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Direct and Interactive Associations of Self-Efficacy and Social Support with Anxiety and Depression in Cardiovascular Patients

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Abstract

The objectives of the study were twofold: i) perceived social support and self-efficacy would negatively predict depression and anxiety in Cardiovascular Diseases (CVD) patients; and ii) self-efficacy would moderate the association of perceived social support with anxiety and depression in CVD patients. There were 174 CVD patients (ages 19- 60 years) selected from cardiac units of government sector hospitals. They were assessed from self-report scales of self-efficacy, social support, anxiety and, depression. The results from correlation and regression analyses showed that only friend's social support was a negative predictors of anxiety, and friend's and significant other's support were negative predictors of depression. Additionally, self-efficacy was a stronger negative predictor of both the anxiety and depression after controlling the effects due to social support. Finally, self-efficacy moderated the associations of friend's and significant other's support with anxiety and depression. It was concluded that self-efficacy and social support are significant positive resources for better mental health of CVD patients.

Keywords: *Self-efficacy, Social support, Depression, Anxiety, Cardiovascular patients*

Introduction

Cardiovascular disease [CVD] is a serious health issue which is rising rapidly around the globe and particularly in Asian-Pacific region [1,2]. Being a significant cause of mortality, the illness has caused 29 % worldwide deaths [3], of which 80% deaths were from developing countries. Besides deaths, CVD may bring out many mental health symptoms such as anxiety and depression. Earlier, such mental health symptoms were considered to be usual reactions to physical illness but recently, it has been acknowledged that assessment and treatment of mental health symptoms in patients with physical illnesses requires special attention for their better psychological wellbeing [4]. At present, clinical care focuses on improving psychological adjustment in patients to manage the detrimental effects of serious physical illnesses [5]. Particularly, for rehabilitation of cardiac patients, the American and the European guidelines emphasize the need to improve psychosocial adjustment to improve patients' QOL [6,7]. Unfortunately, relatively fewer studies have focused on assessment and treatment of mental health symptoms and psychological adjustment in CVD patients, particularly from developing countries of Asian region [3,8]. Therefore, to fill this research gap, the current study aims to predict anxiety and depression from the social support and self-efficacy in South Asian CVD patients.

Several theoretical approaches, including the integrative approach and transactional stress theory [9,10] offer explanations as to why patients with physical illnesses are at a greater risk for developing depression and anxiety symptoms. These approaches propose that stress of chronic physical illnesses may bring about significant distress leading to depression and anxiety only if the person does not have positive coping mechanisms to cope up with. However, if the person has adequate positive coping resources, he may cope up well to beat the distress of physical illness. Therefore, for adequate assessment and treatment of such mental health symptoms in CVD patients, it is important to assess positive resources which may protect CVD patients from developing such mental health symptoms. Many psychosocial resources including self-efficacy and perceived social support have been described to be the positive resources which may likely protect against the devastating effects of chronic and life-threatening physical illnesses on mental health. Collectively, self-efficacy and social support can be described as person's belief in self-capacity and perception of available social resources to cope with challenging physical and mental illness [11,12]. As the patients suffering from challenging physical illness of CVD may have a greater risk of developing mental health symptoms than the normal population, therefore, assessing the protective roles of self-efficacy and perceived social support seems imperative in minimizing the associated mental health symptoms [13].

Social support is a powerful mechanism to protect CVD patients from the distress of physical illness may be by working as a "cushion" to prevent developing depressive and anxiety symptoms [14]. Low social support negatively predicts depression as well as anxiety in patients with different physical illnesses [15], and even after controlling many other risk factors of depression [16,17]. Contrarily, patients with higher levels of social support are less likely to develop mental health symptoms of anxiety and depression [18,19]. Regarding social support, there can be many source of support including family members, friends, and significant others

in life. All these sources of social support are likely to moderate the effects of distress associated with challenging physical illness in CVD patients. Support from family becomes particularly vital resource for individuals suffering from devastating CVD illness simply by sharing and thereby, lessening the burden of physical illness and associated distress. Empirical evidence shows that support from family decreases distress in female cancer patients because it is associated with emotional vitality [20]. Friend's social support is likely a unique source because the friends are chosen and supportive relationships which are emotionally rewarding and help maintain positive sense of self [21]. Lastly, social support from significant others becomes particularly important because significant others are likely those individuals suffering from same threatening illness who share similar identities, thus well able to understand, empathize, and provide support to the CVD patient. They may become the source of 'primary group member'' support that is provided by significant others experiencing similar stressors [22].

Similarly, among psychological factors, self-efficacy is also described to be the positive factor against depression and anxiety symptoms among normative samples of students [23]. An individual's self-efficacy is likely to play an important role in managing mental health symptoms in CVD patients, because CVD patients with high self-efficacy levels have been described to have more probability of engaging in healthy activities that are favorable to their health [24-26]. In diverse studies using samples of CVD patients, levels of self-efficacy have been reported to be directly related to psychological well-being and self-regulation [27,28].

Moreover, social cognitive model suggests that both of these psychosocial factors may interact significantly to clarify why patients with same severity level of a disease may suffer from varying levels of mental health problems [29,30]. The model explains that self-efficacy may likely moderate the association of perceived social support with various mental health problems by different possible interactions [31]. First, empirical studies based on samples of chronic physical illnesses suggest that self-efficacy interacts synergistically with social support to anxiety and depression. Synergistic interaction means that patients with higher level of self-efficacy would be more likely to translate social support in managing depression and anxiety symptoms [32,33]. Second, self-efficacy may also compensate for deficient availability of social support to manage these symptoms.

Generally, the psychosocial factors as protective resources against depression and anxiety have been widely studied in normal samples in the context of routine stressors [34] with the exception of few studies on patient samples from Asian region. For example, Fatima and Jibeen have predicted quality of life of CVD patients from both of these psychosocial factors [35]; and other few studies have assessed the moderating effects of both the self-efficacy and social support on the relation between physical illness and depression [15,36,37]. Therefore, there is a need to assess whether self-efficacy and social support independently and interactively predict depression and anxiety in CVD patients from an underrepresented Asian region.

Despite the continuously increasing rates of cardiac illnesses in developing countries from Asian regions [2], relatively few researches have been conducted in these countries on samples of CVD patients [38]. Accordingly, among past studies that have focused on these two positive resources against depression and anxiety, majority of the studies have either focused on Western and normal samples [34] or have assessed them as independent predictors instead of assessing their interactive effects. Although social cognitive model [31] suggests proposing an interaction hypothesis of possible interplay between two positive resources, yet no empirical evidence for the interactive roles of self-efficacy and social support in anxiety and depression are available in the existing literature and particularly based on Asain CVD patients. Therefore, the study postulates two hypotheses: (i) depression and anxiety would be negatively predicted from levels of self-efficacy and social support in CVD patients; (ii) level of self-efficacy would interact with social support to predict depression and anxiety in CVD patients.

Methods

Sample

Participants were 174 CVD patients (males = 75%, & females = 25%) who were recruited from cardiac units of three public sector hospitals in Lahore (the fifth largest city in South Asia). They were falling in age range from 19-60 years (M = 45.64, SD = 15.41), mostly married (84%) with a mean education of 4.8 years. The percentage of participants diagnosed during last one month was 32%, during last one year was 22%, and during last five years was 16%. The remaining percentage of the sample was diagnosed for CVD for more than five years.

Instruments

The researchers prepared a structured demographic sheet to assess demographic and clinical information.

Self-Efficacy: was assessed from the General Self-efficacy Scale that was a 10item scale and developed by Schwarzer and Jerusalem [39]. The Urdu translation of the scale [40] was used with the current study sample considering their national language being Urdu. The respondents were required to respond to all items on a four-point response format ranging from 'not at all true' (1) to 'exactly true' (4). A composite self-efficacy score on the scale was obtained by adding responses to all ten items. The composite score, thus obtained, ranged from a minimum likely score of 10 to a maximum likely score of 40, where a higher composite score represented a higher level of perceived self-efficacy. Coefficient of internal reliability (alpha) of the scale in current study was very good (0.98).

Social support: was assessed from the Multidimensional Scale of Perceived Social Support that was a 12 item scale [41]. The Urdu translation of the scale was used [42]. The scale assesses level of perceived social support from three sources: family, friends, and a significant other. The responses were scored on a seven-point scale that ranged from 1 to 7 (very strongly agree to 'very strongly disagree). A full score was obtained by cumulating scores on 12 items. Potential range of the composite score could be from 12 to 84, with a higher score showing a greater level of perceived social support.

The hospital depression anxiety scale: is a14 item scale [43]. The Urdu version of the scale was used in the current study to assess participant's level of depression and anxiety [44]. The response format to the items was four points from 0 to 3 for all items.

Responses to all 7 items corresponding to depression subscale were added to obtain a score indicating a composite depression score; and scores on 7 items comprising anxiety subscale were added to form a composite anxiety score. Internal reliability coefficients of depression (0.68) and anxiety (0.73) subscales were good.

Procedure

After obtaining ethical approval from the Research Review Committee, initially, heads of cardiac departments of selected hospitals were contacted to obtain their official permission. Then, eligible participants were identified with the help of nurses and medical doctors. Then, potential participants were contacted and briefed about the purpose and approximate duration of data collection. They were assured of the confidentiality of their responses. After getting their formal consents, data were collected in individual settings. After data collection, participants were cordially obliged for their cooperation in the study.

Results

Descriptive statistics and correlation coefficients between self-efficacy, social support, anxiety, and depression were calculated and showed in Table 1. Among demographics age ($r = -0.17$, $p < 0.05$) and income ($r = -0.30$, $p < 0.01$) were found to be the significant negative correlates of anxiety; and education ($r = -0.33$, $p < 0.01$) and income ($r = -0.27$, $p < 0.01$) were found to be the significant negative correlates of depression.

Then, anxiety and depression were predicted from in two separate hierarchical models from social support (three sources), then from self-efficacy, and lastly, from three interaction terms (social support from each source X self-efficacy). In the first regression analysis, social support (from family, friends, a significant other) were entered as predictors of anxiety in model 1, then, general self-efficacy as a predictor was added in model 2, and finally, three interaction terms were added as predictors in model 3. The results showed that social

	M	SD	α	SSfa	SSfr	SSsig	GSE	Anxiety	Depression
SSfa	25.30	5.42	0.93	-	0.26**	0.69**	0.02	0.07	-0.10
SSfr	9.45	8.69	0.89		-	0.16*	0.08	-0.16*	-0.42**
SSsig	24.79	6.49	0.92			-	0.13	-0.13	-0.22**
GSE	26.79	6.35	0.98				-	-0.36**	-0.67**
Anxiety	13.47	4.11	0.73					-	0.52**
Depression	11.27	3.52	0.68						-

Note: *p < .05, **p < 0.001; GSE = General Self Efficacy; SSfa = Social Support from family; SSfr = Social Support from Friends; SSsig = Social Support form significant other

Table 1. Correlations between Self-efficacy, Social Support, Anxiety, and Depression.

Predictors	Mental health problems					
	Anxiety			Depression		
	M 1	M 2	M 3	M 1	M 2	M 3
SSfa	-0.13	-0.11	-0.10	0.08	0.01	-0.04
SSfr	-0.30**	-0.22**	0.85	-0.38***	-0.33***	0.18
SSsig	-0.12	-0.11	0.42	-0.22**	-0.09	0.39
GSE		-0.32***	0.04		-0.63***	-0.17
SSfaXGSE			0.611			0.10
SSfrXGSE			-0.99*			-0.53
SSsigXGSE			-1.03*			-0.73*
R^2	0.08	0.18	0.23	0.20	0.58	0.60
Incremental R^2	0.08	0.10	0.05	0.20	0.38	0.02
Model fit	F (173,3) = 5.09**	F (173,4) = 9.41***	F (173,7) = 7.26***	F (172,3) = 14.01**	F (172,4)=57.40***	F (172,7) = 35.31**

Note:*p < 0.05, **p < 0.001; M = Model
SSfa = Social Support from family; SSfr = Social Support from Friends; SSsig = Social Support form significant other; GSE = General Self Efficacy

Table 2. Regression Weights Representing Direct and Interactive Effects of Self- Efficacy and Social Support in Predicting Anxiety and Depression in CVD Patients.

support as a block explained 8 % variance in anxiety with friend's social support being the only significant negative predictor in model 1. Then, self-efficacy was a found to be the stronger negative predictor of anxiety explaining 10% incremental variance when added in model 2. Finally, in third model, self-efficacy moderated the association of friend's and a significant other's social support with anxiety, explaining an incremental variance of 5% (Table 2).

Similarly, in the regression analysis, depression as a criterion variable was assessed from a three-step hierarchical regression analysis from socials support, then, from self-efficacy, and finally, from three interaction terms. It was found that social support as a block explained 20 % variance in depression in model 1 with friend's and a significant other's social support being the significant negative predictors. Then, in model 2, when self-efficacy was added in the model, it turned out to be the negative predictor of depression (incremental variance = 32%). Finally, in the third model, when three interaction terms were added in the model, self-efficacy significantly moderated the social support from a significant other and explained only 2 % variance. Notably, it was found that self-efficacy was a stronger predictor of both the anxiety and depression compared to social support from three sources as evident from comparative correlation coefficients and regression weights as well as explained variances in model 1 and 2 from both series of regression analyses (Table 2).

Discussion

The major objectives of the current study were to analyze the independent and interactive roles of self-efficacy and social support in predicting depression and anxiety on a sample of South Asian CVD patients. It was found that perceived social support from friends was a significant negative predictor of anxiety. However, social support from friends and from a significant other was significant negative predictor of depression. Additionally, self-efficacy was a stronger negative predictor of both the anxiety and depression after controlling the effects due to perceived social support. Finally, in model 3 self-efficacy synergistically interacted with social support from friends and from a significant other in predicting anxiety and depression.

Social support as a predictor of anxiety and depression

As hypothesized, the study findings revealed that a higher level of perceived social support predicted a lower level of anxiety and depression in the study sample. The finding is in line with the earlier literature highlighting the significance of positive social resources in managing anxiety and stress symptoms associated with chronic illnesses in general, and with cardiac illness, in particular [14,45]. The current finding in the context of previous literature suggests that supportive interpersonal relationships facilitate individual's adjustment to CVD and other chronic illnesses. Specifically, social support from friends was a negative predictor of anxiety and support from friends and from a significant other were predictors of depression. This is in accordance with the earlier literature which describes social support from friends to be a unique positive resource because friends are chosen and supportive relationships which are likely to be emotionally rewarding and help alleviate mental health symptoms associated with challenging illness [21]. Further, social support from significant others also turned out to be significant negative predictor of depression that is in line with the earlier literature which describes it a source of 'primary group member'' support [22]. The significant predictive role of perceived social support is further supported in the collectivistic cultural context of Pakistan where social resources are important resources. Notably, mean score on social support from family was highest among three sources of support; however, it was not turned out to be the significant predictor of anxiety and depression in the current study sample. It may be because, being a continuous positive resource though a vital resource, it may have remained stable and may not have co-varied with mental health symptoms.

Self-efficacy as a predictor of anxiety and depression

Besides social resources, self-efficacy also significantly and negatively predicted anxiety and depression in the current sample of CVD patients. The finding is consistent with the few available studies based on patient samples suffering from different chronic illnesses 36. It is important to note that self-efficacy was turned out to be the stronger predictor of both anxiety and depression compared to three sources of social support that is evident from comparative regression weights and explained variances in regression models 1 and 2 in Table 2. That clearly supports that although social resources are important for better psychological wellbeing, however, personal resources such as self-efficacy are far more important for psychological and mental health of CVD patients. A couple of possible explanations may justify the finding. First, it is quite likely that individuals with higher self-efficacy levels are more likely to employ active coping strategies in response to chronic illnesses to avoid mental health problems. Second, higher self-efficacy levels may have lead CVD patients to continue behaviors that are more likely to promote physical and mental health such as following physicians' prescriptions, maintaining healthy life style etc., thereby, enhancing positive feelings about health status leading to lower levels of associated symptoms of anxiety and depression [25]. Additionally, findings from the second regression model point out that association of self-efficacy with both the anxiety and depression are additive rather than compensatory further supporting that both of these psychosocial resources are important for mental wellbeing of CVD patients.

Interaction of self-efficacy and social support predicts anxiety and depression

Final aim of the study was to assess anxiety and depression from interaction of self-efficacy and social support and it was found that self-efficacy synergistically interacted with two sources of social support: from friends and from a significant other in predicting anxiety and depression. It is explained that depression and anxiety symptoms were at lowest levels when CVD patients had the highest levels of both psychosocial resources. Specifically, the CVD patients having higher levels of self-efficacy were better able to use social resources into improving their mental health. In line with the theoretical approach of social cognitive theory, it was evident that the two positive resources form personal and social domains of life were not independent of each other in mental health and improving psychological wellbeing of CVD patients from South Asian region. As discussed earlier that self-efficacy had additive rather than compensatory effect after social support on mental wellbeing, so it is further explained that these factors are additive but interactive that facilitate profiting from each other in improving mental wellbeing. Although, evidence from few studies based on

normal samples supports the synergistic interaction of self-efficacy with perceived social support [46], however, this is an initial research that has tried to assess interactive effects of both resources on mental wellbeing of CVD sample from an underrepresented region of South Asia.

Limitations, Strengths, and Implications

This study advances the earlier literature on several grounds. First, the study provides extension to the earlier literature in assessing the interactive roles of psychological and social factors in addition to their independent roles in predicting metal well being of the current study sample, which has been rarely focused in the earlier literature on patients with chronic illnesses. Likely, the most important contribution of the study is that it has assessed these objectives on a sample of CVD patients from an underrepresented and culturally diverse region of South Asia in contrast to many of the studies conducted on Western samples. In spite of the strengths, the study findings should be considered with caution in light of certain limitations. First, the cross-sectional study design limits us from drawing causal inferences regarding direction of association between psychosocial resources and resulting mental health symptoms. So, it is quite likely that anxiety and depression in CVD patients may have caused low self-efficacy levels and poor social support. In future, longitudinal studies are recommended to rule out causal relationship between variables. Additionally, the sample was selected from only government sector hospital which limits the generalizability of the findings. Future studies can use samples from public and private hospitals to increase the scope and generalizability.

Still, the findings may have several implications for counselors and clinicians. It is recommended that psychological services should be provided along with medical services at cardiac units to improve mental health of CVD patients. Additionally, considering the self-efficacy as a significant positive resource for mental wellbeing, trainings to improve self-efficacy levels of CVD patients should be included as part of clinical treatment which may likely mental wellbeing and in turn physical wellbeing of CVD patients. In light of the literature [31], self-efficacy levels can be enhanced by mastery experiences and modeling.

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