



A New Take on a Resource-Based Model of Quality of Life in Hemato-Oncological Patients: Demographic, Personal, and Social Factors

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Abstract

This study tests a new comprehensive model accounting for the role of demographic, personal, and social factors in quality of life (QOL) among a sample of hematological cancer patients. We hypothesized that positive and negative affect would mediate the associations between these factors and QOL. Seventy-two patients were recruited at an outpatient hematological clinic in a mid-sized medical center in northern Israel. They completed measures of QOL, social support, positive and negative affect, and emotional intelligence (EI). Diagnostic and demographic information was retrieved from their files. Path analysis supported a model in which positive and negative affect mediated the association between income level, social support, EI, and QOL. This study presents a model accounting for QOL among hematological patients that for the first time pertains to demographic, personal, and interpersonal factors. This model may guide future research as well as future interventions to empower and support this fragile target population.

Keywords Hematological cancer · Oncology · Quality of life · Emotional intelligence · Resource model

Introduction

About 1.6% of the general U.S. population will be diagnosed with hematological cancer at some point in their lives. About 61% will survive longer than 5 years (National Institutes of Health, National Cancer Institute, 2017). As a cancer of the blood, this condition is systemic by definition and is still considered incurable, although long-term remission has been recorded in 27–83% of patients, depending on their diagnosis and age (Leukemia and Lymphoma Society, 2017; National Institutes of Health, National Cancer Institute, 2017). The life-threatening diagnosis, the therapeutic interventions and their side effects, and the disruption to life routines for patients and their caregivers exact a heavy toll: the literature is replete with evidence of the physiological

and psychosocial burdens to patients and those around them (Deshields, Potter, Olsen, & Liu, 2014; Waters, Wake, Hesketh, Ashley, & Smibert, 2003; Yamazaki, Sokejima, Mizoue, Eboshida, & Fukuhara, 2005). Adapting to and effectively coping with a severe medical condition is a long-term challenge that touches every aspect of the patients' lives and their surroundings. The current study focuses on perceived Quality of Life (QOL) of hemato-oncological patients treated in an outpatient hematological clinic in a large medical center in northern Israel.

In general, cancer accounts for 25% of total annual death cases in Israel in recent years (Goldberg, Aburava, & Haklai, 2015). Leukemia and other hematological malignancies have accounted for about 2% of new cases annually, but their occurrence is reported to be increasing (Israel Bureau of Statistics, 2015). Treatment combines in- and outpatient frameworks and lasts years, as patients and their families cope with a range of challenges and threats. The literature in Israel notes that these challenges are associated with an ongoing emotional and social toll that severely affects patients' QOL.

This study presents and tests a process model of QOL in hematological patients. In the context of this study, we base our definition of the concept of QOL on prominent existing psychological conceptualizations that reflect individuals'

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subjective assessment of their general life conditions and settings and the extent to which these meet their needs and expectations (Felce & Perry, 1995; McNally, 2009). On top of this basic view of QOL, this study relies on individuals' assessment of their daily living conditions, and how their health condition affects (or does not affect) their functioning. This perception also includes the extent to which health care itself improves or undermines individuals' sense of well-being (Fitzpatrick, Fletcher, Gore, Jones, Spiegelhalter, & Cox, 1992) and the psychological outcomes of these perception such as anxiety, depression, sense of control over one's life, and so on (Cohen, Mount, Strobel, & Bui, 1995). Social support and a general sense of purpose and meaning in life are also often included in the definition of QOL in these contexts (Cohen, Mount, Tomas, & Mount, 1996). The above definition of QOL is most suitable in this context, because it addresses emotional, social, and health-related aspects while avoiding potential overlap with notions such as satisfaction or socioeconomic aspects of QOL (such as standard of living).

Kubey and Csikszentmihalyi (2013) defined QOL as a subjective amalgam of perceptions, that is shaped by a dual process: the first step is exposure to perceptual cues—from the internal (e.g., pain, limitations, function) and external (feedback from others, media, etc.) environments. The second step involves the individual interpretation of the cues resulting in positive or negative experience eventually consolidated across time and situations into a relatively stable sense of QOL (Baum, Herberman, and Cohen, 1995; Tully, Baker, Turnbull, Winefield, & Knight, 2009). QOL was found to be related to a broad range of psychological positive outcomes: life satisfaction, well-being, and aspects of mental health (Hahn et al., 2005). Moreover, studies have shown an association between factors such as QOL and well-being and actual clinical outcomes in various clinical populations (Fayers & Machin, 2013; Wilson & Cleary, 1995). As the importance of the concept of QOL becomes evident in both the literature and practice, we set out to propose and test a model accounting for QOL in a specific sample of oncological outpatients.

The literature on QOL among cancer patients has identified some of the main factors associated with various indicators of the concept. Most studies in the context of hematological cancer focus on specific factors such as the severity of diagnosis, symptoms, and prognosis (Dowdy et al., 2005); personal coping resources such as socioeconomic status, religiosity, gender, and education (Tarakeshwar et al., 2006); psychological resources such as emotional intelligence, associated with maintaining hope and positive prospect in the face of adversity (EI, see: Zysberg, 2017); and social support (Thornton, Perez, & Meyerowitz, 2004). These factors, emerging from the literature compose our proposed model that offers an added value to the existing literature in two

ways: it brings together factors tested separately in the literature while proposing an underlying process of mediation. The model, therefore, suggests a three-tiered process: based on existing evidence, we suggest that clinical, demographic, psychological, and interpersonal factors are associated with levels of QOL through the mediating effect of positive and negative emotional experiences. We first review the relevant literature and then present the model that we test.

Severity of Diagnosis

The severity of the diagnosis naturally plays an important role in patients' QOL experience, as it defines the level of hardships that patients may expect to encounter as well as their chances of recovery and remission (Varni, Limbers, & Burwinkle, 2007). The severity of the diagnosis may also be related to the type and intensity of therapy, and its side effects, often mentioned in the literature as major factors of limited QOL and well-being among cancer patients in general (Rehse & Pukrop, 2003).

Demographic Factors

Demographic factors have been associated with QOL and other psychosocial outcomes among cancer patients in general, whereas the role of age is unclear, it seems that younger age is generally associated with better chances of survival and higher QOL assessments (Kiss et al., 2002; National Institutes of Health, National Cancer Institute, 2017; Shanafelt et al., 2007). Religiosity plays a surprisingly important part in individuals' coping with health challenges and has emerged recently as a major protective factor for various life outcomes, including QOL in cancer patients (Tarakeshwar et al., 2006). Socioeconomic status (typically measured through education and income levels) is another factor often positively associated with health outcomes in general and with cancer patients' QOL specifically (Ashing-Giwa & Lim, 2009; Penson et al., 2001).

Social Support

Yet another pivotal factor consistently mentioned in the literature as a protective factor in coping with almost any life challenge, cancer included, is social support, defined as the extent to which a person experiences other individuals around them as available, as attentive to their needs, and as showing them goodwill. Social support can be both objective and subjective. Availability and support can be instrumental-practical or socio-emotional (Wills, 1991). Social support has been shown to have protective effects for a broad range of health outcomes. Social and emotional availability of others seems to reduce stress and thus to buffer the effects of stressors and other risk factors in cancer patients in general

and in hematological cancers specifically (Cohen & McKay, 1984; Taylor, 2007).

Emotional Intelligence

Altered health conditions, especially life-threatening ones, are accompanied by negative emotional responses, mainly stress, that are consistently associated with adverse outcomes (Taylor, 2007; Thoits, 2010). Because negative emotions, especially stress, seem to play an important role in determining a broad range of psychosocial outcomes in cancer patients, it is worth focusing on an additional individual factor associated with effective coping and adaptation to intensive emotional states: emotional intelligence (EI).

The concept of EI was recently introduced to the health sciences and is still being debated: some authors claim that it describes an array of personality traits, and others support an ability model, conceptualizing EI as a group of human potentials that allow people to effectively identify emotions, integrate emotions into thinking and problem-solving processes, understand complex emotional experiences, and regulate emotional responses (Mayer, Salovey, & Caruso, 2008). Although both models have strengths and weaknesses, the ability-EI model seems to account for outcomes beyond known measures of personality and traditional measures of cognitive ability (Brackett & Mayer, 2003) and was therefore selected for use in this study. Simply put, EI represents a group of abilities that allow individuals to manage their emotions effectively, thus minimizing the adverse effects of negative emotions while maximizing the benefits of positive emotions. EI serves as a potential protective factor for a few chronic diseases (e.g., diabetes; Zysberg, 2017; Zysberg, Bar Yoseph, & Goldman, 2017) but the role of EI in the QOL of oncological patients in general and hematological patients in particular is yet unexplored.

Positive and Negative Affect

As suggested above, existing evidence proposes that health conditions are usually accompanied by negative emotional responses, a natural—at times automatic—response to perceived threat (Kubzansky & Kawachi, 2000; Zysberg, 2017). Whereas a short-term sense of alarm, usually expressed as either stress or anxiety, may motivate a person to take action, long-term exposure to stress and anxiety has been associated with exacerbation of existing conditions, and even the onset of new ones (Gallo & Matthews, 2003). Positive emotions, on the other hand, are often associated with better resilience in the face of health challenges (Fredrickson & Levenson, 1998; Zysberg, 2017). Positive psychologists often associate effective coping with the ability to experience positive emotions, at least to a certain extent, even in the heart of a challenge or conflict (Tugade, Fredrickson, & Feldman Barrett,

2004). We may therefore relate to positive and negative emotions as a mix that shapes individuals' perceptions of how well they are doing and how they feel about their condition (i.e., their QOL). As such, positive and negative emotions may mediate the associations between the factors reviewed above and QOL, as suggested in the literature from adjacent fields of study (e.g., Gallo & Matthews, 1999).

The Current Study

This study examined an integrative model combining factors associated with QOL in cancer patients in general and with hematological cancers specifically. A relatively new addition among the more established factors referred to here is the concept of EI, said to show associations with positive outcomes in a broad range of health-related settings (Zysberg, 2017). Based on the nature of QOL, and the fact that it reflects a subjective balance of positive and negative perceptions of one's life, we hypothesized that the associations between the factors and QOL are mediated by positive and negative emotional experiences.

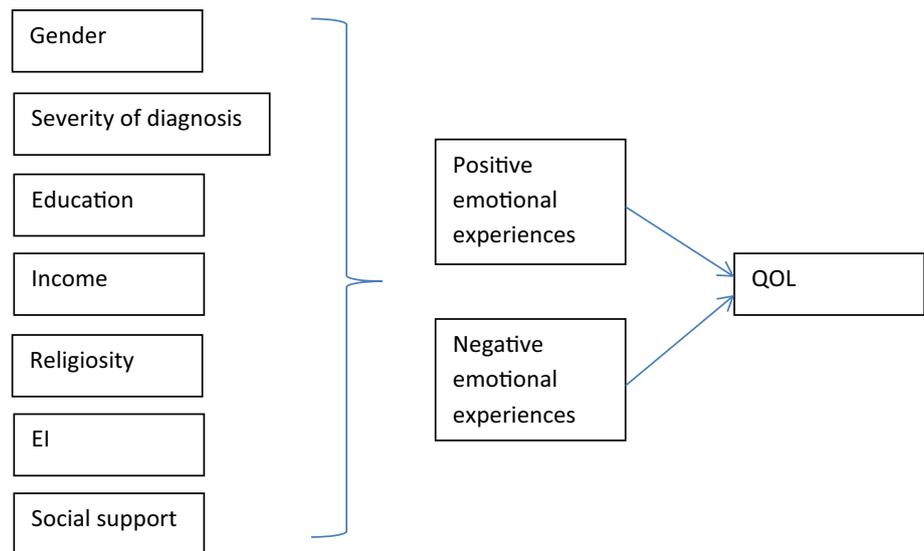
The model is presented in Fig. 1. It reflects three separate levels of risk/protective factors: demographics, usually treated as given at the stage of cancer diagnosis (e.g., gender, education, age, religiosity, and income); psychological, personal coping resources, represented here by the relatively novel concept of EI, which describes individual abilities to identify, process, and regulate emotions and is identified as a major resource for coping with challenging conditions; and social support, representing the social context and social perceptions of people coping with cancer. The associations between the above factors and QOL are hypothesized to be mediated by the emotional experiences of individuals coping with the challenges of cancer, treatment, and additional consequences of the diagnosis.

We tested this model with a sample of hematological cancer patients attending an outpatient clinic in a mid-sized medical center in northern Israel.

Method

The study used a correlational design to examine potential associations between our focal variables without intervening in diagnostic or therapeutic procedures within our target population. Participants were recruited from the patient roster of an outpatient hematology clinic in a mid-sized medical center in northern Israel. The clinic serves a relatively rural population that is heterogenic for ethnicity, education, and income level. All patients attending the clinic have been diagnosed with a hematological malignancy, including multiple myeloma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, chronic lymphoid leukemia, chronic myeloid

Fig. 1 The study model. *EI* emotional intelligence, *QOL* quality of life



leukemia, myelodysplastic syndrome, hairy cell leukemia, and myelofibrosis. Patients with acute leukemia and aggressive lymphoma were excluded because of the severity of their disease, the need for aggressive treatment, and the usually prolonged hospitalization compared with the diseases mentioned above. Despite their varying diagnoses, included patients shared a similar course of illness, treatment, and prognosis, and therefore may be considered to compose a relatively homogenous sample.

Sample

Seventy-two patients attending a hematological outpatient clinic in northern Israel were recruited to this study. Most were men (59%), and their mean age was 64.14 years ($SD = 14.90$). Most were Jewish (78%), 12% were Muslim, and 10% were Christian and Druze. This distribution is similar to that of the general population in Israel. About 49% reported being secular, 30% described themselves as traditional, and 21% as religious or orthodox. Self-reported income level was generally slightly lower than for the general population: less than 35% reported an above-average or higher income level. Only 3% had an academic degree—much lower than the national average. The overwhelming majority (78%) were at an advanced stage of disease (stages III and IV), and 53% had conditions defined as incurable. Table 1 summarizes the diagnoses included in our sample.

Measures

Severity of diagnosis was assessed clinically by the lead medical staff at the clinic and rated as a combination of stage and type of diagnosis (curable or incurable).

Table 1 Diagnoses included in the study sample ($N = 72$)

Diagnosis	Percentage
Multiple myeloma	26
Hodgkin's lymphoma	13
Diffuse large B-cell lymphoma	13
Chronic lymphoid leukemia	11
Follicular lymphoma	10
Chronic myeloid leukemia	7
Low-grade B-cell non-Hodgkin's lymphoma	4
Small lymphocytic lymphoma	4
Hairy cell leukemia	3
Myelofibrosis	3
Myelodysplastic syndrome	3
Other	3

Demographic information was collected from participants' personal records at the clinic: gender, income, and education level. Religiosity was assessed by a single item on which participants were asked to define themselves as secular, traditional, religious, or orthodox.

Emotional intelligence was assessed using the Audio Visual test of Emotional Intelligence. This computer-based ability-EI test contains 27 items of still images and brief video clips describing individuals and groups in various settings. Individuals are asked to identify the emotions that target persons in each item are experiencing. The test has shown adequate reliability, above .68, and good predictive validity in health care settings (Zysberg et al., 2017; Zysberg, Levy, & Zisberg, 2011).

Social support was assessed using the Duke Social Support Scale (Powers, Goodger, & Byles, 2004), specifically an 11-item version of the scale assessing the extent to which

individuals perceive support from others in their social circles and community. The scale is a popular measure of the concept in various settings, and it shows high reliability indices in the literature, of around .80 (e.g., Jia & Zhang, 2012).

Emotional experiences were assessed by the Positive and Negative Affect Schedule (PANAS) questionnaire (Watson & Clark, 1999). The 60-item questionnaire is considered the gold standard for assessing individuals' emotional experiences and yields two subscales representing positive affect and negative affect. Participants were asked to assess the extent to which they had experienced various emotions in the last 3 months, representing the typical time between follow-up meetings for most patients. Reliability ranges from .79 to .90 in the literature (Ostir, Smith, Smith, & Ottenbacher, 2005).

Quality of life was assessed using the McGill Quality of Life questionnaire (Cohen et al., 1995). This 13-item scale is aimed at individuals with severe illnesses and terminal conditions and focuses on physical aspects of QOL, psychological aspects of QOL, and aspects of outlook in life and finding meaning in life. Reported reliability ranges from .70 to .80.

Procedure

After the study received the medical centers' IRB approval, a research assistant (RA) was referred by clinic staff to potential participants from the clinic's patient roster. The RA explained the procedure and collected informed consent. Throughout the recruitment procedure, only four patients declined participation, mainly because they reported insufficient time to complete the questionnaires, which were administered in the clinic while they waited for appointments. The rest of the information was taken from patients' files. At the end of the data-collection phase, a unified database was structured from which all identifying

data were omitted to preserve participants' anonymity and confidentiality.

Statistical Analyses

We first calculated descriptive statistics for all focal variables in our study, and then we used Pearson's correlation matrix to explore preliminary associations between the study variables. To test the proposed model, we used path analysis with the bootstrap procedure to test the model's fit to our data and to test for mediation effects. For this purpose, we used the SPSS 24.0 and AMOS 20.0 statistical packages (IBM, 2018).

Results

Before testing our hypothesized model, we examined the distributions of our main variables and preliminary associations between them. The results are summarized in Table 2.

Descriptive statistics suggest that all the measures used meet the criteria for reliability. They also suggest that participants' responses did not reflect extreme levels of distress. The mean for positive affect is higher than that for negative affect, and mean QOL is well above the middle of the response scale. Mean social support is also notably high.

Results of the correlation analysis provide preliminary insight into the rudimentary associations between the study variables. We see a positive association between education and income level (the higher the education level, the higher the income), a similar association between positive affect and QOL, a negative association between negative affect and QOL (a more negative affect means lower QOL), a positive association between social support and positive affect, and a negative association between social support and negative affect. EI is moderately positively associated with education,

Table 2 Descriptive statistics and zero-order correlations between the study variables ($N=72$)

Variable	1	2	3	4	5	6	7	8
1. Education	–							
2. Income	.59**	–						
3. Religiosity	–.31*	–.11	–					
4. Social support	–.01	–.02	.01	–				
5. Positive affect	.11	–.08	–.10	.51**	–			
6. Negative affect	–.06	.10	.22	–.28*	–.36**	–		
7. Emotional intelligence	.33**	.19	–.35**	.04	.01	–.07	–	
8. Quality of life	.09	–.08	–.33**	.35**	.53**	–.58**	.04	–
Mean	–	–	2.78	4.26	3.23	2.03	12.05	5.34
SD	–	–	1.00	.59	.73	.60	5.45	.80
Cronbach's Alpha	–	–	–	.85	.89	.90	.70	.92

* $p < .05$

** $p < .01$

as may be expected from the literature on ability EI (Côté & Miners, 2006).

A few interesting associations do not necessarily align with the existing evidence: we found negative associations between religiosity and EI and between religiosity and QOL (the higher the religiosity, the lower then QOL). These are addressed in the “Discussion” section.

We then tested the theoretical model using path analysis. The data only partially supported our model suggesting some of the hypothesized paths were not backed by the data. The model described in Fig. 2 includes only the paths supported by our data, forming a somewhat reduced version of the original model.

Despite the partial support to the original model, the data backs the basic essence of our theoretical model: The path analysis results support a mediation model in which positive and negative affect mediates the associations between factors representing demographics (income), personal abilities (EI), social settings (social support), and QOL in our sample. Using the bootstrap procedure, we tested for the significance of the mediation effects and found all to be significant (see Fig. 2 for details). Not all the effects confirmed by the analysis go in the directions supported by existing evidence and theory, and not all work through both positive and negative affect: whereas social support is positively associated with positive affect and negatively associated with negative affect, income has a moderately positive association with negative affect, and EI is negatively associated with negative affect. No other variables presented in the theoretical model showed significant associations with either the mediators or QOL.

Discussion

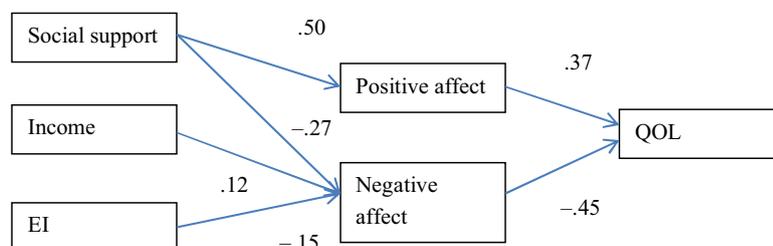
Traditionally, the literature on QOL among cancer patients in general and hematological cancer patients in particular focuses mainly on technical and medical factors such as time of diagnosis, staging, and therapeutic intervention

(Efficace et al., 2013; Wang et al., 2002). Studies on QOL in more general populations of cancer patients focus on coping styles, alongside social support and treatment-related factors (Efficace et al., 2012; Wang et al., 2002). The literature has yet to offer or validate a more comprehensive model accounting for QOL in this population, which is characterized by long-term exposure to stressful, limiting, life-threatening conditions. This study attempted such a preliminary testing of a model integrating demographic, psychological, and social factors, hypothesizing a more complex association between these factors and QOL mediated by positive and negative affect. Another aspect supporting this study’s added value is the inclusion of the concept of EI as a protective psychological factor that works by reducing negative affect and its outcomes. Although there is preliminary evidence for the relevance of EI in health settings, this is the first, to the best of our knowledge, to include cancer-related health settings.

At the descriptive level, our results suggest that the participants maintain a moderately positive outlook on their lives, reporting relatively high levels of social support and, at the very least, moderately positive QOL, even though the distribution of their conditions and diagnoses (described in the Sample subsection) does not suggest an atypically lighter disease or therapeutic burden. These results may reflect the fact that the medical center serves mostly small, close-knit communities that may enjoy high levels of social and family support (Koopman et al., 2001; Letvak, 2002). Moreover, our results echo existing evidence on resilience and coping within the framework of positive psychology, suggesting that individuals undergoing extreme challenges may also find sources of comfort and resilience, thus showing more positive than negative affect when considering their life as a whole (Min et al., 2013).

At the correlational level, our results revalidated some of our measures. For example, the associations between education and income, and education and EI are as expected given existing evidence and theory, and they strengthen the

Fig. 2 Summary of the empirical mode path analysis. *EI* emotional intelligence, *QOL* quality of life. $\chi^2 = 4.75$; $df = 6$; $p > .05$; CFI = .99; NFI = .99; RMSEA = .02. Error terms are omitted for simplicity of presentation. All presented coefficients are significant at $p = .04$ or better. Bootstrapped mediation effect size. *Direct effect is null when mediators are inserted in the model



Bootstrapped mediation effect size

	Beta	Lower .95 CI	Upper .95 CI
Cumulative direct effect	.38	.20	.56
Mediation effect*	.28	.13	.41

validity of the reports that our participants provided. Similarly, the associations between QOL and negative and positive affect are well acknowledged within what we know from the existing literature and again provide additional support to the validity of our measures (Tully et al., 2009). However, a few of the associations we found did not align with what the literature suggests: most markedly, the negative association between religiosity (traditionally a widely acceptable protective factor in such settings; Mytko & Knight, 1999; Rippentrop, Altmaier, & Burns, 2006), QOL, and EI. One possible explanation for this finding is the relatively low socioeconomic status of our sample, which may intervene with the effects of religiosity, as in our study income is one of the strongest factors in our model.

Lastly, the empirically supported model was a reduced version of our original model, with three factors, representing each of the three levels described in our original model: income, representing the demographic level; EI, representing the psychological level; and social support (Gonzalez-Saenz de Tejada et al., 2017), representing the interpersonal or social level. The associations between these factors and QOL were fully mediated by positive and negative affect, as hypothesized, and as suggested in the literature (Huppert & Whittington, 2003). Within the context of cancer-related care and outcomes, the model enriches our understanding of patient QOL: QOL emerges from the model as a perception embedded in emotional responses (in contrast to some views of the concept as embedded in cognitive assessment; see Bech, 1993). Based on this realization, the emerging role of EI as a factor associated with emotion regulation (positive and negative emotions balance), and thus—QOL, beyond the other two factors that already appear in the literature, is of added value in this context. EI appears in the literature as a factor associated with effective emotion regulation and behavior regulation (e.g., Zysberg & Raz, 2018). Our findings strengthen the relatively new recognition in EI as a psychological resource associated with well-being in various settings. These findings shed new light on how EI may relate to well-being and higher QOL. The model in general fits well within the hypothesized frame postulating that income, EI, and social support are all protective factors that may alleviate negative emotions and lead to more positive experiences even under hardship, thus leading to better QOL.

Our results also showed some unexpected associations within the model, notably the positive association between income level and negative affect. Again, we may attribute this result to the relatively lower income level in our sample, which may override the widely acceptable trend according to which, at least up to a point, income is positively associated with life satisfaction (a derivative of positive affect) and QOL (Diener & Diener, 1995). Another potential explanation for this unexpected result may stem from the psychological processes that cancer patients undergo, and from the

realization that income level and social status have little to do with eventual chances of recovery or severity of illness (Brady, Peterman, Fitchett, Mo, & Cella, 1999; Diener & Diener, 1995).

The comparisons of the original, theory-driven model and the final empirical one reveal a few additional potential insights: Since each domain represented in the model (demographic, psychological, and social) was left with a single indicator supported by the data we may suggest that other indicators within each category shared variance with the ones included in the model. Thus, gender, education level, and religiosity may share variance with the income measure (some of these associations are indeed supported by our zero-order correlations). It may additionally suggest that the way gender, education, and other demographics work their way to shape QOL is through the availability of resources (income). Another surprising difference found between the theoretical and empirical models is the omission of the severity of illness indicator from the model. Here, the results may suggest a potentially important point. Since QOL is predominantly a perceptual-psychological outcome, our final model suggests that the actual severity of illness may not be as important in terms of the patient experience at the daily level and that other factors play their part in shaping emotional experiences around life with the condition as a result perceived QOL.

Study Limitations

The study results point in a few interesting directions for future research and—potentially—practice. These should, however, be viewed in light of the study's limitations. Our sample, although statistically adequate, is not very large and represents a rural population in a specific country. The use of larger samples taken from a variety of target populations should be considered before applying the model to practice. Because of the preliminary nature of this study, we related to our sample as if it were uniform, despite differences in diagnosis and prognosis (although, as mentioned, we controlled our analyses for these elements). Future investigation should consider diagnosis and treatment trajectories as part of the model, especially when considering it in applied clinical settings. The use of a correlational study design also limits our ability to interpret our results in terms of cause and effect.

Clinical Implications

Our study provides evidence to support a preliminary or basic model to guide research and potential applications to better understand the dynamics behind QOL among hematological cancer patients, beyond the immediate clinical and treatment-related factors already vastly explored in the literature. Future research might focus on additional

potential factors not included in this model, such as coping style, personality traits, and cultural background, to name just a few. Should additional research support the model and its potential insights regarding the sources of strength that allow individuals to experience higher QOL while facing the challenge of illness and treatment, we may have an empirical basis from which to further understand how to support patients coping with the struggle of their lives. Thus, screening at an early stage of diagnosis and treatment may help practitioners identify individuals at higher risk of degraded QOL and give them support and counseling to reduce such risks. Practitioners may focus on the relatively novel aspects of our model—such as the emphasis on EI—and devise targeted interventions aimed at developing aspects of emotional abilities and skills to help boost QOL. Stronger emphasis on interpersonal aspects of support, from family and significant others to support groups, may be harnessed to strengthen coping tactics and to modify affective responses, thus improving perceptions of QOL among patients and, potentially, others around them.

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Compliance with Ethical Standards

Conflict of interest Authors Leehu Zysberg, Sharon Hai, and Najib Dally declare that they have no conflicts of interest regarding this manuscript and its content.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. All data for this study were collected and processed in accordance with the IRB rules and instructions of the Ziv Medical Center Ethics Committee, which reviewed the study plan and materials and approved them (IRB approval # 0080-14-ZIV).

Informed Consent Informed consent was obtained from all individual participants included in the study

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