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ORIGINAL RESEARCH

Effect of a Self-Determination Theory—Based Communication Skills Training Program on Physiotherapists' Psychological Support for Their Patients With Chronic Low Back Pain: A Randomized Controlled Trial

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Abstract

Objective: To examine the effects of communication skills training on physiotherapists' supportive behavior during clinical practice.

Design: Randomized trial.

Setting: Hospital outpatient physiotherapy clinics.

Participants: Physiotherapists (N=24) and patients (N=24) with chronic low back pain.

Interventions: Two hospital clinics were randomly assigned to the intervention arm. Physiotherapists (n=12) received 8 hours of communication skills training focused on supporting patients' psychological needs. Physiotherapists (n=12) from 2 other hospital clinics formed a waitlist control arm.

Main Outcome Measures: Verbal communication between each physiotherapist and a patient was recorded on an audiotape, and independent, blinded raters used the Health Care Climate Questionnaire to assess physiotherapists' needs-supportive behavior (primary outcome).

Results: Independent raters' Health Care Climate Questionnaire scores favored the intervention arm (Cohen's $d=2.27$; $P<.01$).

Conclusions: Compared with controls, independent ratings demonstrated that physiotherapists who completed the Communication style and exercise compliance in physiotherapy training were found to provide greater support for patients' needs in a single assessed session. Long-term maintenance of this needs-supportive behavior should be examined.

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The communication style and exercise compliance in physiotherapy (CONNECT) trial[1] involves evaluation of a communication skills training program, grounded in the self-determination theory (SDT),[2] designed to enhance physiotherapists' support of

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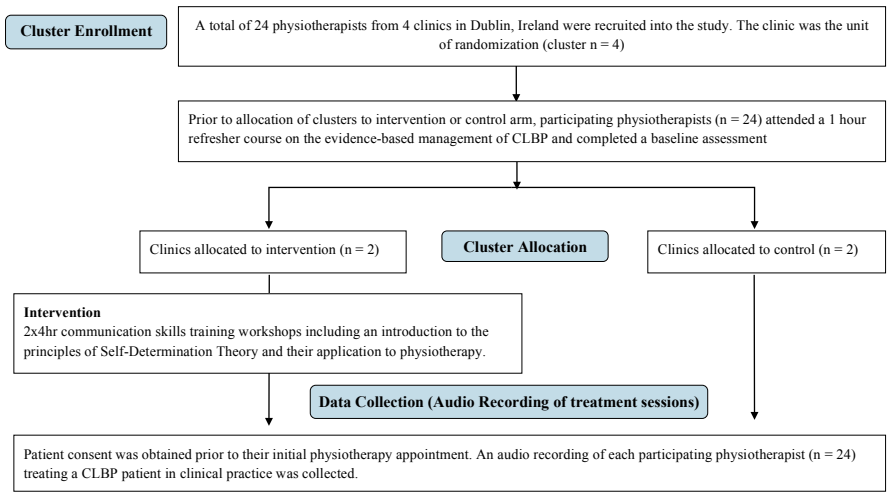

Fig 1 Consolidated Standards of Reporting Trials flow diagram.

their patients' psychological needs. The purpose of the present study was to examine effects of the intervention on physiotherapists' supportive behavior during clinical practice (ie, intervention fidelity). Examination of intervention fidelity is an important component of effectiveness trials and knowledge translation into clinical practice,[3] but until recently it has received limited empirical attention.[4,5]

According to the SDT,[2] people have basic psychological needs for autonomy (feeling fully volitional or free to engage in an activity), competence (feeling effective and capable), and relatedness (feeling connected to and cared for by others). When a patient's psychological needs are supported, participation in treatment is likely to be more self-determined, meaning that it is driven by valued benefits and a willingness to participate, and long-term adherence is more likely than when a paternalistic model of care is adopted.[6] Unfortunately, there is evidence that health care practitioners often adopt this latter model of patient care.[7,8]

SDT-based health care interventions are designed to teach health care practitioners the skills needed to support patients' psychological needs, thereby promoting self-determined motivation and engagement in health-promoting behavior. Empirical support for these relations has been demonstrated in a recent meta-analysis.[6] Drawing on this evidence, a communication skills training intervention, titled CONNECT, was designed for physiotherapists working with individuals seeking treatment for chronic low back pain (CLBP). Specifically, physiotherapists were taught 18 SDT-based strategies to enhance their needs-supportive behaviors in clinical practice.

The primary aim of this study was to determine the effect of the CONNECT intervention on blinded observers' ratings of physiotherapists' needs-supportive behavior. This is the first study to test the effectiveness of an SDT-based intervention for physiotherapists. It was hypothesized that physiotherapists who had completed the CONNECT intervention would exhibit greater needs support compared with physiotherapists who had not completed this intervention.

List of abbreviations:

CLBP	**chronic low back pain**
CONNECT	**communication style and exercise compliance in physiotherapy**
HCCQ	**Health Care Climate Questionnaire**
SDT	**self-determination theory**

Methods

Design

This study was a multicenter randomized controlled trial, comprising a cluster randomized design with intervention and control arms. A schematic view of the study is presented in figure 1, and details of the protocol have been published elsewhere.[1] Briefly, 24 physiotherapists and 24 patients from 4 hospital-based physiotherapy clinics were recruited. All participants completed the study requirements. The research ethics committees of the participating hospitals granted approval for this study, and it was conducted in accordance with the Declaration of Helsinki.

Randomization

Physiotherapists from each site volunteered to participate in the study before randomization to the clinic to either the intervention arm or the control arm. Randomization of cluster sites (ie, 4 hospital clinics) to intervention and control arms (1:1) was carried out by an independent researcher using a computer-based algorithm. All 4 clinics were randomly allocated at the same time, and a researcher (C.L.) contacted each clinic to inform it of its allocation arm. Patients were informed of the purpose of the study, but were not informed whether their physiotherapists' clinic had been allocated to either the treatment arm or the control arm.

Participants

Physiotherapists

Physiotherapists (5 men and 19 women) working in 4 hospital outpatient physiotherapy departments were recruited. Physiotherapists had between 4 and 22 years of clinical experience (mean ± SD, 9.5±4.4y). Physiotherapists provided informed written consent before participating in the study.

Patients

Patients referred by a medical practitioner for physiotherapy for CLBP to 1 of the 4 hospitals during the recruitment period were sent an information leaflet outlining the purpose of the study. Informed written consent was obtained from 24 eligible

participants (6 men and 18 women) before baseline assessment. The first author, a registered physiotherapist, screened potential participants via telephone, and then in person before their first physiotherapy session, to determine eligibility (see appendix 1 for complete inclusion criteria). Exclusion criteria included suspected/confirmed serious spinal pathologies, nerve root involvement, and/or lack of fluency in written/spoken English.

Intervention overview

Guided by previous SDT-based interventions with health care providers,[9-11] 18 intervention-specific communication strategies were developed for use in the clinical setting by physiotherapists (table 1). To standardize delivery by the workshop leader (C.L.), and in turn to standardize implementation of the intervention by the physiotherapists, the 18 SDT-based strategies were organized into 5 categories on the basis of the 5A's Framework of Behavior Change[12] (see table 1).

Intervention implementation

To help standardize the quality of care provided to all patients, physiotherapists from both study arms attended a 1-hour education session. This session reviewed current best evidence-based care for CLBP management, in particular regarding advice for physical activity (eg, as part of home-based rehabilitation) and exercise prescription.[13,14] Physiotherapists from the intervention arm also participated in 8 hours of communication skills training, comprising two 4-h sessions separated by 1 week (in February 2011). The first training session incorporated an overview of the main SDT concepts and covered strategies for implementing the communication skills during physiotherapy practice. Video recordings of simulated initial treatment sessions were shown. These vignettes first depicted a physiotherapist displaying controlling communication styles, which were then contrasted with depictions of needs-supportive communication behaviors. Active role-play and group discussion were also used. At the end of the session, each physiotherapist recorded 2 or 3 goals for strategy implementation during his or her treatment sessions in the upcoming week, along with likely obstacles and anticipated solutions. Physiotherapists were provided with choices regarding these goals; they were advised to choose strategies that they believed required most improvement or would have the most benefit for their patients.

The second training block consisted of group discussion regarding the facilitators and barriers to implementing the communication strategies during the previous week. Further simulated video recordings of follow-up physiotherapy sessions with a controlling versus needs-supportive communication style were shown, followed by group discussion between the physiotherapists and the workshop leader. At the end of the session, physiotherapists revised and set new goals regarding their implementation of the SDT-based strategies over the next 4 weeks. For example, one physiotherapist set a goal to help her patients with CLBP set simple, measurable, achievable, recorded, and time-based (SMART) goals regarding their home-based rehabilitation exercises, and another set a goal to replace a common controlling phrase ("I want you to do this for me, ok?") with a more needs-supportive suggestion ("If you do this, you'll give yourself the best chance for improvement"). As in the first session, physiotherapists were advised to choose goals related to strategies they believed required most improvement or would have the most benefit for their patients.

At 4 and 10 weeks after the second workshop, the workshop leader sent individualized e-mails to physiotherapists in the intervention arm. The purpose of these e-mails was to discuss progress toward the attainment of the implementation goals (examples provided earlier) and to provide assistance in resolving any problems physiotherapists were encountering when implementing needs-supportive communication in their clinical practice.

Recruitment and training of blinded raters

Three individuals were invited to participate in the study as blinded raters. Inclusion criteria were that raters held a PhD in psychology and had published research on motivation and physical activity in peer-reviewed journals in the last 5 years. The raters participated in 2 hours of training delivered by 2 authors (A.M. and C.L.), during which they discussed the structure of a physiotherapy session and the principles of SDT-based communication strategies in physiotherapy. They also listened to audio recordings of sample physiotherapy sessions (involving physiotherapists and patients not drawn from this study's sample) and practiced using the measurement tools used in this study.

Patient and physiotherapist characteristics measures

Physiotherapists

All participating physiotherapists (n=24) completed a baseline assessment package before attending the initial 1-hour workshop. In addition to demographic characteristics and educational history, data were collected using the General Causality Orientation Scale[15] to determine the physiotherapists' dispositional motivational orientation (autonomous, controlling, impersonal). Previous research suggests that these orientations are related to needs-supportive behavior by practitioners,[16] and, thus, General Causality Orientation Scale scores provided a means of detecting potential between-arm differences in therapists before training. Physiotherapists also completed the Learning Self-Regulation Questionnaire[17] to determine their motives for participating in a learning activity.

Patients

Patients completed a self-report questionnaire before their initial physiotherapy session, which assessed demographic and motivation variables as well as CLBP severity and disability.[1] All measures for both physiotherapists and patients are presented in table 2.

Primary outcome measure—Physiotherapists' needs-supportive communication

Health Care Climate Questionnaire

Audio recordings were made of initial treatment sessions involving 24 physiotherapists, each with a different patient (ie, the patient's first visit to the physiotherapist). Using a computer-based algorithm, an independent researcher randomly assigned audio recordings to the 3 raters. Raters each listened to 12 recordings and used the Health Care Climate Questionnaire (HCCQ) to assess physiotherapists' needs-supportive communication. Thus, 12 randomly selected recordings were rated by a single rater, whereas a further 12 were double-rated and interrater reliability was assessed. The 6-item HCCQ is designed to measure the extent to which a health care practitioner interacts with his or her patient in a needs-supportive manner, and example items included "the

Table 1 Mapping communication strategies to the 5A framework and SDT

Strategy	Description/Example	Main Basic Psychological Need(s) Targeted
Ask		
Using open-ended questions	"Tell me"/"What"/"How" are useful terms when asking questions as they allow the patient to elaborate on his or her story. Example: "What kind of things are you doing to alleviate the pain at the moment?"	Relatedness
Using single questions	Avoid asking multiple questions at one time. Instead, ask one question and wait for a response before asking a second question.	Relatedness
Staying silent	Allow the patient to complete sentences and finish speaking before following up with further questions.	Relatedness
Paraphrasing	After listening to the patient, summarize your perception of the main points. Examples: "So what I am hearing is that …" or "It sounds like …"	Relatedness
Empathizing	Show the patient that you understood the emotions that went along with the issue being discussed. Examples: "I can see this upsets you" or "That must be very frustrating."	Relatedness
Gauging patient readiness to accept advice	Ask the patient whether he or she is ready to consider advice regarding activities outside the clinic. Example: "There are a number of things you can do that will help … would you like to hear a few suggestions?"	Autonomy
Advise		
Catering to different learning preferences	Use a selection of methods (aural, visual, kinesthetic) to educate the patient (during session and take-home materials); these methods cater to multiple learning preferences.	Competence
Closing the loop	Ask patients to paraphrase/demonstrate information that had been provided. Provide corrective feedback as required, and retest understanding. Example: "To be sure that I was clear could you please tell me, in your own words, your understanding of the …"	Competence
Providing a rationale	Explain to the patient the rationale behind your advice. Example: "As we discussed earlier, your back needs support from the muscles around. So, if you can do these exercises you can really provide your back with extra support …" or "Research shows that physical activity such as walking is a great way to …"	Autonomy
Providing opportunities for patient input or choice	Ask the patient to provide input or make choices when providing advice. Example: "Getting some physical activity—like going for a walk, riding your bike, or swimming—is really good for your back. Is there a type of exercise that you prefer?"	Autonomy
Using autonomy-supportive phrases instead of controlling language	Support and encourage the patient to accept personal responsibility for his or her recovery. Avoid coercion or guilt-inducing phrases. Examples: "Here are some things that will help you overcome …" or "If you complete these exercises then you'll strengthen your back and it will be less likely to give you pain" instead of "Do this for me" or "You have to …" or "You must…"	Autonomy and competence
Agree		
Using SMART goal setting	Agreed on goals that are Specific, Measurable, Achievable, Recorded, and Time-based (SMART). Example: "Earlier you mentioned that you are finding walking hard for long periods. For this week we could set a target of 15 minutes walking per day, how many days do you think you could achieve that target in the next week?"	Competence
Ensuring active patient participation in goal setting	Ask the patient for his or her opinions/comments during goal setting. Take into account patient's subjective history (eg, family/work commitments). Example: "What time of day would suit you best for these exercises?"	Autonomy and competence
Assist		
Identifying barriers and obstacles	Discuss at least 1 likely barrier to following treatment advice. Example: "Is there anything you can think of that might stop you from accomplishing your exercise goal?"	Competence and autonomy
Identifying solutions and obstacles	Brainstorm with the patient ways to overcome this barrier (eg, "identifying enablers" and "cognitive restructuring"). Examples: "Walking can be a fun and social activity that doesn't seem like hard work. How would you feel about walking with a friend/neighbor?" and suggest changing thoughts	Competence and autonomy

(*continued on next page*)

Table 1 (*continued*)

Strategy	Description/Example	Main Basic Psychological Need(s) Targeted
	from "I am too out of shape to walk to the shop" to "If I take it nice and easy and remember to breathe, relax and take a rest when I need one, I will be able to walk to the shop."	
Arrange		
Providing a rehabilitation diary	Provide the patient with a rehabilitation diary to help him or her keep track of home-based rehabilitation (eg, exercise and physical activity).	Competence and autonomy
Following-up	Suggest a specific follow-up appointment, provide guidance regarding when an appointment should be arranged (eg, no more than 2wk later), or inform the patient that no follow-up appointment is needed.	Relatedness and competence
Offering contact	Invite the patient to contact you in the event of difficulties or questions.	Relatedness and competence

physiotherapist listened carefully to how the participant wanted to do things" and "the physiotherapist tried to understand how the participant saw things before suggesting how to do things." The scale includes 7-point Likert scales, anchored at 1 (not true at all), 4 (somewhat true), and 7 (very true).[17] Previous scores derived from the HCCQ have demonstrated good interrater reliability and construct validity.[26]

Blinding

Patients were blinded to treatment allocation. Independent raters were also blinded to treatment allocation and study design. Because of the nature of the intervention, it was not possible to blind the treating physiotherapists. Also, logistical constraints meant that the researcher who administered the questionnaires was not blinded.

Sample size

The required sample size was calculated using an effect size derived from a meta-analytic estimate of blinded needs-support ratings associated with SDT-based training (mean effect, $d=1.4$; range, 0.33−1.57).[27] Using G*Power software,[28,a] the sample size needed to detect this effect for the blinded HCCQ ratings ($\alpha=.05$; 90% power) was estimated to be 20 participants, 10 in each arm. To allow for potential problems with data collection (eg, scheduling problems or audio recording difficulties), we aimed to recruit a sample of 24 physiotherapists, 12 in each arm.

Statistical analysis

Having computed aggregate scores, skewness and kurtosis estimates were calculated for all variables. Descriptive statistics were computed for all patient and physiotherapist characteristics measures, and independent t tests were used to explore differences across the study arms. These tests were important because characteristics of clients or subordinates (eg, employees who report to a manager or students who are required to follow instructions from a teacher) can affect the needs support that a practitioner provides.[16] Therefore, clinical differences (eg, differences in pain scores or functional disability) or motivational differences (eg, patient motivation for treatment or physiotherapists' motivational orientations) across the trial arms could have affected interactions between patients and physiotherapists.

Primary analysis

An independent t test was used to assess between-arm differences on blinded raters' HCCQ ratings. An effect size (Cohen's d)[29] and a 95% confidence interval were also calculated. In line with Cohen's recommendations, we interpreted d values of 0.2, 0.5, and 0.8 as small, moderate, and large, respectively.

Results

Data were collected between March and November 2011, with recruitment stopped once the prespecified sample size had been reach. On average, patients attended their initial appointment and had their interactions with their physiotherapist audio recorded 16.7±6.9 weeks after the end of the CONNECT intervention (ie, February, 2011). No adverse events were reported.

Patient and physiotherapist characteristics

Patients' demographic characteristics and CLBP-related variables (eg, pain-related disability[21] and health status[22]) were similar to previous CLBP research in Irish public hospitals.[30,31] There were no significant ($P>.05$) or clinically meaningful between-arm differences on any patient or physiotherapist characteristic variable (table 3).

Primary analysis

Needs-support (HCCQ) scores provided by blinded raters were normally distributed (skewness/kurtosis range, −1 to +1), supporting the use of independent t tests. The interrater reliability on the 12 double-rated recordings was also acceptable (intraclass correlation coefficient, .79). An independent samples t test demonstrated that there was a large between-arm difference in needs-support scores ($d=2.27$; 95% confidence interval=1.18−3.21; $P<.001$), with intervention arm physiotherapists (mean ± SD, 4.57±0.85) rated as significantly more supportive than control arm physiotherapists (mean ± SD, 2.78±0.72).

Discussion

To our knowledge, this is the first study to investigate the effect of an SDT-based communication skills intervention on physiotherapists' needs-supportive behavior. Analyses indicated that the intervention had a large positive influence on physiotherapists' needs-supportive behavior with patients under experimental conditions, thus supporting the main study hypothesis.

Table 2 Description of physiotherapist and patient characteristics

Measure	Description
Physiotherapist	
General Causality Orientation Scale (GCOS)	This is a 17-item scale that assesses the strength of different global motivational orientations within an individual.[15] Subscales for autonomous, controlled, and impersonal personality types are included.
Learning Self-Regulation Questionnaire (LSRQ)	The questionnaire provides both self-determined and controlling reasons for participating in learning experiences and asks individuals to rate on a 7-point Likert scale how true the statement is for them. The questionnaire is divided into 2 subscales: self-determined regulation and controlled regulation.[18]
Patient	
The Modified Core Set of Questionnaires in Back Pain Research	Patients completed the Bothersomeness Scale, the Interference with Work Scale, and the Satisfaction with Current Symptoms Scale from the Core Set of Outcomes.[19]
Global Perceived Effect Scale (GPE)	The GPE is an 11-point numeric rating scale that assesses the patient's perception of recovery. It is considered to have high face validity and is often used as the reference standard against which other subjective measures are tested when assessing their measurement properties.[20]
Roland Morris Disability Questionnaire (RMDQ)	This questionnaire consists of 24 yes/no items regarding the impact of back pain on activities of daily living. The RMDQ is used widely in low back pain studies as a standardized measure of activity limitation and has demonstrated good validity, reliability, and responsiveness.[21]
European Quality of Life—5 Dimensions Weighted Index	The European Quality of Life is a standardized instrument that provides a simple descriptive profile and a single weighted health index value for health status. It is applicable to a wide range of health conditions for which it has been shown to demonstrate good validity and reliability.[22]
Depression Anxiety Stress Scale-21 subscale (DASS)	The DASS includes a set of 3 self-report scales designed to measure symptoms of psychological distress including depression, anxiety, and stress; the 7-item depression subscale was used in the present study.[23]
Fear Avoidance Beliefs Questionnaire (FABQ) physical activity	This is a 5-item self-report questionnaire that specifically focuses on participants' beliefs about how physical activity affects their low back pain.[24]
Perceived Competence Scale (PCS)	This 4-item scale has consistently produced scores with good reliability and validity in relation to various health-related behaviors, including physical activity.[9]
Treatment Self- Regulation Questionnaire (TSRQ)	This 15-item instrument is used to assess self-determined and controlled motivation toward health care treatment, as well as amotivation (absence of motivation). It has demonstrated good reliability and validity across diverse health-related behaviors.[25]

Although this is the first study to use an intervention based on SDT principles in a physiotherapy setting, other interventions have been conducted with health care practitioners treating patients for whom behavior change is a main focus of treatment (eg, physicians counseling smokers to quit).[32] A recent meta-analysis included 5 studies that examined the effect of SDT-based interventions on the needs-supportive behavior of health care practitioners.[27] Effect sizes associated with blinded needs-support ratings in these studies ranged from 0.33[33] to 1.57.[32] One possibility as to why the effect in this study was relatively larger in magnitude is that physiotherapists may be particularly amenable to this type of training and, therefore, implemented the communication strategies more closely to protocol than did health care practitioners in other studies. However, it should be noted that the lower bound of the 95% confidence interval for our effect ($d=1.18-3.21$) falls within the range of effect sizes found in other studies ($d=0.33-1.57$). Thus, our seemingly larger effect may be an artifact of chance attributable to our relatively small sample size. Physiotherapists may, in fact, be similar to other health care practitioners in their capacity to learn and implement needs-supportive behavior in clinical practice.

Study limitations

It is noteworthy that this study was powered to detect differences in the primary outcome and that this outcome was collected using a criterion standard method, namely, observation by expert assessors who were blinded to treatment allocation.[34] This approach is particularly valuable to overcome various biases associated with self- and patient-reported data.[35]

A limitation of this study was that physiotherapists' needs support in clinical practice was assessed only at a single time point. Ideally, to determine whether the effects of the intervention on needs-supportive behaviors persist over time, physiotherapists' behavior should be assessed at various time points.[5,34] Also, investigating the physiotherapists' change in needs support from before to after the communication skills training would have allowed us to more confidently attribute between-arm differences to the intervention effects. To partially address this limitation, we assessed physiotherapists' motivational orientation (General Causality Orientation Scale) because this has been shown to correlate with needs-supportive behavior.[16] Baseline scores on this measure across the 2 arms of the trial were similar; however, differences in needs support before the intervention are still possible.

Another potential limitation of this study relates to the degree to which physiotherapists implemented the intervention in a standardized fashion. The 5A framework was also intended to assist physiotherapists in implementing effective communication in their clinical practice by way of a structured approach (that could be modified on the basis of their clinical judgment). In keeping with SDT principles, however, physiotherapists were also

Table 3 Patient and physiotherapist characteristics

Characteristic	Control (n=12)	Experimental (n=12)	*P*
Patients			
Age (y)	47.88±13.05	46.80±6.30	.82
Sex: female (%)	83.3	75	.37
Previous LBP (% yes)	66.6	75	.67
Currently employed (% yes)	33.3	41.66	.68
Pain intensity	6.50±2.11	6.75±1.66	.75
Pain bothersomeness	3.58±1.00	3.33±0.99	.54
Pain activity interference	3.33±1.27	3.83±1.03	.26
Symptom satisfaction	1.33±0.49	1.75±1.22	.28
Global perception of recovery	−0.14±2.81	−0.42±2.68	.38
Quality of life	0.46±0.17	0.35±0.17	.15
Disability	11.55±4.01	14.33±3.92	.11
Depression	8.67±6.57	8.52±8.51	.92
Fear-avoidance	14.92±6.57	16.25±7.91	.66
Perceived competence	6.6 (0.65)	6.88±0.20	.18
Self-determined motivation	−2.42±2.32	−3.58±3.58	.09
Physiotherapists			
Age (y)	34.92±5.98	32.67±3.28	.27
Experience (y)	10.17±5.03	8.83±3.67	.47
GCOS (A)	101.00±6.19	95.00±8.33	.14
GCOS (I)	45.25±10.34	39.82±10.75	.23
GCOS (C)	57.00±14.95	57.91±8.09	.86
LSRQ (A)	6.65±0.43	6.40±0.77	.34
LSRQ (C)	10.50±3.15	10.25±3.96	.39

NOTE. Values are mean ± SD or as otherwise indicated. $P \leq .05$ is the level of significance.

Abbreviations: GCOS (A), General Causality Orientation Scale (Autonomous); GCOS (C), General Causality Orientation Scale (Controlling); GCOS (I), General Causality Orientation Scale (Impersonal); LBP, low back pain; LSRQ (A), Learning Self-Regulation Questionnaire (Autonomous); LSRQ (C), Learning Self-Regulation Questionnaire (Controlling).

provided with a choice regarding the specific strategies they felt were most important or required the most improvement. This approach recognizes that physiotherapists all have unique communication skills before arriving at training and a tailored approach is appropriate to maximize the degree to which physiotherapists communicated with their patients in a manner that was consistent with the theory-driven principles and strategies in the training (ie, standardized implementation of communication skills). Ideally, baseline recordings could be analyzed before training by workshop leaders or mentors who could then help guide physiotherapists toward the communication skills that required the greatest improvement.

Finally, one must also consider the potential impact of the presence of the audio recording device in the treatment area. Having a recording device nearby may have resulted in physiotherapists in the experimental group temporarily displaying the communication skills taught in the workshops. In future, researchers may wish to examine physiotherapists' behavior in a less obtrusive manner and, as noted previously, examine behavior in multiple sessions over an extended period of time to more accurately measure therapists' normal clinical practice.

Future research

Future research should use larger samples and investigate the extent to which treatment effects endure over time. Researchers could also investigate the feasibility of incorporating SDT-based communication skills education into undergraduate and postgraduate programs. However, the effect on patient outcomes and the cost-effectiveness of the intervention should be examined before methods for widespread implementation are developed and used.[13] Analysis of outcomes from the main CONNECT trial will provide the initial evidence in this regard.[1]

Conclusions

Communication that supports patients' psychological needs can lead to better outcomes but is often not used by health care practitioners. This study indicates that in a single consultation session, greater needs-supportive behavior was evident for health care practitioners who participated in the CONNECT intervention compared with those in a nonintervention control group.

Supplier

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Keywords

Communication; Motivation; Patient compliance; Physical therapists; Rehabilitation

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Appendix 1 Patient inclusion and exclusion criteria

- Inclusion criteria
  - Age
    - 18—70y
  - Diagnosis
    - Low back pain of mechanical origin with or without radiation to the lower limb
  - Pain duration
    - Chronic (≥3 mo) or recurrent (≥3 episodes in the previous year)
  - Language
    - English speaking and English literate
  - Contact status
    - Access to a telephone
- Exclusion criteria
  - Pathology
    - Suspected or confirmed serious spinal pathology (fracture, metastatic, inflammatory, or infective diseases of the spine, cauda equina syndrome/widespread neurological disorder)

(*continued on next page*)

Nerve root compromise (2 of strength, reflex, or sensation affected for same nerve root)
Medical history
Spinal surgery or history of systemic or inflammatory disease
Current medical status
Scheduled for major surgery during treatment
Treatment status
Currently or having received treatment for CLBP within the previous 3mo
Pregnancy
Suspected or confirmed pregnancy
Contraindications
Unstable angina/uncontrolled cardiac dysrhythmias/severe aortic stenosis/acute systemic infection accompanied by fever. No confounding conditions, such as a neurological disorder or an intellectual disorder

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