The Correlation of Health Related Quality of Life with Psychological Distress, Social Support and Cognitive Coping in Chronic Pain Patients

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The present study examines the correlation of psychological distress, social support and catastrophizing with health-related quality of life (HRQoL) in chronic pain patients. The hypotheses were: (i) psychological distress would be negatively correlated with HRQoL; (ii) social support would be positively correlated with HRQoL; (iii) catastrophizing would mediate the relationship between psychological distress and HRQoL; (iv) catastrophizing would mediate the relationship between social support and HRQoL. The scales were first translated using back-translation method. Then they were administered to 62 chronic pain patients from various hospitals in Kuala Lumpur: Selayang Hospital, Kuala Lumpur Hospital, University Malaya Medical Centre and IIUM Clinic. Pearson product correlations and multiple regression were employed for data analysis. The findings revealed that depression correlated negatively and significantly with mental component score of HRQoL. However, depression did not correlate negatively with physical component score of HRQoL. On the other hand, social support did not correlate significantly with both scores of HRQoL, mental component score and physical component score. The study also investigated mediating effect of catastrophizing. The finding showed that there was no mediating effect of catastrophizing in the relationship between perceived social support and HRQoL, and there was no mediating effect of catastrophizing in the relationship between depression and HRQoL. Implications and limitations of the study were discussed.

Keywords: health-related quality of life, psychological distress, depression, social support, cognitive coping, catastrophizing, and chronic pain

Chronic pain is a stressor that can cause physical impairment, psychological and social disabilities. It has become increasingly prevalent in recent years. It is estimated that over 10% of the population worldwide has been reported to have chronic pain. In many cases of chronic pain there is still no clear explanation about the cause of the pain. This lack of understanding leads to continuous research to find the most effective treatment for chronic pain (All, Fried, & Wallace, 2000).

Chronic pain, if not effectively treated and relieved, can cause negative effects on all of a patient's quality of life. Most of the studies agree that quality of life has become an important outcome indicator

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in chronic pain patients. It is increasingly recognized as one of the most important parameters to be measured in the evaluation by medical workers and psychologists (Condon, 2002; Nordqvist, 2003; O'Neil, 2002; Petrak, Hardt, Kappis, Nickel, & Egle, 2003).

The most common effect of pain in people with chronic pain is that it can be a highly stressful experience. The patients go to doctors many times and take various medications, yet still without success. The persisting pain can probably lead to some changes in the patient's daily life. They do less some of the things that are important (e.g., sitting, standing, walking and sleeping) and give up doing some of the things that are enjoyable (e.g., sex, cooking, gardening, driving and participating in other activities). A common consequence of these changes is that the patients often face work problems and experience financial hardships. Therefore, chronic pain patients are frequently under so much conditions of depress (Nicholas, 2001; John, 2003).

The experience with persistent pain can also have a direct effect on social relationship with others. People with chronic pain become isolated, alienated from loved ones, work-mates and society. This is due to the lack of communication with others to discuss their thought and feeling, especially when pain becomes too overwhelming. Some friends might feel hesitant to approach people with chronic pain because they fear that it will make them upset or frustrated, particularly if the discussion evolves around their pain. As a result, those friends would rather keep a distance from them (Grant, 2002). On the other hand, people with chronic pain usually need someone for assistance. Physical limitation and physical disability are the main reasons for them to seek help from others. They often become very much dependent on others (John, 2003). This has been frequently identified as another factor that causes people to stay away from them. Therefore, people with chronic pain are usually associated with lack of social support.

To deal with the problems mentioned earlier, the patients usually develop their own set of coping strategies for their pain. The decision to use any particular coping strategy plays an important role to facilitate their adjustment to the pain (Fernandez, 1986). Obviously, the first common step of the patient's coping strategies is adopting behavioral coping, such as going to the doctor to receive medical evaluation, to determine the cause of the pain, and then taking medications. Such treatments and medications might have a temporary cure for the pain. Yet, most of the times they could not totally relieve their pains and would probably have side effects too (Nicholas, 2001). In this case, despite their attempts with behavioral coping strategies, the pains still remain. For this reason, understanding the cognitive coping strategies of the patients in managing their pain is of paramount importance.

Cognitive coping with pain can be classified into adaptive and non-adaptive strategies. However, most of the times, people with chronic pain use non-adaptive cognitive coping in dealing with pain. Reviews of the literature found that catastrophizing is the most common strategies in chronic pain patients. It is clearly considered to have a risk factor for poor adjustment to pain (Keefe & Williams,

1990; Asghari & Nicholas, 2004), poor physical and psychosocial functioning and poor response to treatment (Thorn, 2004), depression (Bishop & Warr, 2003) and low level QoL (Petrak, Hardt, Kappis, Nickel, & Egle, 2003).

Much of the activities in psychological research are search for mediating variables. Three reviewed studies have examined the role of catastrophizing as a mediating factor in chronic pain patients. For instance, Porter, Keefe, Lipkus and Hurwitz (2005), Lackner and Quigley (2004), and Smeets, Vlaeyen, Kester and Knottnerus (2005) have shown that catastrophizing mediates patient's outcomes. The present study will investigate catastrophizing as a mediator variable in correlation with depression and social support on Health-related quality of life (HRQoL) among chronic pain patients.

Statement of the Problem

Based on the explanation above, this present study will look at the associations of depression, social support and catastrophizing with the level of HRQoL of the chronic pain patients. Depression and social support, as independent or predictor variables, are probed to see how they are related to HRQoL. The role of cognitive coping, especially catastrophizing, will be investigated as a mediator variable in HRQoL context among chronic pain patients.

Hypothesis

Based on the previous review, the present research will investigate the correlation of the characteristics of people with chronic pain, especially depression, social support, and catastrophizing, with HRQoL. The following hypothesis will be investigated:

1. Depression will be negatively correlated with HRQoL.

2. Social support will be positively correlated with HRQoL.

3. Catastrophizing will mediate the correlation between depression and HRQoL.

4. Catastrophizing will mediate the correlation between social support and HRQoL

Method

Participants

The participants of this research consisted of 62 chronic pain patients who were recruited from several hospitals in Kuala Lumpur. The participants were recruited by using a convenient sampling.

Procedures

The researcher approached the director of the hospital to get approval to conduct this study. The researcher could approach the participants upon receipt of this approval. After approval was obtained, the researcher selected the chronic pain patients based on the judgment from the doctors. To be included in this study, the chronic pain patients must meet the criteria that the pain has been present more than three months, is ongoing, is due to non-life-threatening causes, and has not responded to currently available treatment methods.

In the administration of questionnaires, the researcher built the rapport with the patients. The researcher assured the patients that there are no bad affects or consequences for answering the questionnaires. The questionnaires would be anonymous and the patients were assured that their answers are strictly confidential. If the patients presented the rapport adequately, then the researcher continued to distribute the questionnaires.

Since the questionnaires were developed from the west and the patients were Malaysians, the researcher expected to face cross-cultural problems. To deal with this problem, the researcher translated all the questionnaires by using the technique of back-translation. The technique fully provided benefits in order to obtain language similarities and to avoid bias in translation (Brislin, 1970).

In back-translation, the questions were translated into the target language and then re-translated back into the source language. In this case, the original English versions were translated into Bahasa Malaysia (target language) and then the translated versions were translated into English, without reference to the original English questionnaire versions (Wan Rafaei, 2005).

Measurements

Demographic Variables

A questionnaire was completed covering various sociodemographical characteristics (i.e., age, gender, race, religion, and education), and questions regarding the current pain (i.e., durationn and intensity of pain).

Health-related Quality of Life

Health-related quality of life was measured by using the Short-Form 12 (SF-12) measure. It consists of 12 items self-rating. SF-12 is divided into two meta-scores: the Physical Component Summary and the Mental Component Summary. It consists of 12 items which are short and do not need much time to

administer. The scale has good content validity and high internal consistency reliability, Cronbach's alpha 0.70 (Ware, Kosinski, & Keller, 1996).

Depression

Depression was measured using the Beck Depression Inventory (BDI) second edition developed by Beck & Brown (1996). The scale comprises items related to depression symptoms (e.g., hopelessness and irritability), cognitions (e.g. guilt and feelings of being punished), as well as physical symptoms (e.g., fatigue, weight loss, and lack of interest in sex). The scale consists of 21 items self-rating ranging from 0 to 3. It has been reported to be highly reliable (coefficient alpha = 0.92). Construct validity has been established, and it is able to differentiate depressed from non-depressed patients.

Social Support

Social support was measured by using Multidimensional Scale Perceived Social Support (MSPSS) developed by Zimet, Dahlem, Zimet, and Farley (1988). The scale measures the strength of perceived availability of social support available from three different sources: family, friends, and significant others. The scale consists of 12 items. Self-rating is made on a 7-point rating scale. Reliability of this scale ranges from 0.85 to 0.91.

Catastrophizing

Catastrophizing in the present research was measured by Cognitive Coping Strategies Inventory-Revised (CCRI-S) developed by Thorn, Ward, and Clements (2003). CCRI-S consists of three factors (Distraction, Self-Statements and Catastrophizing) and 35 items measuring the strategies reported to be used to manage pain. However, the present study focuses only on catastrophizing. This dimension of catastrophizing comprises 10 items. Reliability of this scale ranges from 0.70 to 0.80.

Data Analysis

Data analysis for this research was conducted using the computer package SPSS. Pearson product moment correlation was carried out to test the significance of the relationship between psychological distress and social support with HRQoL. In addition, multiple regression analyses was also conducted to test the mediating effect of cognitive coping in relationship between psychological distress and social support with HRQoL correlation.

Results

The Relationships of Depression with HRQoL

The present study hypothesized that depression will be negatively correlated with HRQoL. Pearson product moment correlation was conducted to test these relationships. The study indicates that depression significantly negatively correlated with mental component score of HRQoL, with the correlation coefficient (r = -.48). This correlation is significant at a 1% level of significance. However, depression did not correlate negatively with physical component score of HRQoL, with correlation coefficient (r = -.16, p > .05). Thus, this finding supports the hypothesis that depression negatively correlates with mental component score of HRQoL.

The Relationships of Perceived Social Support with HRQoL

The present study also hypothesized that perceived social support will be positively correlated with HRQoL. However, perceived social support did not correlate significantly with both scores of HRQoL, mental component score (r = -.051, p > .05) and physical component score (r = -.06, p > .05). This indicates that the hypothesis cannot be accepted. The relationships between variables were analyzed by using the Pearson's Correlation Coefficient. All coefficient indices are given in Table 1.

Table 1
Relationship among Variables

No	Variables	1	2	3	4	5
1.	Mental component score HRQOL (MCS-HRQoL)	1				
2.	Physical component score HRQOL (PCS-HRQoL)	.31**	1			
3.	Depression	-.48**	-.16	1		
4.	Perceived social support	-.05	-.06	-.12	1	
5.	Catastrophizing	-.43**	-.31*	.51**	.11	1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

The Mediating Effect of Catastrophizing on the Relationship between Depression and HRQoL

To test the hypothesis that catastrophizing mediates the relationship between depression and social support with health-related quality of life, a series of multiple regression analyses were performed following the procedures suggested by Baron and Kenny (1986).

In terms of mental score (MCS) of HRQoL, In the first regression analysis it is found that mental component score of HRQoL was significantly predicted by depression, β = -.41, S_β = .10, t = -4.21, p <. 01.

In the second regression analysis it was found that the predictor variable is significantly related to the hypothesized mediator. Catastrophizing was significantly predicted by depression, β = .44, S_β = .09, t = 4.65, p < .01.

The third step was to test whether the hypothesized mediator (catastrophizing) variable is related to the outcome variable (HRQoL). This regression was significant β = -.42, S_β = .12, t = -3.67, p < .01.

The last step was to test mediating effects. The regression model analyzed by catastrophizing was added as a predictor variable. According to Howel (2002), when a mediator variable (catastrophizing) is added, the relationship between predictor (depression) and outcome (MCS of HRQoL) decreases. This study found the relationship between the predictor and the outcome decreased. However, the test was significant at < .10, it cannot meet the requirement at < .05. The result is presented in Table 2 below.

Table 2
Standardized Beta Coefficients, Standard Error and t Value for Paths from Depression and MCS-HRQoL with Catastrophizing as Mediator

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
Dependent Variable	Predictor Variable	β	Std. Error (S_β)	β		
MCS-HRQoL	Depression	-.30	.11	-.35	-2.70	.00
MCS-HRQoL	Catastrophizing	-.25	.13	-.25	-1.92	.06

The next step was to estimate standard error of the indirect effect by using the formula from Goodman's (1960) (as cited in Wuensch, 2006). The result was 0.06. Then calculated a *t* statistic = -1.82. When the result was referred to *t* table on *N - 3 df*, the result was found that the indirect effect of catastrophizing was not significant (p > .05). Therefore, it is concluded that there is no mediating effect of catastrophizing on the relationship between depression and Mental Component Summary (MCS) of HRQoL. The results do not provide support for the hypothesis.

Moreover, the relationship between depression and physical component score (PCS) of HRQoL was also not significant. β = -.09, S_β = .72, t = -1.27, p > .05. Consequently, the physical score was not examined any further.

The Mediating Effect of Catastrophizing on the Relationship between Social Support and HRQoL

The relationship between perceived social support and both HRQoL scores is not significant, with physical score (β = -.04, S_β = .07, t = -.48, p > .05.) and mental score (β = -.04, S_β = .11, t = -.39, p > .05.). Therefore, examining mediating effect of catastrophizing on the relationship between social support and HRQoL was also not examined any further. Thus, this indicates that the hypothesis cannot be accepted. The result is presented in Table 3.

Table 3
Standardized Beta Coefficients, Standard Error and t Value for Paths from Perceived Social Support with MCS-HRQoL and PCS-HRQoL

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
Dependent variable	Predictor variable	β	Std. Error	β		
PCS-HRQoL	Social support	-.04	.07	-.06	-.48	.63
MCS-HRQoL	Social support	-.04	.11	-.05	-.39	.69

Discussion

The present study contributes some important findings. Firstly, the study indicated that depression correlates significantly and negatively with HRQoL. A strong relationship exists between mental impairment and depression. This finding was consistent with de Leval's (2001) theory (as cited in Moore, Höfer, McGee & Ring, 2005) that depression influences the reduction in HRQoL. A depressed person usually has a heightened perception of negative daily stressors and is preoccupied with excessive worries such as physical appearance, misplacing or losing things, and not having enough energy. Additionally, a depressed person will usually see his or her well-being, social functioning and living conditions as worse than they appear. All these negative effects of depression can lead to a worse overall perception of health status. This result is in line with previous studies that found that depression was negatively correlated with the mental component score of HRQoL in chronic pain patients (Elliott et al., 2003).

Secondly, the study tested the hypothesis that perceived social support would be able to predict HRQoL in chronic pain patients. However, this study indicates that there is no relationship between perceived social support with mental component score and physical component score of HRQoL. This certainly contradicts past findings that demonstrated support for the association between social support with HRQoL (Dysvik et al., 2004; Reed & Towell, 2005; Kuemsun et al., 2003).

Several possibilities might explain this finding. A possible explanation is because of the response acquiescence set (the tendencies to answer 'agree' rather than 'disagree', Coolican, 1996) occurred when the participants responding perceived social support scale. The tendency to simply answer agrees appears when the participants often responded in an 'agree' pattern and subsequently circled the same response for different items. Moreover, perceived social support scale did not combine negative (unfavourable) and positive (favourable) statements. All the items only have positive statements. Therefore, it has influenced the participants to give the established 'agree' answer.

Another explanation for this inconsistent finding might be the response format of this scale was presented in many choices (from 1 = very strongly disagree to 7 = very strongly agree). Based on the observation during the course of the interview, some participants had difficulties in differentiating each choice. Especially for elderly patients, they could not differentiate sensitively on each choice. Therefore, some participants predictably marked at the extreme end of the choice (predominantly response format number 7).

Additionally, from this discrepancy finding it might be explained by the cultural characteristic of the participants. As concluded by Fisher, Butt, Moriarty, Sin, and Brockmann (2002) in their study on quality of life and social support among older people from different ethnic groups, ethnicity may play an important role in influencing both collective and personal responses to perceptions of quality of life and social support. They found in their study that Asian participants tended to report the poorest health. However, at the same time, Asian participants tended to report themselves as having high expectation about support from family. For instance, they tend to feel that their family would provide support in crisis. The family members usually provide practical help in the form of cooking, shopping, or cleaning.

On testing the mediating effect of catastrophizing in the relationship between perceived social support and depression with HRQoL, several conditions to test the mediating effect have been investigated. However, the results indicated no moderating effects of catastrophizing in these two relationships. A possible explanation on the inability of the present study to demonstrate mediating effects of catastrophizing is that there might be other potential mediator variables that are more significant to the chronic pain patients. Past reviews on the QoL have shown that pain beliefs (Dysvik et al., 2004), comorbidities (Heo, Allison, Faith, Zhu, & Fontaine, 2002), and social support (Walsh, 2005); have significantly mediated the relationship between psychological distress and QoL.

Implication of this Study

The finding of this study clearly reveals that depression correlates negatively with perceived mental health of HRQoL. Consequently, this finding further supports the importance of recognizing and treating depression in chronic pain patients. Patients and healthcare providers should be aware of the existence of depressive symptoms in chronic pain patients, such as loss of physical mobility, loss of

occupational and social role contacts, loss of pleasurable and important activities and loss of self-esteem. Moreover, this finding also has important implications for healthcare providers to teach the patients the skill to deal with depression. Teaching this skill to the patients might be able to increase the patient's quality of life.

In addition, there is a significant and negative relation between cognitive coping by catastrophizing and perceived physical and mental of HRQoL. The implication of this finding is that catastrophizing can be an important instrument in identifying the reduction of HRQoL in chronic pain patients. To increase the patient's HRQoL, the focus should not be only on eliminating chronic pain. However, healthcare providers must be familiar with the patients and understand their needs, so that the patients could reduce the level of catastrophizing.

Moreover, the results of this study have important implications for the treatment strategies for chronic pain. Treating only one problem separately may result in suboptimal outcomes. For instance, interventions that focus on depression alone may help to reduce depressive symptoms, however untreated pain may contribute to poor treatment response or prolong the time needed to effectively reduce depressive symptoms. Similarly, treatments that preferentially target pain may result in reductions in pain, but these may just be a temporary cure for the pain. Therefore, interventions should target pain and depression together.

Limitations and Recommendations

There are several recommendations as well limitations to this study. First, a number of items in the questionnaires which consisted of 63 items are too large especially for chronic pain patients. Given this large questionnaires and the participants' physical condition, it make them fatigue to answer all items, (Anastasi & Urbina, 1997). The observation during the course of answering the questionnaires also supported this fact. The researcher found that some participants easily get reluctant to complete the questionnaires. They needed more than 45 minutes to answer all the items. In some cases, they could not complete them because they felt painful or fatigue when answering the questionnaires. As a result, the participant might not report accurately their condition.

Second, one of the weaknesses of this study is the limited number of participants. Although the results seem representative since the participants represented various backgrounds, however, it is suggested for the future research in this area that the sample size be increased sufficiently and from various backgrounds.

Third, the measurement technique in this study was only self-rated questionnaires. Even though this technique is considered the best way to obtain the data, there is a possibility of respondents choosing the ideal answer in the questionnaires in order to satisfy the researcher. With respect to this, using comprehensive techniques such as triangulation using self-rated, interview and observation altogether

would be helpful in the future research in order to obtain the data more accurately. Moreover, if possible, future studies should also include other and more objective measures such as ratings by healthcare professional.

Fourth, there is a strong evidence of predominance of high depression in chronic pain patients. For this reason the researcher recommends that comprehensive assessment on chronic pain should include screening the level of depression. This is a vital recommendation because treatment of depression in chronic pain is effective to the increase patient's QoL and has been shown to be effective in reducing health care cost.

Fifth, since there is evidence that perceived social support does not correlate with HRQoL in this study, more research on the association of this is needed for elaboration in future. Future research should attempt to examine the support more comprehensively by using standardized scale with high sensitivity and a short duration in completing the scale. It would be particularly useful, if the researcher also identify the support by asking their spouse, family members or friends. Wherever possible, conducting longitudinal studies should be conducted in order to obtain more accurate data about the relationship between perceived social support and HRQoL in chronic pain patients.

Conclusion

The present study examines the relationship between HRQoL with depression, and perceived social support and to test the mediating effects of catastrophizing in the relationship between depression and perceived social support with HRQoL. The results of this study indicate that depression was identified as predictive variables in explaining a reduction of HRQoL of this sample of chronic pain patients.

The present study concludes that the chronic pain patients are not only suffering from chronic pain, but they are also suffering from depression and catastrophizing. In turn, such chronic pain accompanied by depression and catastrophizing would generate poor HRQoL. For this reason, increasing HRQoL of chronic pain patients should not only concentrate on reducing the pain, but also treating depression and catastrophizing.

Even though perceived social support fails to predict HRQoL, it cannot be concluded that perceived social support is not important in chronic pain patients. Several suggestions and discussions are drawn from this finding. Moreover, the role of catastrophizing as a mediating variable is also not supported, indicating that catastrophizing has no significant function in mediating effects of depression and perceived social support on HRQoL. Future research should attempt to examine the role of perceived social support and catastrophizing in chronic pain patients.

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