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The Role of Locus of Control and Attributional Style in Coping Strategies and Quality of Life among Iranian Breast Cancer and Colorectal Cancer Patients: A Pilot Study

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Quantitative Study

Abstract

Background: The influence of various psychological factors and coping mechanisms on quality of life (QOL) in cancer patients has been well established. We evaluated locus of control and attributional styles, and their association with coping styles and quality of life (QOL) among Iranian cancer patients.

Methods: This cross-sectional study was conducted on patients with breast cancer and patients with colorectal cancer in stage I to III. Patients were assessed for demographic and disease characteristics, cancer-related symptoms, locus of control, attributional styles, coping styles, and QOL.

Results: From 140 invited patients, 100 patients participated in the study. Data of 55 patients with breast cancer and 22 patients with colorectal cancer were appropriate and included for analysis (mean age of 47.5 ± 7.9 years, 89.6% female). Factors positively associated with QOL included educational level, internal locus of control, overall hopefulness, and confrontive, optimistic, and self-reliant coping styles (r = 0.228 to 0.426). Factors negatively associated with QOL included age, symptoms severity, overall hopelessness, and fatalistic and emotive coping styles (r = -0.221 to -0.674). Internal locus of control and hopefulness were associated with confrontive/adaptive coping styles (r = 0.226 to 0.381), while external locus of control and hopelessness were associated with evasive/maladaptive coping styles (r = 0.208 to 0.381).

Conclusion: These results indicate that internal locus of control, hopefulness, and positive attributional styles are associated with more adaptive/confrontive coping strategies and better QOL in Iranian cancer patients. Further studies with more comprehensive psychosocial evaluation in a larger sample of cancer patients are warranted.

Keywords: Cancer, Quality of life, Psychosocial, Coping, Health locus of control

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Introduction

During recent decades, survival rates for almost all types of cancer have increased as a result of earlier detection and better therapies. With increasing survival, the chronicity of the disease accompanied with the invasiveness of the treatments significantly affect different aspects of psychosocial health and quality of life (QOL) of cancer patients (Naaman, Radwan, Fergusson, & Johnson, 2009). Evidences also confirmed that psychosocial factors have a great impact on cancer patients' QOL (Shapiro et al. 2001). Therefore, cancer has received much attention regarding psychological needs of the patients.

Different psychological interventions have been adopted for patients with cancer and resulted in improvement of psychological status and QOL (Naaman et al., 2009). A major pre-requisite of psychological interventions for cancer patients is, however, knowledge about the beliefs and attitudes of the patient in regard to health and disease. The term health locus of control (HLC) is attributed to the degree to which individuals believe that their health is controlled by internal or external factors. Studies have shown that HLC has effects on psychological status and QOL of patients with different health conditions including cancer (Cousson-Gelie, Irachabal, Bruchon-Schweitzer, Dilhuydy, & Lakdja, 2005; De & Vinck, 1996; Nau, Price, & Peter, 2005; Weis, Fitzpatrick, & Bushfield, 2008). While locus of control is linked to expectancies about the future events, "attributional style" is linked to past events, which in patients with cancer, may also have effects on coping mechanisms, health seeking behaviors, and adherence to treatments. Although studies are available on HLC among cancer patients, there is a lack of data regarding attributional style among cancer patients, especially in Iranian patients, and its effects on psychosocial health and QOL are not clear.

Cancer in Iran is the third cause of death, with breast cancer as the first cause of cancer death in women and colorectal cancer (CRC) as the third cause (Pourhoseingholi, Faghihzadeh, Hajizadeh, Abadi, & Zali, 2009). Considering the lack of knowledge about the meaning of experienced personal control and its relationship to QOL in cancer patients, especially in Iran, we evaluated locus of control and attributional styles, and their correlates with coping mechanisms and QOL among a sample of Iranian patients with breast cancer and CRC. We hypothesized that the patients' QOL and their coping styles are closely linked to their theory of illness, in particular the locus of control and the attributional styles.

Methods

Participants and Settings

The present study is a cross-sectional observational investigation conducted in Oct 2011 on a sample of patients with breast cancer and CRC who had been registered in Mashhad Cancer Registry (Reza Radiation and Oncology Center, Mashhad, Iran). The study was performed in cooperation with the Department of Psychosomatic Medicine and Psychotherapy of Freiburg University Medical Center (Freiburg, Germany). It was approved by the local ethics committee of Reza Radiation and Oncology Center in Mashhad (Iran) and performed in accordance with the Declaration of Helsinki. At the time of the study, there were 543 breast cancer and 1063 CRC patients registered at the center. Adult patients, living in the city, having pathologically proven breast cancer/CRC in stage I to III, and with cancer duration of one to three years were invited to participate in a meeting. An informed consent was obtained from all patients for using their medical documents for gathering more information about their disease.

Assessments

Socio-demographic and medical data. A demographic survey obtained basic information regarding participant's age, marital status, and education level. Medical and treatment information were gathered from patients

documents. These information included stage and duration of the disease and the type of medical treatments. Other evaluations are described as follows.

Locus of control. Based on Levenson's multidimensional view of locus of control, we used the Levenson Multidimensional Locus of Control Scales (IPC). The IPC contains three 8-item sub-scales measuring perceptions of the level of control concerning events and circumstances in life. Participants scored items on a 6-point scale, ranging from +3 ("strongly agree") to –3 ("strongly disagree"). Sub-scales are internality (I), externality-chance (C), and externality-powerful-others (P) (Farahani, Cooper, & Jin, 1996; Levenson, 1973).

Attributional style. The Seligman Attributional Style Questionnaire (SASQ, also known as the ASQ) evaluates attributions for six negative and six positive hypothetical events, and measures the degree to which the cause is internal to the self (versus external), stable across time (versus unstable), and global in effects (versus specific). The questionnaire contains 36 items; 6 good events and 6 bad evens, each in 3 causal dimensions. Scales constructed from the 6 negative situations presented are Internal Negative, Stable Negative, Global Negative, Hopelessness (the average of Global Negative and Stable Negative), and Composite Negative (the sum of the first three scales). Scales constructed from the 6 positive situations presented are Internal Positive, Stable Positive, Global Positive, Hopefulness (the average of Global Positive and Stable Positive), and Composite Positive (the sum of the first three scales) (Peterson et al., 1982).

Coping styles. As a widely used instrument for measuring coping styles, we used the Jalowiec Coping Scale (JCS). The JCS contains 60 items (scoring from 1 to 3) in 8 dimensions including confrontive (facing up to the problem), evasive (avoiding the problem), optimistic (positive thinking), fatalistic (pessimistic thinking), emotive (releasing emotion), palliative (making oneself feel better), supportive (using support system), and self-reliant (depending on oneself) (Jalowiec, 2003).

Quality of life. Quality of life was measured using the Short Form Health Survey (SF-36). With 36 items, this instrument yields an 8-scale profile of functional health and well-being resulting in two sum scores for physical and mental health. It is a generic measure and has proven useful in surveys of general and specific populations. Dimensions include physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health. All scores are converted to a range of 0 to 100 in which higher scores indicate better status (Montazeri, Goshtasebi, Vahdaninia, & Gandek, 2005).

Medical symptoms. The severity of symptoms and their impact on patient's daily life were measured using the M.D. Anderson Symptom Inventory (MDASI) which is a multi-symptom patient-reported outcome measure for clinical and research use. Thirteen core items include symptoms found to have the highest frequency and/or severity in patients with various cancers and treatment types, and six items are related to symptom interference with daily life. The MDASI uses a 0–10 numerical rating scale to assess the severity of symptoms and interference (Cleeland et al., 2000).

Statistical analyses

Data were entered into the SPSS for Windows (version 16.0; SPSS Inc., Chicago, IL, USA) and were analyzed using descriptive and analytic analyses including frequencies, mean and standard deviations, t-test, and chi-square test for comparison of quantitative and qualitative variables, respectively. Pearson and Spearman correlation coefficients were used to detect associations between variables. A P value of < 0.05 was considered significant in all analyses.

Results

From 140 invited patients, 100 patients participated in the meeting. Fifty five patients with breast cancer and 22 patients with CRC

(89.6% female) completed the questionnaires and then were included in the analysis. Questionnaires of the other patients could not be included in whole or in part by missing data management. Mean age of the included patients was 47.5 ± 7.9 years and cancer duration ranged from one to three years (1.7 ± 0.7 years).

Variables Associated with Quality of Life

Age (r = -0.221) and educational level (r = 0.266) were associated with QOL. Moreover, both symptom severity (r = -0.592) and symptom interference (r = -0.674) were strongly associated with QOL (Table 1). With regards to the locus of control, the internal locus of control was associated with better QOL (r = 0.228) and IPC chance score was associated with worse mental health (r = -0.251). Regarding attributional styles, internal (r = 0.426), stable (r = 0.342), and global positive scores (r = 0.235) were associated with better overall QOL and/or its dimensions. In addition, hopefulness (r = 0.327) and composite positive scale (r = 0.398) were associated with better QOL. In contrast, stable (r = -0.278) and global negative scores (r = -0.248) were associated with worse QOL. Furthermore, hopelessness (r = -0.327) and composite negative score (r = -0.312) were associated with worse QOL (Table 2).

Table 1. Associations of Demographic and Clinical Characteristics with Patients Quality of Life

	Physical health	Mental health	Total SF-36 score
Age	-0.199*	-0.226*	-0.221*
Cancer duration	0.024	0.009	0.036
Education	0.250*	0.305*	0.266*
Stage	-0.024	-0.125	-0.013
Symptoms			
Symptom severity	-0.591**	-0.527**	-0.592**
Symptom interference	-0.640**	-0.605**	-0.674**

Data are presented as correlation coefficient.
* p < 0.05, ** p < 0.001

Table 2. Associations of Locus of Control and Attributional Styles with Patients Quality of Life

Locus of control	Physical health	Mental health	Total SF-36 score
Internality	0.214	0.188	0.228*
Powerful others	-0.087	-0.086	-0.076
Chance	-0.155	-0.251*	-0.185
Attributional style			
Internal Positive	0.402**	0.405**	0.426**
Stable Positive	0.312*	0.404**	0.342**
Global Positive	0.161	0.235*	0.208
Hopefulness	0.281*	0.380**	0.327*
Composite Positive	0.355*	0.430**	0.398**
Internal Negative	-0.046	0.008	-0.032
Stable Negative	-0.278*	-0.272*	-0.278*
Global Negative	-0.189*	-0.310*	-0.248*
Hopelessness	-0.285*	-0.367**	-0.327*
Composite Negative	-0.279*	-0.330*	-0.312*

Data are presented as correlation coefficient.
* p < 0.05, ** p < 0.001

Concerning coping styles, confrontive (r = 0.264) and optimistic (r = 0.333) coping styles were associated with better QOL while fatalistic (r = -0.224) and emotive (r = -0.258) styles were associated with worse QOL (Table 3).

Variables Associated with Coping Styles

Factors associated with coping styles are presented in table 4. Younger age was associated with optimistic coping (r = -0.229), and higher education was associated with confrontive (r = 0.269) and less emotive coping styles (r = -0.265). Symptom severity (r = 0.384) and symptom interference (r = 0.298) were associated with emotive style. Internal locus of control was associated with confrontive, optimistic, and self-reliant coping styles (r = 0.280 to 0.307), while powerful others and chance were associated with evasive, fatalistic, and emotive styles (r = 0.223 to 0.381). With regard to attributional style, positive internality, stability, and globality and overall hopefulness were associated with confrontive, optimistic, and self-reliant coping styles (r = 0.226 to 0.381), while negative stability and globality were associated with emotive and fatalistic coping styles (r = 0.208 to 0.211).

Table 3. Associations of Coping Styles with Patients Quality of Life

Coping style	Physical health	Mental health	Total SF-36 score
Confrontive	0.320*	0.213*	0.264*
Evasive	0.047	-0.059	0.018
Optimistic	0.320*	0.326*	0.333**
Fatalistic	-0.192*	-0.267*	-0.224*
Emotive	-0.217*	-0.338**	-0.258*
Palliative	0.043	-0.028	0.036
Supportive	0.108	0.039	0.079
Self-reliant	0.169	0.091	0.138

Data are presented as correlation coefficient.
* p < 0.05, ** p < 0.001

Table 4. Associations of Demographic Data, Locus of Control, and Attributional Style with Coping Mechanisms

		Confrontive	Evasive	Optimistic	Fatalistic	Emotive	Palliative	Supportive	Self-reliant
Locus of control	Age	-0.052	-0.088	-0.229*	0.043	0.083	0.027	0.011	-0.035
	Education	0.269*	0.009	0.123	-0.161	-0.265*	0.003	0.061	0.111
	Internality	0.295*	0.111	0.307*	-0.042	0.056	0.150	0.120	0.280*
	Powerful others	-0.095	0.223*	0.014	0.300*	0.128	0.136	0.011	0.073
	Chance	-0.245*	0.275*	-0.049	0.381*	0.310*	0.140	-0.058	0.022
Attributional styles	Internal Positive	0.264*	0.058	0.162	0.048	-0.012	0.022	0.066	0.268*
	Stable Positive	0.362**	0.015	0.323*	-0.133	-0.209*	0.085	0.127	0.313*
	Global Positive	0.270*	0.172	0.226*	-0.027	0.118	0.296*	0.169	0.318*
	Hopefulness	0.379**	0.109	0.328*	-0.093	-0.044	0.237*	0.180	0.381**
	Internal Negative	-0.087	-0.142	-0.078	-0.115	-0.213*	-0.274*	-0.070	-0.139
	Stable Negative	-0.240*	0.030	-0.265*	0.208*	0.032	-0.117	-0.028	-0.240*
	Global Negative	0.083	0.196	0.021	0.024	0.211*	-0.045	0.077	0.194
	Hopelessness	-0.068	0.152	-0.124	0.126	0.163	-0.092	0.039	0.009

Data are presented as correlation coefficient.
* p < 0.05, ** p < 0.001

Discussion

Since cancer is often a chronic and life threatening, but not necessarily life terminating, disease, knowledge about aspects of coping with the disease is of great clinical importance. Regarding the influence of health/disease control perception on health behaviors and well-being, we therefore investigated the associations of the illness theory of cancer patients' in particular the concepts of locus of control and attributional style and their impact on coping strategies and QOL.

Factors Affecting QOL

We found that younger age is associated with better QOL which was similar to most of previous studies (Moro-Valdezate et al., 2012; Lu et al., 2009). The association of age with QOL is, however, influenced by different factors including educational level, patient reaction to cancer diagnosis, physical and psychological comorbidities, and treatment adherence. Some studies reported controversial results in this regard (Mehnert & Koch, 2008; Cimprich, Ronis, & Martinez-Ramos, 2002). Therefore, understanding the specific needs of cancer survivors at each life stage is important in developing tailored interventions. As expected, the severity of cancer-related symptoms was strongly associated with lower QOL which highlights the importance of interventions aiming to alleviate such symptoms. With regard to the locus of control, we found that internal source of control is associated with better QOL and external source of control (chance) with worse QOL. Moreover, we found that hopeful attributions are associated with better QOL. In contrast, hopeless attributions were associated with worse QOL. These results are similar to other studies on cancer survivors in different populations which showed that internal health locus of control is positively related to health promoting behaviors and QOL (Allart, Soubeyran, & Cousson-Gelie, 2013; Cai, Zhou, Yu, & Wan, 2011; Chung, Chao, Chou, & Lee, 2009; Frank-Stromborg, Pender, Walker, & Sechrist, 1990; Watson, Pruyn, Greer, & van den Borne, 1990; Yi, & Kim, 2013)). With influence on the patient's beliefs regarding the personal control over health/cancer, HLC can affect coping mechanisms, health seeking behaviors, and adherence to treatments which in turn may change the disease course and QOL (Cousson-Gelie et al., 2005). It must be noted however that HLC is not a simple issue and that several factors may modulate its effects on health/disease and well-being. Studies showed that physician-patient relationship, the severity of the illness, subjective stress, family and social supports, and sociocultural issues have effects on HLC (Sørlie & Sexton, 2004; Wrightson & Wardle, 1997). The cultural aspects of the influence of HLC on cancer QOL and patients coping mechanisms is the matter of our future study in Iran and Germany.

Factors Affecting Coping Styles

Several factors could be associated with coping strategies in cancer patients which should be considered in developing educational interventions. We found that younger age is associated with optimistic coping. The association of age with coping styles is influenced by different factors including education level, psychological comorbidities, fears of disease progression, hope, and social support (Compas et al., 1999; Reuter et al., 2006; Schnoll, Harlow, Stolbach, & Brandt, 1998). In our study, younger patients had higher education level which was associated with confrontive and less emotive coping styles, and older patients had higher hopelessness scores. In addition, we found that symptom severity is associated with emotive coping style, though the direction of this association is not clear from our study. It might be a bi-directional relationship between physical symptoms severity and coping styles which needs declaration in longitudinal studies.

With regard to the influence of locus of control and attributional styles on coping styles, we found that internal locus of control and hopefulness are associated with confrontive and

adaptive coping styles, the styles that were associated with better QOL. While, external source of control (powerful others and chance) were associated with evasive and maladaptive styles, the styles that were associated with lower QOL. People reflecting an internal locus of control believe that they can exert control over their environment to bring about desirable consequences. Conversely, people with an external locus of control believe that larger social forces, powerful persons or groups, or chance will determine their fate (Ogden, 2007). Hence, evaluation of locus of control and attributional styles are important in designing the psycheducational intervention for cancer patients.

Study Limitations

There are limitations to this study which must be considered. The sample size of our study was small which does not permit for a precise analysis of different factors associated with QOL and coping styles, and comparison between breast cancer and CRC patients. Moreover, we did not evaluate psychological morbidity and family/social support which can affect QOL and coping mechanisms, and mediate the above mentioned associations among cancer patients (Allart et al., 2013; Al-Azri, Al-Awisi, & Al-Moundhri, 2009; Yi & Kim, 2013). And finally, our study was cross-sectional and does not allow inferences on the direction of the observed associations.

Conclusion

The results of this study showed that internal locus of control, hopefulness, and positive attributional styles are associated with more adaptive/confrontive coping styles and better QOL in Iranian cancer patients. Attributional style, locus of control, and also coping strategies can be modulated by psychoeducation and psychotherapy. Therefore, we can change the story of cancer and hopefully we can expect that the psychological wellbeing and even the hard reality of cancer will be changed. Further studies with larger sample of patients and more comprehensive psychosocial evaluation are warranted.

Conflict of Interests

Authors have no conflict of interests.

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