

# Predicting Depression among Jordanian Patients Diagnosed with Physical Illnesses

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## Abstract

Depression is associated with increased medical morbidity and mortality among patients with chronic medical illnesses. The purpose of this study was to investigate the psychosocial predictors of depression among patients diagnosed with chronic illnesses in Jordan. A cross sectional survey using 806 patients diagnosed with chronic illnesses has been used to collect data in regards to depressive symptoms, psychological distress, coping, optimism, life satisfaction, and perceived social support. 27.5% of the patients reported that they had moderate to severe depressive symptoms, and about 31% of them had mild level of depression. Psychological distress, perceived social support from family, life satisfaction and optimism were significant predictors of depressive symptoms ( $R^2 = .29$ ;  $F_{11, 803} = 29.7$ ,  $p < .001$ ). Male and female patients were significantly different in their depressive scores ( $t = -2.57$ ,  $p = .01$ ). Implication for clinical practice and research are discussed.

## Keywords

Chronic Illness, Depression, Jordan, Psychosocial Health

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## 1. Introduction

Chronic illness is becoming the most life devastating health problem and cause of death around the world. According to [Yach and associates \(2004\)](#), cardiovascular diseases are the most leading cause of death around the world followed by cancer, chronic lung diseases, and diabetes mellitus. Therefore, understanding the relationship between psychosocial wellbeing and chronic illnesses appears vital to public health assessment and health care delivery system. Health care policy makers are struggling to fulfill the requirement for patients with chronic illnesses given the increased patients' demands and cost of health care. During the last few decades, Jordan has witnessed a significant increase in number of deaths primarily due to chronic illness such as cardiovascular and cancer (Ministry of Health [WHO], 2009). Thus, the comorbidity between chronic physical conditions and psychosocial health consequences such as depressive feelings, stress, adherence, and psychosocial health concerns became common interest for health professional and researchers. According to [Doumit and Nasser \(2010\)](#), patients with chronic illnesses are overwhelmed with psychological stressors due to requirement related to management of their illnesses. However, patients' psychosocial status may interfere with their ability to manage their needs independently that may exacerbate their health condition ([Sareen, Cox, Clara, & Asmundson, 2005](#)). For example, patients with chronic illnesses may suffer depressive feelings that delay their recovery and healing process ([Katon, Lin, & Kroenke, 2007](#)). Moreover, [Frasure-Smith and Lespérance \(2006\)](#) found that one issue of concern among patients experiencing coronary atherosclerosis disease is the development of psychological problems such as anxiety, stress, and depression. Therefore, patients with chronic illnesses are struggling to manage their physical illnesses independently and further overwhelmed with vulnerability to increased psychosocial comorbidity ([Sareen et al., 2005](#)).

One of the significant psychosocial factors that influence patients' health conditions is depression. Number of studies connected depression to health treatment outcomes. For example, depression has been associated with increased medical morbidity, mortality, worse quality of life, risk for complications among patients with cardiac and metabolic problems ([Freedland, Rich, Skala, Carney, Dávila-román, & Jaffe, 2003](#); [Lustman, Anderson, Freedland, de Groot, Carney et al., 2000](#); [De Groot, Anderson, Freedland, Clouse, & Lustman, 2000](#)). Furthermore, the literature showed that treatment of depression had positive outcome on patients' prognosis and quality of life, and that depressed mood lowered the force needed to cope with the chronic diseases, decreased tolerability of physical symptoms, and increased psychosocial disturbances ([Frasure-Smith & Lespérance, 2006](#)). Previous studies also show that depression have been linked with chronic illnesses ([Honyashiki, Ferri, Acosta, Guerra, & Huang, 2011](#)), and that patients' psychological difficulties and health care professional competency related to psychological follow up care have been linked to increased morbidity, mortality, and expenditure of health services ([Wang, Demler, Olfson, Pincus, Wells, & Kessler, 2006](#); [Sullivan, Simon, Spertus, & Russo, 2002](#)). According to [Katon \(2003\)](#), depression contributed to 50% increase in health care cost medical illnesses.

The impact of chronic illnesses on the bio-psycho-social aspects of individual health and wellbeing cannot be interpreted solely in terms of disease process, but also relates to difficulties of individuals' adjustment to their illnesses and the evolved changes of their lifestyle ([MacDonald, 2005](#); [Chen and Chang, 2012](#)). Therefore, understanding the relationship between depression and other psychosocial factors such as coping, social support, life satisfaction, optimism and stress seem to be noteworthy in terms of understanding the factors that interfere with effectiveness of treatment plans. Previous studies show that there is a relationship between difficulties in coping mechanisms, perceived social support and the development of depression among patients with chronic illnesses ([Zhang, Chen, & Chen, 2008](#)). This infers that exploring factors that predict depression among patients with chronic illness will enable addressing the factors that possibly affect patients' physical and psychological condition. In Jordan, few studies addressed this issue either generally or among specific group of patients ([Khalil, DarAwwad, Al-Gamal, Hamdan-Mansour et al. 2012](#); [Hamdan-Mansour, Halabi, & Dawani, 2009](#)). However, information related to depression among diagnosed with chronic illnesses in Jordan is limited, provoking the need to explore the interrelationship between depression and the psychosocial factors especially with the increased cost and demands for health care services globally. Therefore, the purpose of this study is to examine the psychosocial predictors of depression among patients with chronic illnesses in Jordan. The specific aims are:

- To examine prediction power of stress, social support, life satisfaction, optimism and coping on depressive symptoms among patients with chronic illnesses in Jordan controlling for demographic and personal characteristics.
- To identify the differences of depressive symptoms of patients with chronic illnesses in Jordan in relation to

demographic and personal characteristics: age, gender, working status, and medical diagnosis.

## 2. Method

### 2.1. Design

A quantitative approach using cross-sectional, descriptive-correlational design was used to examine. Data was data from patients diagnosed with diabetes mellitus-type-II, Rheumatoid arthritis, cardiovascular diseases (CVD), cancer, and pulmonary diseases from the three health care sectors in Jordan (governmental, University affiliated, and private). Information collected in regards to stress, depression, perceived social support, coping, optimism, and life satisfaction.

### 2.2. Sample and Settings

A convenience sampling of 806 completed and returned the questionnaire. The study targeted patients attending primary, secondary and tertiary care units. Inclusion criteria include: 1) diagnosed with one of the following chronic illness longer than 6 months: diabetes mellitus-type-II, Rheumatoid arthritis, CAD, cancer, and pulmonary diseases; 2) age of 18 years or above; 3) ability to read and write in Arabic. Exclusion criteria included: no history of diagnosed mental or cognitive disorders.

### 2.3. Data Collection Procedure

Prior data collection, ethical approval obtained from the Faculty of Nursing at the University of Jordan, and the targeted institutions. Data collected using self report format of data collection at patient's convenience. Patients who expressed interest to participation in the study were approached by the researcher who explained the study and provided them with all details and answered all their questions. Patients were asked to sign the consent form that included information related to the title of the study, its purpose, its significance and a statement informing the participants that their privacy would be protected by assuring them that their responses will be treated confidentially, and information that reveal their identity will not be recorded. Also, the information will be used for the purpose of the study, and that their participation is voluntary and they have the right to withdraw at any time during the study and that their decision will not influence the quality of care they receive. Anonymity of the respondents ensured during and after study completion; and data secured and saved to provide anonymity. All data e kept in a closed cabinet at the Faculty of Nursing, University of Jordan. The whole package presented in Arabic language.

### 2.4. Instruments

The data collected using an Arabic version of self-reporting questionnaires. The English format of questionnaires consulted by a professional English language editor. To formulate the Arabic language format, a numbers of procedures used to determine the reliability and validity of the tool. The tool first translation into Arabic language by a research assistant and back translated into English language another independent research assistant as described by [Brislin \(1970\)](#) and [Chapman and Carter \(1979\)](#). The two English forms (the original and the translated) compared in terms of conceptual rather than literal meaning of the items by the primary and co-investigators who had the expertise in the field. The translator and the back translator meet to examine the difference in the two forms. Pilot testing conducted using patients (n = 25) requesting their appraisals for the appropriateness of the translation.

The Instruments were:

1) Perceived social support was measured by Multidimensional Scale of Perceived Social Support ([Zimet, Dahlem, Zimet, & Farley 1988](#)). This scale is 12-item self-reported scale to assess the perception of social support adequacy from the family, friends, and significant others such as health care team. Each item is measured using a 7-point Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree). The scale has three sub scales, family (items 3, 4, 8, & 11), friends (items, 7, 9, & 12), and significant others (items, 1, 2, 5, & 10). The total score ranges from 7 to 84. The higher the score is the higher the perceived social support. This scale had good internal consistency for the scale as whole which was .88. In this study, Cronbach's Alpha for the subscales were .85 (Family), .79 (friends), and .75 (others).

2) The Beck Depression Inventory-II (BDI-II) (Beck, Steer, Brown, & 1996) was used to assess patients' depressive symptoms, which contain items that measure cognitive-affective symptoms and attitudes, impaired performance, and somatic symptoms (Beck et al., 1996). This instrument contains 21 questions answered on a four-point Likert scale in which 0 represents the absence of symptoms and 3 represents an extreme problem. The total range of 0 to 63 and standard cutoff points as follow: 0 - 13 indicates no or minimal symptom, 14 - 19 indicates mild symptoms, 20 - 28 indicates moderate symptoms, and 29 - 63 indicates severe symptoms (Beck et al., 1996). A score of 13 is the cut-off point indicating depression. The test-retest  $r$  was .88, and Cronbach's Alpha is .87 (Beck et al., 1996). In this study, Cronbach's Alpha was .85.

3) Stress was measured using the brief form of Psychological Stress Measure (Lemyre, Tessier, & Eillion, 1990). The original Psychological Stress Measure (PSM) was designed using 49 items drawn from descriptors generated by focus groups on stress. The scale is unifactorial in structure and maintains a test-retest stability of .68 to .80 under apparently constant conditions. Patients checks the answer that best indicates the degree to which each statement has applied to him/her recently The responses made on a Likert scale and ranged from range from 1 (null) to 4 (much). The higher the score in the scale reflect higher level of psychological stress. In this study, Cronbach's Alpha was .88.

4) Coping skills was measured using the abbreviated version of the COPE Inventory (Carver, 1990). Brief COPE is a 28 items scale measures the ways individuals use to cope with stress in their life. Brief COPE is formed of 14 domains (each consisted of 2 items) were responses ranged from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot). The scale takes >10 minutes to be completed. The scale has good internal consistency with Cronbach's alpha of .83 (Carver, 1990). In this study, Cronbach's Alpha was .73.

5) Optimism was measured using the Life Orientation Test (LOT-R) (Scheier, Carver, & Bridges, 1994). The LOT-R is designed to measure optimism by assessing the generalized outcome expectancies of individuals. Each item is scaled on a five point Likert scale. The responses ranges from strongly agree to strongly disagree. The scoring is done by reversing the negative statement and then adding all the responses together. Cronbach's alpha for the scale was .76 and test-retest was estimated at .79 (Scheier, Carver, & Bridges, 1994). In this study, Cronbach's Alpha was .81.

6) Life satisfaction was measured using the Satisfaction with Life Scale (Diener, Emmons, Larsen, Griffin, 1985). This is a general measure of life satisfaction, which consisted of five statements. Participants were asked to rate each statement according to the following seven-point scale: a) strongly disagree; b) disagree; c) slightly disagree; d) neither agree nor disagree; e) slightly agree; f) agree; and g) strongly agree. The scores of the total scale ranges from 5 to 35 and interpreted as follow: from 31 - 35 (extremely satisfied), from 26 - 30 (satisfied), from 21 - 25 (slightly satisfied), 20 (neutral), from 15 - 19 (slightly dissatisfied), from 10 - 14 (dissatisfied), and 5 - 9 (extremely dissatisfied). The test-retest reliability was estimated to be .87 (Diener et al., 1985). In this study, Cronbach's Alpha was .78.

**Potential covariates:** Gender, age, marital status, type of disease, duration of disease, smoking status, income, Education level and work status. The demographic information obtained from an investigator-developed subject profile.

## 3. Results

### 3.1. Descriptive Characteristics

A total number of 806 patients completed the questionnaire (see Table 1). Patients' age ranged from 18 to 90 years, with mean of 51.5 (SD = 15). About 54% (n = 436) of the patients there were male patients, while 45.9% (n = 370) were females. In regard to marital status, the majority of them 73.8% (n = 595) were married, while 5.2% (n = 42) were divorced, and 10.5% (n = 85) were single, and 10.4% (n = 84) were widow. The analysis also showed that most of patients (52%, n = 419) were not working, and 25.3% (n = 204) of them had a full time work, also 15.3% (n = 123) had retired, where the least percent 7.4% (n = 60) of patients had a part time work.

In regard to their medical diagnosis, the analysis showed that 28.6% (n = 230) of the patients had diabetes mellitus type-II, 21.6% (n = 174) had cardiovascular disease, 14.6% (n = 118) had pulmonary diseases, 13.3% (n = 107) had rheumatoid arthritis, and 11.4% (n = 92) had cancer. The analysis also showed that the majority (70.1%, n = 565) of patients were not smoking, while 29.9% (n = 241) were active smokers. Among those who smoke, 25% (n = 60) of them smoked more than 10 cigarettes per day.

**Table 1.** Descriptive characteristics of patients diagnosed with chronic illnesses (N = 806).

Variable		n	%	M	SD	Md.	P <sub>25</sub>	P <sub>75</sub>
<b>Age</b>				51.5	15	52	41.8	63
<b>Gender</b>	Male	436	54.1					
	Female	370	45.9					
<b>Marital status</b>	Single	85	10.5					
	Married	595	73.8					
	Widow	84	10.4					
	Divorced	42	5.2					
	Not working	419	52					
<b>Working status</b>	Part-time job	60	7.4					
	Full time job	204	25.3					
	>High school	365	45.3					
<b>Level of education</b>	High school	171	21.2					
	Diploma	120	14.9					
	Bachelor	127	15.8					
	Graduate	4	.5					
<b>Medical diagnoses</b>	Diabetes mellitus	230	28.6					
	Cardiovascular	174	21.6					
	Pulmonary	118	14.6					
	Cancer	92	11.4					
	Rheumatoid Arthritis	107	13.3					
<b>Smoking</b>	Smoking	241	9.9					
	Not smoking	565	70.1					

### 3.2. Psychosocial Health Factors

**Depression:** Regarding depressive symptoms, the analysis (see [Table 2](#)) showed that the patients had a mean score of 16.1 (SD = 10.2) with scores ranging from 0 to 54. About 50% of the patients had a score of 16 or above. In regards to level of depression, the analysis showed that 41.4% (n = 334) of the patients found to have no or minimal depressive symptoms, while 31% (n = 250) had mild depressive symptoms, 15.5% (n = 125) had moderate depressive symptoms, and 12.0% (n = 97) had severe depressive symptoms. The analysis indicates that about 25% of the patients are suffering from depressive symptoms compared to 41% with no to minimal depressive symptom.

**Optimisms:** Regarding patients' optimism perception using life orientation scale (see [Table 2](#)), the analysis showed that patients had a mean score of 34.5 (SD = 5.9) with scores ranging from 10 to 50. Considering that the possible range of score is 5 - 50, and that the analysis showed that 50% (n = 403) of the patients had a score of 34 or above and 50% of them had a score between 32 and 38, the results indicate that patients, in general, had high level of optimism.

#### Coping skills

Regarding patients' coping skills using brief COPE scale (see [Table 2](#)), the analysis showed that patients had a mean score of 71.6 (SD = 10.1) with scores ranging from 29 to 104. Considering that the possible range of score is 28 - 112, and that the analysis showed that 50% (n = 403) of the patients had a score of 71 or above and

**Table 2.** Psychosocial health status of patients diagnosed with chronic illness in Jordan (N = 806).

Variable	N	M	SD	Min	Max	P <sub>25</sub>	P <sub>50</sub>	P <sub>75</sub>
Depressive symptoms	806	16.1	10.2	0	54	9	16	21
Social support-other	806	22.7	4.9	4	28	21	24	26
Social support-family	806	22.2	4.8	4	28	20	23	26
Social support-friends	806	18.4	6.2	4	28	14	20	23
Optimism	806	34.5	5.9	10	50	32	34	38
Life satisfaction	806	23.8	5.8	5	35	21	25	28
Coping	806	71.6	10.1	29	104	67	71	77
Psychological distress	806	41.9	11.3	14	68	33	42	51

50% of them had a score between 67 and 77, the results indicate that patients, in general, had moderate of their ability to effectively cope with their life situations.

**Life satisfaction:** Regarding patients' satisfaction about their life (see [Table 2](#)), the analysis showed that patients had a mean score of 23.8 (SD = 5.8) with scores ranging from 5 to 35. Considering that the possible range of score is 5 - 35, and that the analysis showed that 50% (n = 403) of the patients had a score of 25 or above and 50% of them had a score between 21 and 28, the results indicate that patients, in general, had high level of satisfaction about their life.

**Psychological distress:** Regarding patients' psychological distress level (see [Table 2](#)), the analysis showed that patients had a mean score of 41.9 (SD = 11.7) with scores ranging from 14 to 68. Considering that the possible range of score is 9 - 72, and that the analysis showed that that 50% (n = 403) of the patients had a score of 42 or above and 50% of them had a score between 33 and 51, the results indicate that patients, in general, had moderate level of stress.

**Perceived social support:** Regarding patients' perception of perceived social support (see [Table 2](#)), the analysis showed that patients' highest perception of perceived social support was from others and family with mean scores of 22.7 (SD = 4.9) and 22.2 (SD = 4.8) respectively. However, patients had lower perception of social support from friends with score of 18.4 (SD = 6.2). In general, perception of social support from family, friends and other were at the moderate level give the possible range of score for each subscale to be 4 - 28 and the median scores for all subscales were almost equal and at the moderate to high level (23 - 26). The analysis is showing the lowest level of perception was support from friends although the scores of seem to be at the moderate level.

### 3.3. Differences in Depressive Symptoms in Relation to Demographic Characteristics

Regarding the relationship between demographic and personal characteristic and depressive symptoms, the analysis showed that although there was a negative correlation between patients' age depressive symptoms, this relationship was not statistically significant. Regarding gender differences, the analysis showed that there was significant difference between male and female patients in their depressive symptoms ( $t = -2.57, p = .01$ ) with higher mean score of BDI among female patients (M = 17.1, SD = 10.0) than male patients (M = 15.2, SD = 10.2). To examine the differences in psychological factors in relation to working status, one-way ANOVA was conducted. The analysis showed that there was a significant difference in depressive symptoms in regards to working status, ( $F_{3,806} = 9.3, p < .001$ ). Using post hoc comparison (scheffe), the analysis showed that those who are not working (M = 17.8, SD = 10.5) were significantly different (higher mean) in their BDI score from those working full time (M = 13.5, SD = 8.9).

Regarding differences in depressive symptoms in relation to patients' medical diagnoses (see [Table 3](#)), the analysis showed that 21.6% (n = 24) of those diagnosed with pulmonary diseases had moderate to severe depressive symptoms, while 29.3 (n = 48) of those with CVD, 47.7% (n = 40) of those diagnosed with cancer, 27.8% (n = 28) of those diagnosed with rheumatoid arthritis, 16.7% (n = 27) of those diagnosed with diabetes, and 36.1% (n = 43) for those who have more than one of the listed chronic disease.

**Table 3.** Difference in depression level among related to medical diagnosis (N = 806).

Depression Level	Medical Diagnosis												Total	
	Pulmonary d/o		CVD		Cancer		Rheumatoid Arthritis		DM-II		Co-morbid			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Not depressed</b>	53	47.7	75	45.7	20	22.7	45	44.6	114	51.6	26	21.8	333	41.4
<b>Mild</b>	34	30.6	41	25.0	26	29.5	28	27.7	70	31.7	50	42.0	249	31.0
<b>Moderate</b>	13	11.7	29	17.7	17	19.3	15	14.9	25	11.3	26	21.8	125	15.5
<b>Severe</b>	11	9.9	19	11.6	25	28.4	13	12.9	12	5.4	17	14.3	97	12.1

The results infer that those diagnosed with cancer had the highest reported depressive symptoms among all listed chronic illnesses followed by those who have more than one disease. Using one-way ANOVA to examine differences in depressive symptoms in relation to patients' medical diagnoses, the analysis showed that there was significant difference in depressive symptoms related to medical diagnoses ( $F_{5,806} = 12.8, p < .05$ ). Using post hoc comparison (Scheffe), the analysis showed that patients diagnosed with cancer are significantly different (had higher mean score;  $M = 21.9, SD = 12$ ) from all other patients; pulmonary disease ( $M = 14.9, SD = 9.9$ ), CVD ( $M = 15.9, SD = 10.6$ ), RA ( $M = 15.9, SD = 10.2$ ), and DM-II ( $M = 13, SD = 8.4$ ). The results indicate that patients diagnosed with cancer had more depressive symptoms than all other patients diagnosed with chronic illness in this study.

To examine whether stress, social support, life satisfaction, optimism and coping are significant predictors of depressive symptoms among controlling for the demographic and personal characteristics (age, gender, working status, and medical diagnosis), two-steps multiple hierarchical regression analysis was performed.

The results (see [Table 4](#)) showed that model 1 that contained demographics and personal characteristics explained 2% ( $R^2 = .02$ ) of the variance in depressive symptoms (see [Table 4](#)). Although the  $R^2$  was very small, the model was significant ( $F_{4,803} = 3.27, p = .012$ ). In this model, only working status was a significant predictor of depressive symptom. After entry of stress, social support, life satisfaction, optimism and coping at step 2, the total variance explained by the model as a whole was 29% ( $R^2 = .29$ ) and was significant ( $F_{11,803} = 29.7, p < .001$ ). The variables in step 2 explained an additional 27% of variance in depressive symptoms. In Model 2, working status was not a significant predictor of depressive symptoms as it was in model 1. In addition, perceived social support from family ( $\beta = -.087, p = .041$ ), optimism ( $\beta = -.235, p < .001$ ), life satisfaction ( $\beta = -.255, p < .001$ ), and psychological distress ( $\beta = .239, p < .001$ ) were significant predictors of depressive symptoms.

#### 4. Discussion

Globally, chronic physical health problems are the main cause for disability ([Mathers & Loncar, 2005](#)), and depression is associated with increased medical morbidity, mortality, and risk for complications among patients with chronic medical illnesses ([Freedland et al., 2003](#); [De Groot et al., 2000](#)). Depression also found to increase the health care cost even with suppression of physical severity ([Katon, 2003](#)).

Therefore; screening for psychological factors among patients diagnosed with chronic illnesses is considered a primary function for health professional caring for this group of patients ([Hamdan-Mansour, 2010](#); [Hamdan-Mansour et al., 2012](#)). This study aimed at examining the psychosocial predictors of depressive symptoms among patients diagnosed with chronic illnesses and explore further about the differences in depressive symptoms related to sociodemographic and medical conditions. The study found, in general, that a significant number of patients (27.5%) had moderate to severe depressive symptoms and 31% had mild depressive symptoms. In addition, the study showed that the depressive symptoms among the listed chronic illnesses ranged from 16% (diabetes) to 47% (cancer). The results of this study had some agreement with previous international reports. Globally, [Moussavi and colleagues \(2007\)](#) found that prevalence of depressive episode among patients with chronic illnesses ranged from 2.0% (diabetes mellitus) to 4.5 (angina), and that the average depressive episode among those with more than one physical disorder ranged from 9.3% to 23.0%. The prevalence of depressive symptoms in this study is higher than [Moussavi and colleagues' report](#). One explanation is that in this study a self report format of data has been used while in [Moussavi and colleagues' reported data](#) has been collected using interviews. Moreover, this study found that about 28.5% of patients with cancer had severe depressive

**Table 4.** Two steps Multiple Hierarchical Regressing depressive symptoms on stress, social support, life satisfaction, optimism and coping controlling for demographic and personal characteristics among patients with chronic illness in Jordan (N = 806).

Variables	Model 1		Model 2	
	$\beta$	<i>P</i> -value	$\beta$	<i>P</i> -value
<b>Age</b>	-.006	.880	.045	.155
<b>Gender</b>	.043	.278	.031	.370
<b>Working status</b>	-.100	<b>.013</b>	-.051	.138
<b>Medical diagnoses</b>	-.014	.707	.032	.315
<b>PSS-Fa</b>			-.087	<b>.041</b>
<b>PSS-Fr</b>			-.060	.094
<b>PSS-others</b>			.026	.558
<b>Optimism</b>			-.235	<b>.000</b>
<b>Life satisfaction</b>			-.255	<b>.000</b>
<b>Coping</b>			.006	.846
<b>Psychological distress</b>			.239	<b>.000</b>
<i>R</i> <sup>2</sup>	.02	.012	.29	<.001
<i>Adjusted R</i> <sup>2</sup>	.01		.28	
<i>R</i> <sup>2</sup> change	-		.27	

PSS-Fr: Perceived social support from friends; PSS-Fa: Perceived social support from family; PSS-others: Perceived social support from others.

symptoms, while in previous study the prevalence rates for depression in patients with cancer ranged from 22% to 29% (Hotopf, Chidgey, Addington-Hall, & Ly, 2002) which indicates that patients with cancer in Jordan had almost equal rates of depressive feeling to those in other regions in the world. Moreover, and similar to Zhang and associates (2008), the majority of the patients in this study (60% - 75%) with pulmonary diseases, diabetes, CVD had depressive feelings. These rates were higher than what has been reported by previous studies that 20% of patients with COPD had depressive feeling (Di Marcoa et al., 2006), and 51% of patients with congestive heart failure had mild to severe depressive symptoms on BDI (Freedland et al., 2003). In conclusion, significant number of patients with chronic illnesses suffers depressive feelings that may interfere negatively in their ability to adapt to their illness.

In regards to psychosocial predictors of depression, we found that perceived social support from family, optimism, life satisfaction, and psychological distress were significant predictors of depressive symptoms. Whereas, age and type of medical diagnoses were not significant predictors of depressive symptoms, there was a significant difference between male and female patients. The results support previous reports that depression is associated with number of clinical and demographic characteristic of patients diagnosed with chronic illnesses (Katon et al., 2007; Gottlieb et al., 2004; Katon, 2003), and that depression is associated with perceived social support among patients with chronic illnesses (e.g., Zhang et al., 2008). Although literature shows connection between coping to depression among patients with chronic illness (Frasure-Smith & Lespérance, 2006; Zhang et al., 2008), this study showed that depression and coping has weak correlations and the coping is not a significant predictor of depression. This may question the role of coping mechanism in forming the psychological status of patients. One possible explanation is that patients had depressive feeling, however; they have also utilized available sources of social support and their level of satisfaction and feeling optimistic as means to manage the negative feeling resting from depression. Another explanation might be related to the intercorrelation of depressive symptoms and psychological distress and the use of social support as buffering system. According to Cohen, Gottlieb and Underwood (2000), social support influences health through either the stress-buffering model or the main effect model. The main premises of the stress-buffering model is that others will provide necessary resources that may redefine the potential for harm posed by a situation and cushions one's perceived ability to



cope with imposed demands, thereby preventing a particular situation from being perceived as stressful. These two models provide an explanation for how an individual's physical and mental health is maintained and promoted. The individual's social support, based on the stress buffering and main effect models, influences the individual's emotions, cognition, and behaviors, and consequently; is able to perceive risk factors and functions in a healthy way that improves their level of life satisfaction and their optimistic perspectives. This may result in maintaining positive levels of optimism, life satisfaction and effectively using coping skills. The results also support Lewinsohn's model that patients with chronic illnesses are at risk for depression if their illness affected their ability to function (Lewinsohn, Hoberman, Teri, & Hautzinger, 1985). In this study, patients were able to maintain their function utilizing social support that, in turn; resulted in improving their life satisfaction and optimistic view of life. In conclusion, Jordanian patients with chronic illness are suffering depression, and that improving their psychosocial health status; perceived social support, optimism, and life satisfaction and managing their stressful life events will enable patients to encounter their negative feelings that produce depression.

One limitation for this study is that data were collected cross sectional, while a longitudinal one may allow better understanding for a cumulative experience over long period of time.

## 5. Conclusion

Managing comorbidity of physical and psychological problems in primary care is needed. Data from this study suggest that there is a higher incidence and prevalence of depression in patients with chronic medical illness. Moreover, the study suggest that managing stress, enhancing social support, life satisfaction, and optimism are among the most influencing factors that encounter negative feeling and development of depression among patients with chronic illnesses. This study has an implication for psychosocial nurses and mental health professionals at the community and primary care settings. There is a need that psychosocial nurses and mental health professionals assess and screen psychosocial factors: stress, depression, social support, optimism, life satisfaction, and coping skills among patients with chronic illness in their routine checkups and visits to outpatients units. There is also a need to develop large treatment trials aimed at improving outcomes of psychosocial well-being in medical illnesses to prospect the cost and burden of such illnesses. Future research must focus on establishing diagnostically reliable criteria measuring depression and other psychosocial factors.

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