third party payor. Thisdiscrepancy requires resolution early in the rehabilitation program to avoid patient dissatisfaction and self-termination of treatment. Carosella et al. (23) found a significant correlation between high pain intensity and patients who did not complete a comprehensive back pain rehabilitation program. For patients who cannot achieve pain control, treatment planning will involve either the institution of an alternate pain management approach or behaviour modification to establish more realistic goals.

Physicians surveyed did not consider Increased Strength and Range of Motion as important, ranking it low for both the working and non working patient. Combined with their emphasis on Pain Control, it is apparent that pain takes precedence over strength in the general medical view of rehabilitation.

Patients and Third Party Sponsors ascribed a low value to Acquired Knowledge or Positive Attitude Shift, and ranked them last for all patient categories. Conversely, the treating staff regarded Acquired Knowledge as highly valuable. This staff opinion may reflect the imposed program direction and the effort required to provide dynamic education in back pain rehabilitation. Patients and Sponsors may regard these goals as less important because of a perceived lack of direct application to the immediate problem of return to work and pain control. Further research is required to determine the effect of these two objectives on outcome.

The treating therapists saw very little difference between the "not sponsored and working" and the "sponsored and working" patient for all of the objectives and perceived the need for Functional Improvement as more important than Increased Strength and Range of Motion. Although the latter is a necessary prerequisite of the former, Increased Strength and Range of Motion was apparently viewed merely as a means to an end and not as a goal itself.

Our analysis of the ranking of objectives by the CBI Staff and the Third Party Sponsors revealed that those who treat and those who pay adjusted their goals depending upon whether the patient was at work. Staff and Sponsors viewed Return to Work and Functional Improvement as the most important objectives when the patient was not working. When the patient was regularly employed, Pain Control and Functional Improvement took precedence.

While all the groups of responders considered certain goals to be very important, they did not unanimously choose a single objective as paramount. Increased Strength and Range of Motion, Positive Attitude Shift and Acquired Knowledge were scored low by at least half the raters in each group. For working patients, "Return to Work" did not equal 0%. In some cases it ranked higher than a few other objectives. Patients who had regular employment apparently viewed their ability to stay at work as an important objective of treatment.

CONCLUSION

The determination of a successful rehabilitation outcome cannot view all patients identically and should not use return to work as the only criterion. The work status of the patient and the perspective of the individual defining success both need consideration. Based on the findings in this study, recognizing a patient's specific circumstances allows prediction of their expectations. The potential for disagreement, between physician, sponsor, staff and the five categories of patients, as to the success of treatment is evident.

A definition of success by an involved party should be part of any study measuring patient outcomes. This study has shown that success is difficult to define and far from homogeneous. Success of a rehabilitation program should clearly state both the mutual and conflicting goals of the patient, clinician, and interested third party. Recognition of patient priorities and their variance from the stated program objectives is essential for effective goal setting. It is recommended that the definition of success should encompass three distinct measures: pain reduction, improvement in function, and return to work.

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Table II

Six objectives of treatment at the Canadian Back Institute

1) Return to Work -return to any gainful employment in any capacity regardless of hours or duty

2) Pain Control -abolition of pain or the patient's demonstrated ability to control or reduce symptoms in a timely manner

3) Functional Improvement -increased performance in activities of daily living and the improved capacity to sit, stand, or walk in spite of pain

4) Increased Strength and Range of Motion -a measured increase in muscular strength and spinal flexibility

5) Positive Attitude Shift -exhibiting a positive outlook with a stated willingness to adhere to and be responsible for the treatment program

6) Acquired Knowledge -discuss knowledgeably spinal anatomy and pathology, postural techniques, and the principles of exercise

Table III

Priority ranking and mean percentage * of rehabilitation objectives by PHYSICIANS

CATEGORY OF PATIENT:

WORKING

1.	Pain Control	33.1 %
2.	Functional Improvement	16.3 %
3.	Acquired Knowledge	11.9 %
4.	Positive Attitude Shift	10.3 %
5.	Increased Strength & Range of motion	10.2 %
6.	Return to Work	2.0 %

NOT WORKING DUE TO INJURY

1.	Pain Control	24.1 %
2.	Return to Work	21.8 %
3.	Functional Improvement	12.4 %
4.	Positive Attitude Shift	9.1 %
5.	Acquired Knowledge	8.6 %
6.	Increased Strength & Range of motion	8.5 %

* Percentages represent transformed data and thus do not add up to 100%

Table IV
Priority ranking and mean percentage * of rehabilitation objectives by THIRD PARTY SPONSORS

CATEGORY OF PATIENT:

SPONSORED AND WORKING

1.	Pain Control	13.2 %
2.	Functional Improvement	11.3 %
3.	Increased Strength & Range of motion	9.0 %
4.	Return to Work	6.0 %
5.	Acquired Knowledge	5.6 %
6.	Positive Attitude Shift	5.0 %

SPONSORED ON MODIFIED DUTY

1.	Functional Improvement	17.4 %
2.	Return to Work	14.8 %
3.	Pain Control	10.5 %
4.	Increased Strength & Range of motion	8.7 %
5.	Positive Attitude Shift	4.7 %
6.	Acquired Knowledge	4.5 %

SPONSORED AND OFF WORK LESS THAN 10 WEEKS

1.	Return to Work	19.8 %
2.	Functional Improvement	12.1 %
3.	Pain Control	10.4 %
4.	Increased Strength & Range of motion	7.2 %
5.	Positive Attitude Shift	7.1 %
6.	Acquired Knowledge	4.3 %

SPONSORED AND OFF WORK MORE THAN 10 WEEKS

1.	Return to Work	19.1 %
2.	Functional Improvement	12.0 %
3.	Pain Control	10.9 %
4.	Increased Strength & Range of motion	9.1 %
5.	Acquired Knowledge	4.9 %
6.	Positive Attitude Shift	3.3 %

* Percentages represent transformed data and thus do not add up to 100%

Table V
Priority ranking and mean percentage * of rehabilitation objectives by Canadian Back Institute STAFF

CATEGORY OF PATIENT:

NOT SPONSORED AND WORKING

1.	Pain Control	26.4 %
2.	Acquired Knowledge	22.9 %
3.	Functional Improvement	14.7 %
4.	Increased Strength & Range of motion	12.6 %
5.	Positive Attitude Shift	5.1 %
6.	Return to Work	0.4 %

SPONSORED AND WORKING

1.	Pain Control	26.4 %
2.	Acquired Knowledge	22.8 %
3.	Functional Improvement	14.7 %
4.	Increased Strength & Range of motion	12.3 %
5.	Positive Attitude Shift	6.2 %
6.	Return to Work	0.4 %

SPONSORED ON MODIFIED DUTY

1.	Functional Improvement	20.1 %
2.	Pain Control	17.2 %
3.	Acquired Knowledge	15.6 %
4.	Increased Strength & Range of motion	11.3 %
5.	Return to Work	7.8 %
6.	Positive Attitude Shift	6.0 %

SPONSORED AND OFF WORK LESS THAN 10 WEEKS

1.	Return to Work	27.4 %
2.	Pain Control	16.7 %
3.	Acquired Knowledge	13.2 %
4.	Functional Improvement	12.5 %
5.	Increased Strength & Range of motion	7.8 %
6.	Positive Attitude Shift	5.3 %

SPONSORED AND OFF WORK MORE THAN 10 WEEKS

1.	Return to Work	27.6 %
2.	Functional Improvement	14.4 %
3.	Increased Strength & Range of motion	9.1 %
4.	Pain Control	5.0 %
5.	Acquired Knowledge	4.8 %
6.	Positive Attitude Shift	3.3 %

Percentages represent transformed data and thus do not add up to 100%

Table VI
Priority ranking and mean percentage * of rehabilitation objectives by PATIENTS

CATEGORY OF PATIENT:

NOT SPONSORED AND WORKING

1.	Pain Control	31.6 %
2.	Functional Improvement	14.0 %
3.	Increased Strength & Range of motion	13.2 %
4.	Acquired Knowledge	6.3 %
5.	Positive Attitude Shift	4.6 %
6.	Return to Work	3.2 %

SPONSORED AND WORKING

1.	Pain Control	29.8 %
2.	Functional Improvement	15.2 %
3.	Increased Strength & Range of motion	12.3 %
4.	Acquired Knowledge	10.4 %
5.	Positive Attitude Shift	4.6 %
6.	Return to Work	1.9 %

SPONSORED ON MODIFIED DUTY

1.	Pain Control	36.7 %
2.	Return to Work	13.4 %
3.	Functional Improvement	11.4 %
4.	Increased Strength & Range of motion	6.1 %
5.	Acquired Knowledge	5.5 %
6.	Positive Attitude Shift	2.7 %

SPONSORED AND OFF WORK LESS THAN 10 WEEKS

1.	Pain Control	23.2 %
2.	Return to Work	14.7 %
3.	Increased Strength & Range of motion	10.5 %
4.	Functional Improvement	8.9 %
5.	Acquired Knowledge	5.3 %
6.	Positive Attitude Shift	2.9 %

SPONSORED AND OFF WORK MORE THAN 10 WEEKS

1.	Pain Control	28.4 %
2.	Return to Work	12.5 %
3.	Functional Improvement	10.5 %
4.	Increased Strength & Range of motion	9.1 %
5.	Acquired Knowledge	4.9 %
6.	Positive Attitude Shift	3.3 %

* Percentages represent transformed data and thus do not add up to 100%

Table 8
Individual ANOVA p-values for each Rehabilitation Objective

RATING GROUP:		
PHYSICIANS		
	Return to Work	0.0001
	Pain Control	0.0001
	Functional Improvement	0.0001
	Increased Strength	0.0045
	Attitude Shift	0.2039
	Acquired Knowledge	0.0001
STAFF		
	Return to Work	0.0001
	Pain Control	0.0001
	Functional Improvement	0.0001
	Increased Strength	0.0001
	Attitude Shift	0.0001
	Acquired Knowledge	0.0001
THIRD PARTY SPONSORS		
	Return to Work	0.0001
	Pain Control	0.3346
	Functional Improvement	0.0010
	Increased Strength	0.0522
	Attitude Shift	0.0006
	Acquired Knowledge	0.0032
PATIENTS		
	Return to Work	0.0001
	Pain Control	0.0468
	Functional Improvement	0.0179
	Increased Strength	0.0090
	Attitude Shift	0.0457
	Acquired Knowledge	0.0175

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