

# Spiritual and existential factors predict pain relief in a pain management program with a meaning-based component

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## Abstract

The present study aimed to determine the relationship between spiritual and existential factors and outcomes following a multidisciplinary group pain management program that contains a meaning-based component. A retrospective cohort study included people with chronic pain admitted to a group pain program that sought to address spiritual and existential factors as well as other traditional pain management strategies. Outcomes were standard measures of pain intensity and psychological and physical functioning in addition to spiritual well-being assessed using the Functional Assessment of Chronic Illness Therapy – Spiritual Well-Being-Extended scale (FACIT-Sp-Ex). The participants showed significant increases in physical function and decreases in anxiety, pain intensity and pain catastrophising. At baseline, there were significant negative correlations between the meaning and purpose subscale of the FACIT-Sp and depression and pain catastrophising and positive correlations with pain self-efficacy and satisfaction with life. There were also significant positive correlations between improvement in pain intensity during the program and faith (FACIT-Sp subscale) and satisfaction with life and a negative correlation with pain catastrophising. The program resulted in significant improvements in pain intensity and physical and psychological function. The strong association between aspects of spiritual well-being and pain reduction during the program as well as other measures of psychological well-being adds to the evidence suggesting the importance of addressing these factors as part of a comprehensive approach to pain management.

**Keywords:** Pain, chronic, pain management program, existential, spiritual

## Introduction

Multidisciplinary pain management programs have been shown to be an important and effective tool in the treatment of chronic non-cancer pain (1). While pain program protocols vary, there is general consensus on most included strategies such as graded

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activity, exercise, relaxation, thought management, activity pacing and pain flare up management (2). Pain reduction is one of the endpoints used to assess the efficacy of pain programs. However, the patient's ability to positively cope with and accept his or her symptoms and other outcomes such as improvement in mood, physical function and cognitive variables is of equal importance.

Borrowing on the well demonstrated importance of spiritual and existential factors in end of life care (3), there is increasing interest in the role of these factors in chronic pain (4, 5). The definition of spirituality sometimes causes confusion and it is often assumed that it refers to a religious experience (6). However, emerging consensus is that spirituality is a broader concept that for some people has no link to religion and incorporates more general and existential issues of meaning, purpose and identity (7, 8).

Recently, existential and spiritual factors such as meaning, purpose and faith have been noted to play a significant role in stress vulnerability and coping with pain (9, 10). Indeed, the physical and psychological suffering associated with chronic pain can reduce the person's ability to cope with his or her symptoms and this in turn may lead to existential suffering including loss of purpose, meaning and hope. Conversely, studies also show that when faced with chronic illness, people may also turn to their spiritual and religious beliefs as a way to deal with both their condition and subsequent symptoms (11, 12).

Research suggests that spiritual forms of coping are generally associated with positive outcomes including less depression and longer survival (13). Wachholtz and colleagues suggest these outcomes are likely due to positive correlations with feelings of social support, spiritual connection, peace, calmness and reduced psychological stress due to improvement in mood (13). In turn, improvement in mood may reduce pain through decreased pain sensitivity (14).

These data are useful in loosely recommending the use of positive existential or spiritually-based interventions. However, there is little available data regarding the relationship between existential and spiritual factors and other pain-related variables in people with chronic pain. Moreover, there is no available data showing whether programs which include an emphasis on spiritual and existential factors have an effect on outcomes following pain

programs and whether these factors actually change as a result of the intervention.

The aims of this present study therefore are to: first, determine whether existential and spiritual well-being is related to other pain-related variables in a group of people participating in a group pain program; second, determine whether a pain program that seeks to address spiritual and existential aspects of pain in conjunction with other traditional cognitive behavioural approaches results in changes in existential and spiritual well-being or other pain-related variables; and third, determine whether there is a relationship between measures of existential or spiritual well-being prior to the intervention and subsequent changes in pain-related variables.

## Methods

Subjects included 113 people referred consecutively by general practitioners or specialists to a tertiary pain management service with chronic non-cancer pain and who participated in a multidisciplinary pain management program. Participants were selected on the basis of their likelihood to respond to and benefit from standard cognitive behavioural pain management strategies and not on the basis of their spiritual or existential beliefs. However, it was indicated that the program included a session that would have a more intensive focus on issues of meaning, identity and purpose and the relevance of these issues for living with pain. All participants gave written informed consent and the study was approved by the institutional ethics committee.

### *The pain program*

The program included six weekly sessions of three hours duration conducted by a physiotherapist and clinical psychologist who were both present for the entire session. A pain medicine specialist provided educational input regarding pain physiology in two of the sessions. Five of the sessions introduced traditional cognitive behavioural pain management strategies such as stretching, exercise, relaxation, graded activity, thought management, activity pacing and managing pain flare ups. Although spiritual and

existential issues arose and were addressed throughout the program, one session was designed to explicitly focus on addressing spiritual and existential factors. These included issues of meaning, purpose; the personal strengths and qualities that underpin them, how they are impacted by pain and how a sense of identity, meaning and purpose may be regained or strengthened while living with pain.

### *Measures*

All participants completed standardised self-report measures relating to pain intensity, pain interference, psychological function, physical function and spiritual well-being. Questionnaires were completed prior to commencing the pain management program and again at the end of the last session. Each subject was required to complete a questionnaire assessing average pain intensity over the previous week (0-10 numerical rating scale (NRS)). Each participant's mood was assessed using the Depression Anxiety Stress Scale (DASS-21) which uses a 4-point Likert-type scale and is well validated and widely used (15). Various aspects of cognitive functioning were also assessed. These included satisfaction with life using the Satisfaction with Life scale (SWL). The SWL scale is a reliable and valid tool that has also been shown to correlate with other measures of mental health and to be predictive of future behaviours (16). Additionally, participants were also required to complete questionnaires relating to pain self-efficacy (Pain Self Efficacy Questionnaire, PSEQ) (17), pain catastrophizing (Pain Catastrophising Scale, PCS), and perceived disability (Modified Roland & Morris Disability Questionnaire, R&M). Physical function was measured using stair-climb and sit-to-stand tests.

Spiritual well-being was assessed using the Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being-Extended (FACIT-Sp-Ex). This is a widely used and validated scale that measures spiritual well-being as a component of quality of life in people diagnosed and treated for serious illness including people with cancer and HIV/AIDS (18). Responses are scored on a 5-point Likert scale (0 = not at all and 4 = very much). There are subscales within the FACIT-Sp-Ex, with part A (items 1-12) measuring meaning, peace and purpose

in life (items 1-8) and faith (comfort and strength in one's spiritual beliefs) (items 9-12), and part B (items 13-23) assessing relational aspects of spiritual well-being.

### *Data analysis*

All statistical analysis was performed using SPSS version 23 for Windows. We used both parametric and non-parametric descriptive analysis to characterise variables at study entry before commencing the program (baseline). Pre-to-post treatment changes in self-reporting and physical measures were analysed using paired-sample T-tests. Bonferroni correction was applied to account for multiple comparisons. To examine differences between demographic and study variables, we used the Mann-Whitney U test and Kruskal-Wallis one-way analysis of variance. We further used Pearson's correlation coefficient to measure relationships between: 1. self-reporting variables at baseline; 2. baseline and pre-to-post program percentage changes in variables.

## **Results**

Most of the 113 subjects who participated in the pain program were female (n=85; 75%) and 42% of the participants were aged over 65 years (mean 60.38  $\pm$  SD 17.59; range 22-91 years). Of those participants starting the pain management program, 95% completed post-treatment measures.

### *Baseline measures and demographics*

Prior to starting the program, there were no significant differences in pain intensity within age ( $p = 0.96$ ) and gender groups ( $p = 0.82$ ). There were several significant differences in spiritual well-being between independent groups as measured by the FACIT-Sp-Ex and subscales. Females scored significantly higher for the total score of the spiritual well-being scale (FACIT-SP-Ex) ( $p = 0.017$ ). We also found significant differences between age groups with subjects over 65 years scoring higher than younger

subjects on the FACIT-SP-Ex total score ( $p = 0.01$ ) and relational ( $p = 0.01$ ) subscale.

### *Relationships between spiritual well-being and other variables at baseline*

This component of the analysis focussed on the relationship between spiritual well-being as measured by the FACIT-Sp-Ex and other variables at baseline prior to taking part in the pain management program (see Table 1). The weakest correlation was with pain intensity. There was no significant correlation between pain intensity at baseline and either the total score on the FACIT-Sp-Ex or any of the subscales. On the other hand, there were moderate and statistically significant correlations between the total score on the FACIT-Sp-Ex and depression ( $r = -0.52$ ,  $p < 0.000001$ ), pain catastrophising ( $r = -0.48$ ,  $p = 0.000001$ ), pain self-efficacy ( $r = 0.45$ ,  $p < 0.000001$ ) and anxiety ( $r = 0.40$ ,  $p = 0.00002$ ). When the subscales of the FACIT-Sp-Ex were examined, the strongest relationships were with the meaning and

purpose subscale (depression;  $r = -0.55$ ,  $p < 0.000001$ ; pain self-efficacy,  $r = 0.53$ ,  $p < 0.000001$ ; pain catastrophising;  $r = -0.49$ ,  $p = 0.000001$  and satisfaction with life;  $r = 0.40$ ,  $p = 0.0002$ ). Relationships with the faith and relational subscales were weaker with the exception of a moderate and statistically significant relationship between the relational subscale and pain catastrophising ( $r = -0.41$ ,  $p = 0.00004$ ).

### *Program outcomes*

At the end of the program, there were significant changes (in order of effect size) in pain intensity (32% reduction, effect size 1.47,  $p < 0.0001$ ), perceived disability (28% reduction, effect size 1.15,  $p < 0.0001$ ), physical function (sit to stand, 44% increase, effect size 0.73,  $p < 0.0001$  and stair climb, 36% increase, effect size 0.71,  $p < 0.0001$ ), pain catastrophising (32% improvement, effect size 0.61,  $p < 0.0001$ ) and pain self-efficacy (22% increase, effect size 0.58,  $p < 0.0001$ ) (see Table 2).

**Table 1. Relationship between spiritual wellbeing and other variables at baseline**

		Meaning & Purpose	Faith	Relational	FACIT-Sp-Ex (total)
Pain Intensity (NRS)	r	-.01	.05	-.08	-.03
	p value	0.886	0.585	0.380	0.731
	N	112	112	113	113
Satisfaction with Life (SWL)	r	.40	.24	.29	.38
	p value	0.00002	0.012	0.002	0.00004
	N	110	110	111	111
Depression (DASS)	r	-.55	-.31	-.39	-.52
	p value	<0.000001	0.001	0.00002	<0.000001
	N	111	111	112	112
Anxiety (DASS)	r	-.32	-.28	-.35	-.40
	p value	0.001	0.003	0.0002	0.00002
	N	111	111	112	112
Stress (DASS)	r	-.37	-.28	-.28	-.38
	p value	0.00008	0.004	0.003	0.00004
	N	111	111	112	112
Pain self-efficacy (PSEQ)	r	.53	.30	.33	.45
	p value	<0.000001	0.002	0.0004	<0.000001
	N	111	111	112	112
Pain catastrophising (PCS)	r	-.49	-.34	-.41	-.48
	p value	0.000001	0.001	0.00004	0.000001
	N	93	93	94	94

**Table 2. Pre- and post-program scores (mean and standard error) and percentage improvements**

Variable	Pre-program (baseline) score Mean (SEM)	Post-program score Mean (SEM)	% change	Effect size	P-value
Pain intensity (NRS)	6.9 (0.17)	4.7 (0.11)	-32	1.47	<0.0001
Perceived disability (Modified R&M)	12.3 (0.47)	8.8 (0.43)	-28	1.15	<0.0001
Satisfaction with life (SWL)	16.9 (0.74)	20.3 (0.71)	20	0.44	0.001
<i>Spiritual well-being (FACIT-Sp-Ex)</i>					
Meaning/purpose (1-8)	19.3 (0.61)	21.1 (0.63)	9	0.28	0.041
Faith (9-12)	7.7 (0.49)	9.4 (0.49)	22	0.33	0.015
Relational (13-23)	30.7 (0.94)	33.0 (0.92)	7	0.23	0.082
Sum (1-12)	26.9 (0.99)	31.3 (0.96)	16	0.43	0.002
Sum (1-23)	57.6 (1.75)	65.0 (1.66)	13	0.41	0.002
<i>Mood (DASS)</i>					
Depression	7.1 (0.53)	5.1 (0.41)	-28	0.40	0.003
Anxiety	4.8 (0.42)	3.1 (0.30)	-35	0.45	0.001
Stress	7.7 (0.49)	6.2 (0.44)	-19	0.30	0.024
Pain self-efficacy (PSEQ)	30.0 (0.99)	36.7 (1.19)	22	0.58	<0.0001
Pain catastrophising (PCS)	22.4 (1.28)	15.2 (1.14)	-32	0.61	<0.0001
Sit to stand	46.6 (2.55)	67.1 (3.24)	44	0.73	<0.0001
Stair climb	17.8 (7.6)	24.2 (10.4)	36	0.71	<0.0001

**Table 3. Correlations between baseline scores and differences in pre and post program pain intensity scores**

Variable	Correlation	P value
Satisfaction with Life (SWL)	.40	0.00002
Perceived Disability (R&M)	-.17	.091
Depression (DASS)	-.30	0.002
Anxiety (DASS)	-.31	0.001
Stress (DASS)	-.26	0.007
Pain self-efficacy (PSEQ)	.37	0.0001
Pain catastrophising (PCS)	-.40	0.0001
Meaning and purpose (FACIT subscale)	.34	0.0003
Faith (FACIT subscale)	.42	0.00001
Relational (FACIT subscale)	.29	0.003
Spiritual well-being (FACIT-Sp total)	.40	0.00002
Spiritual well-being (FACIT-Sp-Ex total)	.39	0.00004

There were substantial changes in mean scores with anxiety and depression (35% and 28% decrease respectively). However, effect sizes were smaller (0.45 and 0.40 respectively) and p values lower (p = 0.001 and p = 0.003 respectively). There was a relatively small and insignificant change in stress (19% decrease, effect size 0.30, p < 0.024).

There was some improvement in satisfaction with life (20% increase, effect size 0.44, p = 0.001). However, changes in spiritual well-being as assessed by the FACIT-Sp-Ex were the smallest of all

variables studied. There was a 13% increase in the total score (effect size 0.41, p = 0.002). The changes in the subscales were generally small. Although there was a 22% increase in the faith subscale, the changes in the meaning/purpose and relational subscales were small (9% and 7% respectively), the effect sizes for all subscales were small (meaning/purpose, 0.28; faith, 0.33; and relational 0.23) and none were statistically significant.

### *Relationship between baseline scores and differences in pre and post-program scores*

The relationship between baseline scores and program outcomes in each of the variables was examined. There were few significant correlations between scores at baseline and change in other variables during the program. The strongest correlations were between baseline scores and the change in pain intensity (see Table 3). The strongest, statistically significant correlations were with spiritual well-being (12 item FACIT-Sp,  $r = 0.40$ ,  $p = 0.00002$  and FACIT-Sp faith subscale,  $r = 0.42$ ,  $p = 0.00001$ ), satisfaction with life (SWL,  $r = 0.40$ ,  $p = 0.00002$ ) and pain catastrophising (PCS,  $r = -0.40$ ,  $p = 0.0001$ ). The meaning and purpose subscale of the FACIT-Sp-Ex had a weaker but still significant correlation with change in pain intensity ( $r = 0.34$ ,  $p = 0.0003$ ). There was also a statistically significant but weaker relationship between pain self-efficacy at baseline and reduction in pain intensity ( $r = 0.37$ ,  $p = 0.0001$ ).

## **Discussion**

This present study demonstrates firstly that a pain management program with a component that seeks to address aspects of spiritual well-being results in significant improvements in pain intensity, physical function, mood and cognitive function. Interestingly, in the context of this research and the program itself, there were relatively minor changes in measured aspects of spiritual well-being.

Although we recognise the impact of having no control group on the strength of our conclusions regarding program outcomes, the primary aim of this study is not to determine the effectiveness of the program itself but rather to examine changes in spiritual well-being and its relationship with other variables and outcomes. Despite having no control group, the changes demonstrated over time are consistent with other studies that have examined the effectiveness of other cognitive behavioural pain programs and show substantial changes in pain intensity as well as physical and psychological function (19).

Interestingly, given our desire to incorporate content that addressed spiritual and existential aspects

of living with pain, we found a relatively small impact on spiritual well-being over the course of the program. The lack of change, however, is consistent with other studies that show that spirituality, and meaning in particular, is resistant to change over time (5). This lack of change may also be due to the short time frame of the overall program and the very limited time devoted to addressing spiritual and existential issues. Additionally, the wide variability in individual spiritual experience occurring in attendees of a program of this nature requires a very generic and possibly superficial approach to addressing these issues. The question moving forward is whether a different approach that can spend more time addressing these issues has a greater potential to result in a change in spiritual well-being.

This last point begs the question: why is it important to address spiritual well-being? The second part of the study provides information that may help answer this question. It is well known that the presence of pain is associated with mood dysfunction. However, our baseline data shows no significant relationship between the intensity of pain and spiritual well-being. This lack of relationship is consistent with previous literature suggesting that spirituality is more linked to an increased ability to cope with pain rather than a decrease in the pain itself (20). Studies also suggest that spiritual well-being and activities reduce anxiety and increase one's ability to relax in the presence of a chronic disease (21). It has been shown that those who participate in mindfulness, religious and spiritual activities not only show increased pain tolerance but also show greater life satisfaction and psychological well-being (22, 23).

This preferential relationship with coping rather than pain intensity is consistent with our data that showed strong positive relationships between spiritual well-being and other measures of psychological well-being in those living with pain. The data is cross sectional and it is not possible to determine from our study the direction of these relationships. However, the findings are consistent with a large and growing body of literature in both pain and palliative care fields which demonstrates that spiritual well-being is associated with better physical and psychological function in the presence of chronic pain or a terminal illness (5, 24).

Within the broader concept of spiritual well-being, it was the meaning and purpose component of the FACIT-Sp measure that showed the strongest correlations. This is again consistent with previous literature describing the positive relationship between a strong sense of meaning and purpose in life and between psychological functioning in illness, trauma and disease (25) including chronic pain (5).

The lack of any significant relationship between pain intensity and spiritual well-being at baseline contrasts with the finding of a strong positive relationship between higher baseline levels of spiritual well-being and a reduction in pain intensity over the course of the program. There were also strong relationships between a pain reduction and both satisfaction with life and pain catastrophising. However, it is the faith component of the spiritual well-being subscale that demonstrates the strongest relationship. While previous studies show significant correlations between strong spiritual well-being and increased pain tolerance (22) and an ability to cope with pain (11), we believe this is the first study to show that spiritual well-being, and faith in particular, as a significant correlate for changes in pain intensity over a course of treatment.

The reason for this relationship is intriguing and not immediately obvious. However, before discussing this further, it is important to address the concept of faith that is captured by the FACIT-Sp. The faith items of the FACIT-Sp are not necessarily assessing religious faith. Rather, there are four items that are more broadly phrased to explore the degree of comfort and strength in a person's "faith or spiritual beliefs". Taking this into account, it is highly speculative but there are several possible reasons for the relationship between "faith" and the improvement in pain. It may be that a strong element of "faith" is associated with a greater confidence or trust in health professionals and a greater likelihood of following their advice. It is also possible that those with higher levels of "faith" are more likely to improve because they are more likely to engage with a program that seeks to incorporate a spiritual and existential component. It is also possible that they are more eager to please the program providers and report better outcomes. All of these possibilities would need to be explored further and cannot be answered in the present study.

The interesting question that this finding raises, however, is whether levels of spiritual well-being or faith on the FACIT-Sp-Ex can be used as a prognostic tool for determining the likely pain reduction following the pain program. The results of this study certainly suggest that existential and spiritual factors are better predictors of outcome than most of the other psychological variables. Pain relief is only one aspect of managing pain and the results are confined to this particular program. However, the strength of the relationship between spiritual well-being and improvement again suggests the potential important role of these factors in living with pain.

## Conclusion

Our findings show that higher levels of meaning and purpose are associated with better psychological functioning in people with chronic pain. In addition, higher levels of "faith," as assessed by the FACIT-Sp, as well as higher levels of satisfaction with life and lower levels of pain catastrophising, are associated with higher levels of pain reduction in a pain management program with a meaning-based component. This study provides additional support for the consideration of existential and spiritual factors as a component of pain assessment and treatment.

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