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The contribution of purpose in life to psychological morbidity and quality of life in chronic pain patients

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ABSTRACT

Chronic pain is a cause of morbidity, interference with daily functioning, decreased health and quality of life. Purpose in life acts as a protective factor and mitigates these consequences. This cross-sectional study aimed to determine whether purpose in life contributed to psychological morbidity and quality of life in patients with chronic pain by controlling psychological variables related to health (pain severity and interference, pain perceptions, pain catastrophizing and coping). The sample included 103 patients diagnosed with chronic pain. Results showed that purpose in life independently contributed to psychological morbidity and to mental quality of life, but not to physical quality of life, after controlling for pain-related variables. Results showed the relevance of purpose in life to identify patients at risk of developing psychological morbidity and decreased quality of life, suggesting the need to intervene in chronic pain, specifically on purpose in life, to prevent psychological morbidity and promote quality of life, in this population.

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Purpose in life; psychological morbidity; quality of life; chronic pain

Introduction

Pain from a chronic condition is an indicator of injury and a toxic influence (Sturgeon & Zautra, 2010). Chronic pain (CP) is persistent/recurrent, lasting for more than 3–6 months (Treede et al., 2015). The most frequent sites are the lumbar and cervical regions, legs, knees, arms, and hip, and the most common etiology is osteoarthritis, osteoarthrosis, disc herniation, osteoporosis, spinal disorders, and trauma (Azevedo, Costa-Pereira, Mendonça, Dias, & Castro-Lopes, 2012).

Breivik, Collett, Ventafridda, Cohen, and Gallacher (2006) found a prevalence of moderate to severe CP in 19% of 46,394 participants. CP is associated with socio-demographic factors, namely, being female (Tsang et al., 2008; Van Hecke, Torrance, & Smith, 2013), being elderly (Azevedo et al., 2012; Tsang et al., 2008; Van Hecke et al., 2013), belonging to a low socioeconomic status, and being in an inactive work status (Van Hecke et al., 2013). In Portugal, CP prevalence is 36.7%, being higher among the elderly, retired, unemployed, and those with less education (Azevedo et al., 2012).

Pain experience is multimodal affecting different health and well-being domains (Sturgeon & Zautra, 2010), associated with a decreased quality of life (QoL) (Nolet,

Kristman, Cote, Carroll, & Cassidy, 2014). Pain's high prevalence emphasizes the need for research and implementation of interventions focused on pain management (Azevedo et al., 2012).

CP causes emotional distress, depression (Gerrits, van Oppen, van Marwijk, Penninx, & van der Horst, 2014; West, Stewart, Foster, & Usher, 2012), mental exhaustion, anxiety, fatigue, and catastrophizing (West et al., 2012). In Azevedo et al. (2012), 13% of individuals with CP presented a diagnosis of depression, while in the Kroenke et al. (2013) study, approximately half presented one or more anxiety disorders with a negative impact on health-related QoL. Psychological distress in patients with CP was significantly higher compared to healthy individuals (Gormsen, Rosenberg, Bach, & Jensen, 2010). In adulthood, CP is a serious health problem that affects patients' well-being, with severe personal, interpersonal, and economic consequences (O'Brien & Breivik, 2012; Tsang et al., 2008). However, some patients are not affected due to personal resources that increase the likelihood of resilience, showing a relevant personal resource, such as the belief that a person's life has meaning and purpose (Sturgeon & Zautra, 2010). Nevertheless, this has not been as deeply studied in the health area as other positive psychological variables (Goodin et al., 2013; Hood, Pulvers, Carrillo, Merchant, & Thomas, 2012).

Global meaning is a central component of the framework model of meaning in the context of stress and coping (Vehling et al., 2011) encompassing core beliefs, personal goals, and subjective perceptions of coherence and purpose (Park, 2010). Crumbaugh and Maholick (1964) defined 'purpose in life' (PL) as the ontological meaning of life from the point of view of the experiencing individual. McKnight and Kashdan (2009) argued that purpose provides a foundation allowing people to be more resilient to obstacles, stress, and tension, making it easier to face challenges knowing that a purpose exists.

PL is a strong predictor of adjustment in life and is associated with better health (Davison & Jhangri, 2013; Kim, Sun, Park, Kubzansky, & Peterson, 2013; Kraus, Rodrigues, & Dixe, 2009; Sherman & Simonton, 2012), greater socioeconomic status, being employed, and married (Pinquart, 2002). Associations between PL, psychological well-being, and low levels of depressive symptoms were found (Dezutter, Luyckx, & Wachholtz, 2015; Pinquart, 2002), and PL has shown to predict absence of depression, anxiety, and demoralization (Vehling et al., 2011). Even when controlling for other variables (e.g. optimism, pessimism, emotionality), PL remained associated to lower anxiety, depression, negative affect, and greater positive affect (Smith & Zautra, 2004). An overall sense of purpose is an important protective factor in psychological distress (Sherman & Simonton, 2012; Vehling et al., 2011). PL was considered a potential life-satisfaction promoter (Dezutter et al., 2015) in healthy people and cancer patients (Teques, Carrera, Ribeiro, Teques, & Ramon, 2016). Low PL was associated with increased mortality in elderly populations (Boyle, Barnes, Buchman, & Bennett, 2009), while higher PL was considered a protective factor against myocardial infarction in individuals with coronary heart disease (Kim et al., 2013), contributing to successful aging (Boyle et al., 2009). Individuals with greater PL are more proactive in their health care, with a higher probability of using preventive health services (Kim, Strecher, & Ryff, 2014). Thus, PL has a positive relationship with coping and mental and physical QoL (Kraus et al., 2009). Moreover, higher PL results in greater tolerance to pain (Smith et al., 2009), and faster recovery time after surgery (Smith & Zautra, 2004). However, in some studies, PL was not related to physical QoL (Sherman & Simonton, 2012), although meaning in life emerges as an important factor of psychological adjustment to pain (Dezutter et al., 2015). Nevertheless, CP

threatens the individuals' perception of their purpose (Dezutter et al., 2015), implying a review of life's goals and expectations (Pinquart, Silbereisen, & Fröhlich, 2009).

Given the relevance of spirituality to psychology, and its relevance and benefits for people with pain, PL emerges as a part of pain assessment and management. Although there are some studies on PL and its relationship with psychological morbidity and QoL, literature on PL in the CP field is still scarce (Dezutter et al., 2015; Richardson & Morley, 2017; Siddall, Lovell, & MacLeod, 2015; Smith & Zautra, 2004), namely on how PL contributes to psychological morbidity and QoL.

This study focuses on the widespread acknowledgment that life has a purpose and meaning (Sherman & Simonton, 2012), and analyzes how PL contributes to psychological morbidity and physical and mental QoL in CP patients. Sociodemographic (age, education, work status, financial income), clinical (pain duration, comorbidities, pain severity), and psychological variables (pain interference, illness perceptions, pain catastrophizing, illness-focused coping, wellness-focused coping) were the control variables, associated with psychological morbidity and QoL (Jorgensen, 2014; Sassen, 2018). Some other pain related variables of negative affect were not included, such as fear of pain or pain anxiety, since there seems to be construct redundancy on whether pain catastrophizing is conceptually different from these other variables. Therefore, choice was made to use pain catastrophizing as it is one of the most robust psychological predictors of psychological distress and depression symptoms (Burri, Ogata, Rice, & Williams, 2018; Turk & Okifuji, 2002; van der Have et al., 2015). It was hypothesized that PL will be related to psychological morbidity and physical and mental QoL, after controlling for sociodemographic, clinical, and psychological variables related to pain.

Materials and methods

This was a cross-sectional study with a correlational design.

Participants and procedures

The study included 103 patients diagnosed with CP in a main hospital in the North of Portugal. The inclusion criteria were: 1) receiving treatment at the Chronic Pain Unit of the Hospital, 2) being able to read and write, and 3) being over 18 years old. Patients diagnosed with severe psychiatric disorders (psychosis) or cognitive deficit registered in their clinical chart were excluded. The study was approved by the Ethics Committee of the Hospital. Participants (Table 1) were contacted by their physician at the pain consultation, and were informed regarding the objectives and procedures of the study, their confidentiality rights and voluntary participation. All participants signed an informed consent.

Measures

To measure PL, the *PL Test Revised (PIL-R, Harlow, Newcomb & Bentler, 1987)* was used. The instrument evaluates objectives, ambitions, and goals that inspire a sense of purpose in personal and existential life. The 20 items are answered on a 7-point Likert-type scale (1 –

Table 1. Participants' characteristics.

Characteristics	N	%	Mean (SD)
Sex			
Men	22	21.4	
Women	81	78.6	
Age			53.86 (11.38)
Relationship status			
Without partner	25	24.3	
With partner	78	75.7	
Education (years)			7.01 (3.53)
Work status			
Inactive	76	73.8	
Active	27	26.2	
Monthly income			
> €500	56	45.6	
< €500	47	54.4	
Pain duration (months)			48 (86.2)
Presence of comorbidities			
Without comorbidities	43	41.7	
With comorbidities	60	58.3	
Pain medication use			
No medication use	15	14.6	
Medication use	88	85.4	

strongly disagree to 7 – totally agree). High results indicate more PL. The Cronbach's alpha, in this study, was .75 for the total scale.

To measure pain severity and pain interference, the *Brief Pain Inventory (BPI; Cleeland, 1991)* was used. The instrument evaluates pain severity and degree of pain interference on a 0–10 Likert-type scale. Higher results indicate greater severity and functional interference. In this study, the Cronbach's alpha for the severity subscale was .73, and for the interference subscale was .80.

To measure illness perceptions, the *Brief Illness Perception Questionnaire (Brief IPQ; Broadbent, Petrie, Main, & Weinman, 2006)* was used. It assesses illness cognitive and emotional representations through 9 items evaluated on a 0–10 scale, except for item 9 (causes). Higher results indicate more threatening illness perceptions. The Cronbach's alpha of the total scale, in this study was .72.

To measure psychological morbidity, the *Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983)* was used. It includes 14 items in two subscales: anxiety and depression. Higher scores correspond to higher psychological morbidity. The overall result is an indicator of psychological distress. In this study, the Cronbach's alpha for the total scale was .85.

To measure pain catastrophizing, the *Pain Catastrophizing Scale (PCS; Sullivan et al., 1995)* was used. The instrument includes 13 items describing thoughts, perceptions, and catastrophic feelings associated with pain, using a 0–4 rating scale to evaluate their frequency. Higher scores indicate higher levels of catastrophizing. The Cronbach's alpha for the total scale, in this study, was .93.

To measure coping strategies in chronic pain, the *Chronic Pain Coping Inventory-42 (CPCI; Jensen et al., 1995)* was used. The instrument evaluates cognitive and behavioral coping. It consists of 42 items evaluated on a 1–7 scale. The strategies listed fit into illness-focused coping or wellness-focused coping. Higher scores indicate greater use of coping

strategies. In this study, the Cronbach's alpha for illness-focused coping was .82, and for wellness-focused was .77.

To measure QoL, the *Short Form Health Survey (SF-12v2; Ware, Kosinski, & Keller, 1996)* was used. The instrument includes 12 items evaluating physical and mental QoL. Higher scores in each dimension correspond to better QoL, respectively. The Cronbach's alpha, in this study, was .85 for physical QoL, and .84 for mental QoL.

Statistical analysis

The data were processed using IBM SPSS® version 24.0. The preliminary bivariate analysis evaluated relationships between study outcomes and demographic, clinical, and psychological control variables, using Pearson's correlation and Biserial Point coefficient. Multiple hierarchical regression evaluated the relationship of PL with study outcomes, controlling for other measures. The hierarchical model for psychological morbidity included PL in block 1, and in block 2, the variables pain severity, pain interference, illness perceptions, pain catastrophizing, illness-focused coping, and wellness-focused coping. The hierarchical model for physical QoL included in block 1 PL, and in block 2, the variables work status, pain severity, pain interference, illness perceptions, illness-focused coping, wellness-focused coping, and psychological morbidity. The hierarchical model for mental QoL included PL in block 1, and in block 2, the variables pain interference, illness perceptions, illness-focused coping, catastrophizing, and psychological morbidity.

Results

Descriptive statistics

Psychological morbidity was related to pain severity, pain interference, illness representations, pain catastrophizing, illness-focused coping, wellness-focused coping, and PL. Physical QoL was related to work status, pain severity, pain interference, illness perceptions, illness-focused coping, wellness-focused coping, psychological morbidity, and PL. Mental QoL was related to pain interference, illness perceptions, catastrophizing, illness-focused coping, psychological morbidity and PL. Besides, the correlation between PL and pain interference was negative (Table 2).

Hierarchical regressions

Contribution of PL to psychological morbidity after controlling for sociodemographic, clinical, and psychological variables related to pain

PL explained 46.7% of the total variance of psychological morbidity, with model 1 being significant (R^2 .467, $F(1, 101) = 88.414$, $p < .001$). Model 2 explained 62% of the total variance (R^2 of .620, $F(7.95) = 22.165$, $p < .001$, Adjusted $R^2 = .592$). Higher PL ($\beta = -.332$, $t = -4.910$, $p < .001$) was associated with lower levels of psychological morbidity after adjusting for control variables (Table 3).

Table 2. Relationship between sociodemographic, clinical and psychological variables and psychological morbidity, and physical and mental quality of life.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Physical QoL	-															
2. Mental QoL	-.125	-														
3. Psychological morbidity	-.217*	-.724***	-													
4. Purpose in life	.228*	.624***	-.683***	-												
5. Pain severity	-.236*	-.168	.347***	-.197*	-											
6. Pain interference	-.400***	-.449***	.634***	-.581**	.504**	-										
7. Illness perceptions	-.377***	-.449***	.648***	-.617***	.383**	.678**	-									
8. Pain catastrophizing	-.147	-.483***	.625***	-.617***	.264**	.523**	.701**	-								
9. Illness foc. coping	-.409***	-.347***	.436***	-.318**	.186	.441**	.330**	.261**	-							
10. Wellness foc. coping	.260**	.150	-.211*	-.298**	.006	-.095	-.194	-.177	-.106	-						
11. Pain duration	-.003	-.026	.017	.007	.225*	.066	.024	-.102	.123	-.100	-					
12. Presence of comorbidities	.142	-.064	.028	-.057	.139	.052	-.007	.120	.040	-.080	.208*	-				
13. Age	.060	.139	-.178	.094	-.135	-.235*	-.240*	-.217*	.055	-.240*	.122	.108	-			
14. Education	-.130	.074	-.010	.167	.0234	.046	-.072	-.188	-.033	.127	-.103	-.076	-.408**	-		
15. Work status	.229*	.175	-.122	.146	-.108	-.093	-.092	-.057	-.323**	.157	-.076	-.077	-.307**	-.306**	-	
16. Financial income	.055	-.058	-.006	.103	-.026	.077	-.175	-.238*	-.057	-.116	-.017	-.054	.013	.363**	.163	-

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. Purpose in life contribution for psychological morbidity after controlling for sociodemographic, clinical, and psychological variables.

Psychological Morbidity				
Variable	Model 1		Model 2	
	β	t	β	t
Purpose in life	-.683	-9.403***	-.332	-3.595***
Pain severity			.082	1.102
Pain interference			.144	1.412
Illness perceptions			.124	1.174
Pain catastrophizing			1.91	2.030*
Illness-focused coping			.159	2.241*
Wellness-focused coping			-.024	-.359
R^2		.467		.620
F		88.414***		22.165***
ΔR^2		.467		.153
ΔF		88.414		6.398

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4. Contribution of purpose in life to physical and mental quality of life after controlling for sociodemographic, clinical, and psychological variables.

Variables	Physical Quality of Life				Mental Quality of Life			
	Model 1		Model 2		Model 1		Model 2	
	β	t	β	t	β	t	β	t
Purpose in life	.228	2.352*	-.085	-.657	.624	8.022***	.267	2.660**
Work status			.086	.940	-	-	-	-
Pain severity			-.053	-.521	-	-	-	-
Pain interference			-.256	-1.851			-.047	-.466
Illness perceptions			-.254	-1.973			.157	1.401
Pain catastrophizing			-	-			-.034	-.333
Psychological morbidity			.252	1.880			-.579	-5.337***
Illness-focused coping			-.287	-2.790**			-.032	-.411
Wellness-focused coping			.221	2.460*	-	-	-	-
R^2		.052		.331		.389		.566
F		5.530*		5.812***		64.356***		20.845***
ΔR^2		.052		.240		.389		.177
ΔF		5.530		5.600		64.356		7.806

* $p < .05$, ** $p < .01$, *** $p < .001$

Contribution of PL to physical and mental QoL after controlling for sociodemographic, clinical, and psychological variables related to pain

PL explained 5.2% of the total variance of physical QoL, with model 1 being significant ($R^2 .052$, $F(1, 101) = 5.530$, $p = .021$, Adjusted $R^2 = .043$). Model 2 explained 33.1% of the total variance (R^2 of .331, $F(7, 94) = 5.812$, $p < .001$, Adjusted $R^2 = .274$). PL ($\beta = -.085$, $t = -.657$, $p = .513$) was not associated with physical QoL when other variables were entered (Table 4).

PL explained 38.9% of the total variance of mental QoL, with model 1 being significant ($R^2 .389$, $F(1, 101) = 64,356$, $p < .001$). Model 2 explained 56.6% of the total variance ($R^2 .566$, $F(6, 96) = 20,845$, $p < .001$, Adjusted $R^2 = .539$). Greater PL ($\beta = .267$, $t = 2.660$, $p = .009$) was associated with better mental QoL after adjusting for control variables (Table 4).

Discussion

Results revealed that PL was negatively related to psychological morbidity. Previous studies suggest that PL is a protective factor against depression (Pinquart, 2002; Smith & Zautra, 2004), since individuals with a strong purpose have fewer depressive symptoms (Dezutter et al., 2015; Siddall et al., 2015) and lower levels of anxiety (Leeson et al., 2015; Vehling et al., 2011).

PL showed a positive association with physical and mental QoL, which is in agreement with other studies (Davison & Jhangri, 2013; Kim et al., 2013; Smith & Zautra, 2004). McCracken, Vowles and Eccleston (2004, 2005) found that people's ability to reorient their lives and set new goals, despite the pain, was associated with better functioning. Sherman and Simonton (2012) analyzed PL using CP and non-pain populations, and found a stronger association between PL and psychological morbidity in CP population. In the face of a threatening event like CP, being goal oriented and attaining goals despite pain and its interference, brings more satisfaction than achieving goals when adversity is not perceived.

Although no causality should be drawn from this cross-sectional study, PL contributed independently and negatively to psychological morbidity, corroborating the literature, suggesting that depression may be a consequence of lower levels of purpose (Dezutter et al., 2015; Smith & Zautra, 2004). Maintaining or renewing a sense of purpose and meaning during illness represents a protective factor for depressive mood (Vehling et al., 2011): higher level of PL before transplants predicted lower depression (Leeson et al., 2015), and higher levels of purpose in patients who underwent knee replacement surgery predicted lower levels of anxiety (Smith & Zautra, 2004). PL contributed significantly to lower psychological distress in patients receiving treatment in primary care, as well as in cancer patients (Sherman & Simonton, 2012). However, in Vehling et al. study (2011), the global meaning in life was not a predictor of anxiety, in cancer patients.

PL contributed independently and positively to mental QoL, according to previous studies (Davison & Jhangri, 2013; Kraus et al., 2009), since even when other variables such as optimism and emotionality are controlled, PL remains related to better mental QoL (Smith & Zautra, 2004). Purpose has been shown to contribute to the maintenance of a good QoL, with evidence indicating associations between PL, psychological well-being and low levels of depressive symptoms (Dezutter et al., 2015). Psychological morbidity was found to partially mediate the relationship between disability and QoL in patients with chronic low back pain (Ferreira & Pereira, 2014).

PL, in this study, did not contribute to physical QoL. This finding is in line with Sherman and Simonton (2012) results, where PL was not related to physical QoL in patients with cancer. Other studies reported that purpose may be more important for psychological adjustment than for physical functioning (Dezutter et al., 2015), although the literature is not consensual. In patients receiving primary health care, this association was significant (Sherman & Simonton, 2012). Having a strong life purpose has resulted in increased pain tolerance (Smith et al., 2009), faster recovery after surgery (Smith & Zautra, 2004), and acts as a protector against myocardial infarction in adults with coronary disease (Kim et al., 2013). Resilient individuals adopt coping strategies and are more willing to accept pain by reducing pain's control over their emotions (Sturgeon & Zautra, 2010) and daily activities. Thus, it is possible that purpose contributes to physical QoL through coping, since it has a positive

relationship with coping and mental and physical QoL (Kraus et al., 2009). The mediating role of coping is well established in the literature (Dardas & Ahmad, 2015; Morasco et al., 2013).

The results of the present study suggest that PL contributed negatively to psychological morbidity and positively to mental QoL, after controlling for health-related psychological variables. The role of purpose seems pertinent to individuals who are dealing with significant medical conditions (Sherman & Simonton, 2012). Interventions based on coping strategies focused on assigning meaning to pain and accommodating the pain experience in the individual's existential life perception bring significant gains to CP patients (Gruszczynska & Knoll, 2015; Park, 2010).

This study has limitations, such as the sample size, the instruments that were self-report measures, and the cross-sectional design that does not allow causality. Future studies should include social support, and investigate the role of pain interference in PL due to the strong association between these variables. Having high purpose might mean that patients are affected less by their pain, carrying out activities and fulfilling their life goals.

Disclosure statement

No potential conflict of interest was reported by the authors.

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