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Coping, meaning in life, and quality of life in congestive heart failure patients

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Abstract

Objective The present study examined (1) whether particular coping strategies used to deal with congestive heart failure (CHF) are related to meaning in life across time, and (2) whether meaning in life mediates the effect of coping on health-related quality of life.

Methods A sample of 155 CHF patients received questionnaire packets at two time points, 6 months apart. Main outcome measures included Meaning in Life and Mental and Physical Health-Related Quality of Life (HRQOL).

Results Coping (particularly acceptance/positive reinterpretation and religious coping) was not only related to meaning in life, but also to increased meaning over time. Further, meaning in life was related to both mental and physical components of HRQOL. However, coping was minimally related to HRQOL and its effects were not mediated by meaning in life.

Conclusions These results add to accumulating evidence that life meaning is important in the context of living with a chronic, life-threatening illness. Further, coping—especially acceptance and religious coping—is related to increased life meaning over time in the context of life limiting illness.

Keywords Meaning in life · Congestive heart failure · Coping · Health-related quality of life

Experiencing one's life as meaningful, feeling that one has significance and purpose, is positively related to well-being for people dealing with a range of different health crises and illnesses (e.g., [1, 2]). A sense of life meaning imbues one's daily existence with higher levels of positive affect and well-being [3]. While its importance is well-established, however, few studies have examined the processes through which a sense of meaning in life is established and, perhaps even more importantly, how it is maintained in the face of difficult life circumstances such as chronic or life-limiting illnesses [4].

Coping, meaning, and adjustment

Coping, the cognitive and behavioral strategies that individuals enact to manage their stressful encounters and attendant negative emotions [5], has been shown to be fairly strongly related to individuals' adjustment to illness. In particular, coping efforts characterized by behavioral and emotional approach, such as attempting to deal directly with the illness and reinterpreting it in a more positive way, relying on one's faith and one's social network, and accepting one's circumstances, have been shown to be generally helpful while attempting to avoid or disengage are generally maladaptive (see [5], for a review). Links have been reported between coping and a variety of outcomes in those dealing with illness, including mental well-being [6], pain (e.g., [7], and self-reported physical health (e.g., [8]).

Several authors have suggested that the coping activities in which people engage to manage their illness may also influence their sense of meaning in life (e.g., [9, 10]). For example, although serious health problems can be highly stressful, they may also provide opportunities to create a

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more intentional and purposeful way of living, perhaps through re-evaluating and focusing on what is truly important, connecting with the transcendent, or developing a heightened sense of appreciation for life [11]. Such adaptive types of coping may lead individuals to affirm or develop new sources of meaning in their lives, leading them to perceive their lives as more meaningful [3]. On the other hand, those who cope less effectively or employ generally maladaptive strategies such as avoidance or denial may miss the opportunities to develop wisdom or insight through their struggle [12] and may, therefore, subsequently report lower levels of meaning in life.

To date, little research has specifically examined links between coping efforts and the maintenance of life meaning. One recent longitudinal study found that the strategies that breast cancer survivors used to cope with their illness predicted their subsequent sense of meaning in life [13]. In particular, women who used more positive reappraisal, acceptance, social support, religious coping, and active coping perceived higher levels of meaning in life 2 years later, while those using higher levels of denial coping had lower levels of life meaning. However, that study did not examine whether meaning in life changed over time, and therefore did not assess the role of various types of coping in such change.

The present study

Importantly, the Jim et al. [13] study demonstrated the important role that coping strategies may play in influencing life meaning in the context of serious illness. Their study also raised several questions that we address in the present study. First, their sample comprised women who had survived primary treatment for breast cancer and were on the road to long-term survivorship. We wondered whether coping with illness would also be related to life meaning in people facing a progressive, life-limiting condition with a much bleaker prognosis, congestive heart failure (CHF). Second, we examined whether coping efforts would be related not only to subsequent meaning in life, but also to *changes* in meaning in life over time, a question unexamined in the Jim et al. [13] study and a more stringent test of the effects of coping on meaning in life. Finally, as we have discussed, both coping and life meaning have been shown to be related to aspects of well-being (e.g., [5, 14, 15], for reviews). Given that coping efforts are related to meaning in life, and that meaning in life is related to well-being, then a mediational pathway is a plausible mechanism through which coping may exert effects on well-being. To date, the extent to which life meaning may *mediate* the influence of coping on well-being is virtually unknown (cf., [10]).

The present study examined meaning in life and HRQOL in a sample of individuals with CHF, a chronic and progressive illness caused by impairment of the heart's ability to maintain normal blood circulation [16]. Symptoms of CHF are often painful and difficult to manage and overall prognosis is poor. CHF imposes significant functional limitations due to fatigue and edema, and requires continuous monitoring of food, liquids, weight, symptoms and medication adherence [17]. Hospitalization rates are high, with annual readmission rates of 40–60% [18], and CHF imposes an ever-present and ever-increasing threat of mortality. Further, management of CHF symptoms requires multiple medications and significant alterations in lifestyle [19]. We hypothesized that using strategies generally regarded as adaptive to cope with CHF would lead to increased sense of life meaning and higher levels of HRQOL, and that meaning in life would account for at least a portion of the effect of coping on well-being.

Method

Participants

At baseline (Time 1), 191 men and 11 women were recruited[1] from the Cincinnati VAMC and the University of Cincinnati Medical Center during routine medical appointments. Mean age of participants was 65.6 years (range = 44–85) and reported race/ethnicity was 67% Caucasian, 30% African American, and 3% Latino or other racial/ethnic categories. Most (79%) had an average household income ≤$20,000.

Procedure

Eligibility included (1) having had a hospital admission with a diagnosis of left-sided, systolic CHF in the past year, (2) being 40 years of age or older, (3) being able to speak English, and (4) having no obvious psychosis or severe cognitive impairment. Patients meeting eligibility criteria were invited to participate in the study. Participants completed a packet of questionnaires and were re-contacted 6 months later (Time 2) to complete an identical packet of questionnaires. Participants received $50 at each time point for their participation.

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[1] Virtually all of the eligible potential participants approached elected to participate in the study. However, the number of refusals was not recorded.

Measures

Demographics and background information included measures of age, gender, income and self-reported race or ethnicity.

Severity of CHF Extracted from medical records at Time 1 were (1) left ventricular ejection fraction (LVEF), a measure of the percentage of blood volume pumped per heartbeat, and (2) New York Heart Association (NYHA) Classification, which classifies severity from Class I (minimal limitations in activities) to Class IV (confinement to rest and discomfort and symptoms even at rest).

Meaning in life was assessed with the Perceived Personal Meaning Scale (PPMS; [20]) on which participants rate 5 items regarding life meaning (e.g., my life as a whole has meaning) from 1 (strongly disagree) to 4 (strongly agree). The PPMS has shown good concurrent and predictive validity [20]. Internal consistency reliability in the present sample was .92.

Coping was assessed with the COPE [21], 60 items comprising 15 subscales (active coping, restraint, denial, alcohol/drug use, mental disengagement, religious coping, social instrumental support, social emotional support, suppressing competing activities, humor, behavioral disengagement, positive reinterpretation and growth, acceptance, venting, and planning); each subscale consists of 4 items. Participants rated how much they have been using each item in dealing with CHF from 1 (did not do this at all) to 4 (did this a lot). Internal consistency reliabilities for all subscales were acceptable, ranging from .66 to .91. Principal components analysis (PCA) was used to reduce the number of coping items, as recommended by the scale authors. Results suggested that the best solution in terms of both scree plot results and eigenvalues greater than 1 consisted of five factors (active coping, disengagement, seeking social support, acceptance/positive reinterpretation, and religious coping). These factors are fairly consistent with those found by Jim et al. [13] and Carver et al. [21].

Health-related quality of life was assessed with the 36 item Medical Outcomes Study Short Form (SF-36) health status questionnaire [22, 23]. The SF-36 produces two summary scores: the mental health component (MCS; subscales of vitality, social functioning, mental health, and role-emotional) and the physical health component (PCS; subscales of physical functioning, bodily pain, role-physical, and general health). The SF-36 has good psychometric properties and has been successfully used with older adults with CHF [22–24]. Internal consistency reliabilities in the current study were .74 (PCS) and .77 (MCS).

Data analysis plan[2]

Following attrition analyses, paired *t*-tests characterized change across the study period in meaning in life and HRQOL. Then, to examine how Time 1 coping efforts and meaning in life were related to Time 2 meaning in life and change in meaning in life over time, bivariate and partial correlations, respectively, were conducted. Bivariate correlations were conducted to determine the effects of coping on HRQOL. These correlational results, along with those between coping and meaning, were examined to assess the possibility that meaning in life mediated those effects. Finally, to determine which strategies used to cope with CHF were most predictive of meaning in life, a hierarchical regression analysis was conducted in which the first step consisted of the coping activities that were related to Time 2 meaning in life in the bivariate correlation analysis, and the second step included Time 1 meaning in life. This second step, controlling for initial levels of meaning in life, effectively examined the extent to which coping efforts predict *change* in meaning in life over the study period.

Results

Attrition analysis

Follow-up assessment was completed by 81% (155 men and 8 women) of the initial sample. Results of one-way ANOVA and χ^2 analyses revealed no significant differences in baseline characteristics or study variables among those who completed the study, those who were lost to follow-up, and those who had died following baseline testing (10 participants) with the exception of LVEF, which was higher in those lost to follow-up than in the other two groups ($P < .001$).

Changes in study outcomes over time

A *t*-test indicated that meaning in life declined from Time 1 to Time 2 (means = 12.81 and 12.49; $t(160) = 2.2$, $P < .05$), but neither MCS nor PCS changed over time (MCS means = 49.4 and 49.2 and PCS means = 31.2 and 32.0, $P > .5$).

Correlational analyses of coping, meaning in life, and HRQOL

Correlation analyses indicated that severity was unrelated to life meaning, and that coping, particularly acceptance/

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[2] Missing data in this sample were minimal. Item mean substitution was used and no participants were dropped due to missing data.

Table 1 Bivariate and partial correlations of Time 1 illness severity, coping, and meaning with Time 2 meaning in life and HRQOL

	Time 2 life meaning	Time 2 life meaning (partial r)	Time 2 SF-36 MCS	Time 2 SF-36 PCS
Time 1 illness severity				
LVEF%	−.06	−.07	−.05	.01
NYHA classification	−.08	−.05	−.21**	−.38***
Time 1 coping				
Active coping	.20*	.09	−.11	−.06
Acceptance/positive reinterpretation	.35***	.24**	.13	−.04
Social support	.04	.05	−.12	−.24**
Disengagement	−.07	.03	−.25**	−.15*
Religious coping	.28**	.25**	.05	−.11
Time 1 meaning	.55***	–	.31***	.30***

Note. * $P < .001$,** $P < .01$. *** $P < .05$

reappraisal and religious coping, was related to life meaning and increased life meaning at Time 2 (see Table 1). Further, some coping strategies were correlated with poorer HRQOL, particularly disengagement and seeking social support. However, none of the coping strategies that predicted meaning in life predicted HRQOL; therefore, no mediational analyses were conducted.

Coping as a predictor of Time 2 life meaning

To determine which coping strategies were most related to meaning in life, a hierarchical linear regression analysis was conducted by entering the three Time 1 coping variables that were related to meaning in life at the bivariate level.[3] Results indicated that the model was predictive of life meaning ($F(3, 156) = 11.89$, $P < .001$). In particular, both Time 1 acceptance/positive reinterpretation and religious coping were related to Time 2 meaning in life, but active coping was not related in this multivariate analysis. Finally, Time 1 meaning in life was entered as a second step of the regression analysis, and the model was again significantly predictive ($F(4, 159) = 22.42$, $P < .001$). The results indicated that even controlling for the strong influence of baseline meaning in life, the coping strategies of acceptance/positive reinterpretation and religious coping predicted Time 2 meaning in life, essentially indicating positive relationships with *increased* life meaning over time (see Table 2).

Table 2 Hierarchical regression analysis of Time 1 coping as a predictor of Time 2 meaning in life

	B	SEB	β	Adj. R^2
Step 1				.17
Active coping	−.10	.36	−.03	
Acceptance/positive reinterpretation	1.07	.34	.30***	
Religious coping	.38	.18	.17*	
Step 2				.35
Active coping	−.25	.31	−.06	
Acceptance/positive reinterpretation	.66	.30	.18*	
Religious coping	.35	.15	.16*	
Time 1 meaning in life	.54	.07	.49***	

Note. * $P < .001$.** $P < .01$. *** $P < .05$

Discussion

We hypothesized that coping with CHF using strategies generally regarded as adaptive would lead to increased life meaning and higher levels of HRQOL, and further, that meaning in life would account for at least a portion of the effect of coping on well-being. Because prior research on these issues has been primarily conducted in the context of cancer survivorship; expanding the questions to the context of a chronic, progressive, and ultimately fatal illness broadens our understanding of the centrality of life meaning in the quality of life of those living with (and dying from) life-limiting illness.

Importantly, meaning in life declined across the 6 months of the study for the sample as a whole, yet, as expected, participants who coped through their faith and through accepting and trying to understand their illness in a more positive light, experienced *higher* levels of meaning over time. Meaning in life was quite strongly related to better physical and mental HRQOL, which is important,

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[3] Although NYHA classification was not related to meaning in life, it was related to HRQOL, so the regression analysis predicting meaning was conducted using NYHA classification in the first step. Results for coping were virtually identical to those shown in Table 2.

given the strong links of HRQOL and outcomes such as rehospitalization and mortality in CHF patients (e.g., [25]). Interestingly, HRQOL did not change over this time period, suggesting that perhaps some other unassessed factors may have been changing over this same time period, counteracting the influence of the decline in life meaning.

The increased sense of meaning in life experienced by those coping through acceptance, reinterpretation, and religiousness may be considered an aspect of post-traumatic growth (e.g., [26]). Although very little research has yet examined post-traumatic growth in the context of progressive and life-limiting cardiac illness, these results suggest that even in these circumstances, positive life change is possible (cf. [27]), particularly the sense that one's life has meaning and purpose [28]. Further, this increase in a sense of meaning in life was predicted by the types of coping that have been shown to be especially adaptive in low control circumstances such as those faced by individuals with CHF [5, 6].

Curiously, however, these types of coping were unrelated to higher levels of quality of life. In fact, coping efforts were only related to poorer quality of life, surprising in light of the voluminous literature documenting salutary effects of coping on adjustment [5]. However, other research with chronic cardiac conditions also failed to find salutary effects for coping (e.g., [29, 30]). It may be that the coping reported by individuals living with intractable health problems reflects increasing illness, given that they likely have already implemented whatever problem-focused coping is possible in such circumstances. Further, because some types of coping did predict meaning in life, and meaning in life did predict HRQOL, it may be that some effects of coping were very indirectly exerted on HRQOL through meaning in life. In sum, the relationships among meaning in life, coping, and quality of life appear to be complex. While meaning in life is fairly highly related to HRQOL, it has recently been proposed that meaning in life be conceptualized as a separate and "relatively independent" component of well-being (e.g., [31, 32]).

Limitations of the present study should be noted. First, we assessed individuals at only two time points; such snapshots are inadequate to capture the ongoing changes in individuals living with serious illness. It is plausible that meaning in life and coping activities relate in a recursive nature, such that certain types of coping lead to more life meaning, while life meaning may also lead to the use of particular coping strategies, an intriguing possibility that awaits future research. Second, the sample was predominantly male, Judeo-Christian, and of lower socioeconomic status; it is not clear how these variables may relate to quality of life in other samples. These limitations should be taken into account in future research addressing issues of meaning and coping in those living with chronic illness.

In spite of these limitations, the present study advances our understanding of the varied and complex roles that meaning may play in the lives of those with a profoundly difficult progressive illness. These potent coping resources of faith and acceptance are those that are least likely to be taken away by age or infirmity [33], and suggests both directions for future research and for clinical implications targeted at improving the lives of those who are gravely ill. These effects are particularly remarkable given that, for the whole sample, meaning in life declined over time, illustrating the important roles that religion and positive cognitive coping can play in even dire circumstances.

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