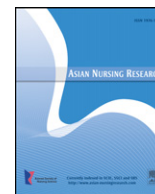


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Research Article

Changes in Depressive Symptoms in Spouses of Post Myocardial Infarction Patients

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SUMMARY

Purpose: To identify parsimonious models for changes in depression in spouses of post myocardial infarction (MI) patients over 2 years based on the biopsychosocial model.*Methods:* A total of 442 community living patients who had experienced an MI and their spouses were included for analysis. Patients and spouses completed psychosocial assessments at baseline, 1 year, and 2 years after enrollment in the Patients' and Families' Psychological Response to Home Automated External Defibrillator Trial. Linear mixed models were used for testing hypotheses.*Results:* A total of 15.2% (baseline), 11.5% (1-year follow up), and 8.1% (2-year follow up) of spouses were depressed. Spouse biological factors did not influence changes in depression. Among all spouses, two groups of spouses showed increased depression over time: spouses with lower baseline depression scores ($p < .001$), and spouses of patients who had higher baseline depression scores ($p = .001$). Among psychologically distressed (anxious or depressed) spouses, three groups of spouses showed increased depression over time: spouses who had lower baseline depression scores ($p < .001$), spouses who had more social support at baseline ($p = .023$), and spouses of patients who had higher baseline depression scores ($p < .001$). *Conclusion:* Spouse and patient baseline depression significantly predicted changes in depression for all spouses and psychologically distressed spouses. Among psychologically distressed spouses, higher baseline social support predicted higher depression scores over time. This study is an important step in understanding longitudinal changes in the psychological status of spouses of MI patients for evaluating the need for interventions. It is crucial that patient couples' psychosocial factors are continuously assessed.

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Introduction

The spouse of the post-myocardial infarction (MI) patient experiences life altering changes after the MI. In post-MI or revascularization couples, the spouses were significantly more anxious and depressed than the patients were (Moser & Dracup, 2004). The spouse is subject to many physical and psychological demands and may need to assume the functions that were once the patient's roles. As a result, spouses may develop and maintain higher levels of psychological distress such as depression or anxiety (Moser).

The psychological distress of spouses continues after the acute phase of MI. In a longitudinal study with 10 years of follow-up (Arefjord, Hallaraker, Havik, & Maeland, 1998), approximately 50% of wives of MI patients had a low level of depression during the

whole period and the proportion of severely depressed wives of MI patients was relatively stable over 10 years. While the patient directly experiences the cardiac event, the spouse lives through a parallel experience equally intense as the patient's experience (Marsden & Dracup, 1991). The spouses are more likely to be marginalized from medical attention since the main focus is on patient survival. From a long-term perspective, decreasing spousal anxiety and depression may be a cost-effective way to improve the patients' psychosocial status and may decrease morbidity and mortality outcomes (Moser & Dracup, 2004). Health care professionals need to identify spouses with the greatest need for support and provide resources to them (Martensson, Dracup, & Fridlund, 2001). This study is an important step to understand longitudinal changes in the psychological status of spouses of MI patients and for evaluating the need for interventions. It is crucial to decrease psychological distress and improve social support or coping skills among spouses of post-MI patients. Little is known about the longitudinal changes in depression for spouses of post-MI patients.

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Theoretical framework

The biopsychosocial model provides the basis for understanding the holistic approach for patient care as well as the determinants of disease (Engel, 1977). The model encompasses both circumstances of the person and illness. The biopsychosocial model takes into account the missing dimensions of the biomedical model that leaves no room within its framework for the social, psychological, and behavioral dimensions of illness (Engel, 1977, 1980). The biopsychosocial model has been used extensively in the understanding of risk for the development and progression of coronary heart disease (Andersson, Pesonen, & Ohlin, 2007; Buselli & Stuart, 1999; Ramachandruni, Handberg, & Sheps, 2004).

Various factors in spouses' biological, psychological, and social realms can affect their health status. Figure 1 presents the revised biopsychosocial model for health in spouses of MI patients. Spouses' biological factors such as age and gender influence their psychological responses or coping strategies. Younger wives report more emotional and somatic symptoms than older wives do including appetite disturbance, headaches, and depression lasting up to 2 years after the cardiac events (Ebbesen, 1990; Moore, 1994). Comparing female and male spouses of patients who experienced an acute MI, female spouses showed higher scores in the use of certain coping strategies such as planful problem solving (Santavirta, Kettunen, & Solovieva, 2001).

Spouse social factors, including spouse's social support, marital relationship with the patient, and patient's biological, psychological, and social factors, interact with factors in the spouse's biological and psychological realms. The social factors also affect spouse's health status. Perceived spousal social support strongly affects the spouses' psychological responses and health. In wives of post-MI patients, dissatisfaction with social support was strongly related to anxiety and depression (Arefjord et al., 1998). The quality of the marital relationship was a crucial factor affecting the spouse's well-being (Coyne & Smith, 1991; Kriegsman, Penninx, & van Eijk, 1994; Manne, 1990).

The patient's biopsychosocial factors in the spouse's social realm play an important role in influencing the spouse's psychological

distress. Spousal distress is related to the patient's age. Distress in wives was negatively associated with the age of the patient indicating that the spouses of older patients were less distressed (Coyne & Fiske, 1992). The patient's severity of illness may or may not be related to spousal distress. The number of MIs and the clinical severity of MI were not related to emotional reactions in wives (Arefjord et al., 1998).

The current study focuses on depression in spouses of post-MI patients. Based on the biopsychosocial model, the spouse's biopsychosocial factors will ultimately affect their own health status. Psychological distress is a risk for heart disease. In the first National Health and Nutrition Examination Survey for people who were free of coronary heart disease, depression was related to an increased risk of its incidence in both men and women after controlling for possible confounding factors (Ferketich, Schwartzbaum, Frid, & Moeschberger, 2000). Also, increased morbidity and mortality will impact the spouses' abilities to assist patients in their recovery and provide a stressor that will impact patients' health (Figure 1).

Purpose of the study and hypotheses

The purpose of the study was to examine factors that contribute to changes in depression for spouses of post-MI patients based on three realms from the biopsychosocial model over a period of 2 years. Spouse biological factors (age and gender), spouse baseline psychological factors (anxiety, depression, and coping), and spouse baseline social factors including the amount of and satisfaction in spouse support, and patient factors (age, gender, elapsed time since most recent MI, and baseline psychosocial variables) were used to predict changes in spouse depression. Separate models were developed for all spouses and for psychologically distressed spouse subgroup (anxious or depressed spouses). We hypothesized that the spouse's baseline biopsychosocial factors would predict changes in spouse depression over time in all spouses and the subgroup of psychologically distressed spouses.

Methods

Research design and data set

The study is a longitudinal observational nonexperimental design. The data set for the current study is longitudinal data from the Patients' and Families' Psychological Response to Home Automated External Defibrillator Trial (PRHAT). The PRHAT study was conducted as an ancillary study of the Home Automated Defibrillator Trial (HAT). The HAT was designed to determine whether having an automatic external defibrillator (AED) in the home improves survival of patients at intermediate risk of sudden cardiac arrest. The primary purpose of the PRHAT study was to examine the long term psychological responses, including anxiety, depression, family coping skills, and social support, and compare the effects of the CPR and CPR/AED training in groups of community living patients who have experienced an MI and their spouses/companions over 2 years. Details of the PRHAT study regarding recruitment and data collection are described in a previously published paper (Thomas et al., 2011). For the current study, individuals who are spouses or domestic partners were included. Individuals who had evidence of cognitive impairment were excluded. To test the research question with linear mixed models, power was calculated for spouses (N = 442) for the outcome variable depression using Diggle and Diggle's method for continuous outcomes (Diggle & Diggle, 2002). For a medium effect size with an alpha of .05, power was .82 for depression.

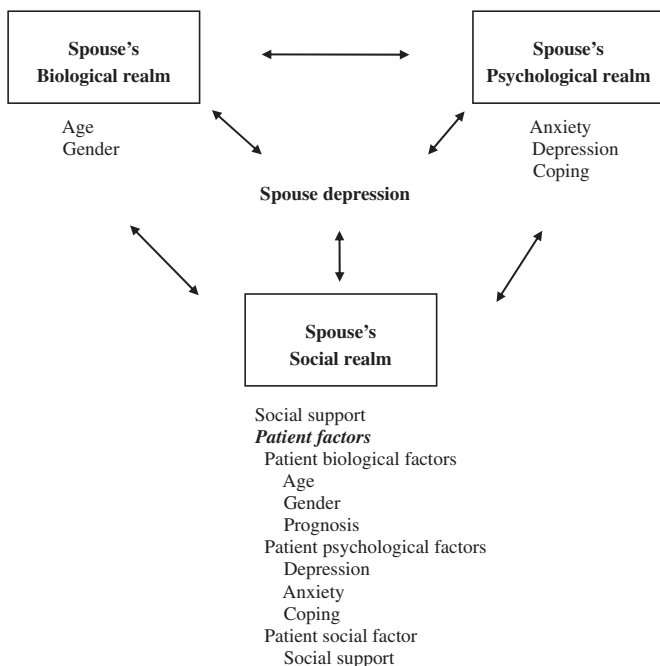


Figure 1. Revised biopsychosocial model in spouses of post myocardial infarction (MI) patients from (Thomas et al., 2008).

Measurements

Cognitive assessment

The Adult Lifestyles and Function Interview Mini Mental State Examination (ALFI-MMSE; Roccaforte, Burke, Bayer, & Wengel, 1992) was used to assess cognitive status at baseline. Scores on the ALFI-MMSE range from 0 to 21. Higher scores indicate that people are more cognitively intact. Respondents with 17 points or above are not considered as cognitively impaired. For the current study, individuals scoring 16 or below were excluded from the analysis.

Psychosocial assessment

Psychosocial assessment included the Beck Depression Inventory II (BDI-II; Beck, Steer, & Brown, 1996), State/Trait Anxiety Inventory (STAI; Spielberger, Lushene, & Gorsuch, 1972), Social Support Questionnaire (SSQ; Sarason, Levine, Basham, & Sarason, 1983) and the Family Crisis Oriented Personal Evaluation Scale (F-COPES; McCubbin & McCubbin, 1987). Assessments were conducted at intake, 1-year and 2-year follow ups.

BDI-II was used to assess the spouse's depression symptoms. As a self-administered screening tool for depressive symptoms, the BDI-II asks respondents about how they have been feeling throughout the past 2 weeks. Based on 21 items with a 4-point Likert-type scale ranging from 0 to 3 in each question, the total scores can be between 0 and 63 with higher scores indicating higher levels of depression. The BDI-II is a reliable instrument (Cronbach's alpha = .91, $r = .72$) across 20 studies (Carney, 2009; Dozois & Covin, 2004). The severity of depression symptoms is categorized as four levels: absent (0–12), mild (13–19), moderate (20–28), and severe (≥ 29) (Beck et al., 1996).

STAI was used to assess anxiety. Particularly for the current study, the state portion of the STAI was used to define the anxiety level. This questionnaire has shown excellent reliability and validity. In a total of 816 research articles using STAI between 1990 and 2000, the average Cronbach's alpha was .89, and the average test-retest reliability of the STAI was .88 (Barnes, 2002). As a self-administered instrument, STAI consists of 20 items. Based on a 4-point Likert scale ranging from *not at all* (scored 0) to *very much so* (scored 4), respondents are asked to rate how anxious they are at the moment or have been. The total scores range from 20 to 80 with higher scores indicating greater anxiety. Individuals who score above 40 are categorized as anxious (Spielberger et al., 1972).

Based on the perspective of perceived social support, SSQ was developed in 1983 (Sarason et al., 1983). Its shortened version, SSQ-6 (Sarason, Sarason, Shearin, & Pierce, 1987), was used to measure the amount of and satisfaction with social support. Given six social support scenarios, respondents are asked to list the people who would provide the particular type of support (SSQ-N) and to rate how satisfied they are with those people (SSQ-S) on a 6-point Likert scale ranging from 1 (*very dissatisfied*) to 6 (*very satisfied*). As a norm-referenced instrument, the higher scores in SSQ-N and SSQ-S indicate more perceived availability of people providing social support and higher satisfaction from the social support. The SSQ-6 is highly similar to the original SSQ in the correlation of two scores. Both the test-retest reliability and the internal reliability are highly satisfactory from a psychometric perspective (Sarason et al., 1987).

F-COPES was developed to identify problem solving and behavioral strategies utilized by families when faced with problems or crises (McCubbin & McCubbin, 1987). It was used to assess the coping strategies of spouses, and designed to integrate family resources and the meaning of perception factors identified in family stress theory into coping strategies. As a self-administered survey, it has 30 items that describe various coping behaviors

that individuals may use in times of stress or crisis. The total score ranges from 30 to 150 with higher scores demonstrating a greater number of coping strategies used leading to more successful adaptation. The F-COPES is a reliable instrument. In a study reviewing family assessment tools from 1978 to 1997 (Neabel, Fothergill-Bourbonnais, & Dunning, 2000), Cronbach's alpha for the subscales ranged from .63 to .83; the 4-week test-retest reliability for the subscales ranged from .61 to .95 and for the total tool it was .81.

Psychological distress subgroup

Psychological distress was defined using the depression and anxiety scores. Individuals who had ≥ 13 on the BDI-II or ≥ 40 on the STAI at baseline were clarified as psychologically distressed spouses. Recent studies provide clinical evidence of worse outcomes in psychologically distressed post-MI patients (Frasure-Smith et al., 2009) and patients with stable coronary artery disease when differentiating distressed patients using similar depression and anxiety criteria (Frasure-Smith & Lespérance, 2008).

Statistical analysis

To generate normal distribution, spouse depression was transformed with a square root. Baseline anxiety scores were inverted. Baseline social support satisfaction was reflected (highest no. –1) and inverse transformed indicating that the higher values of the transformed social support satisfaction, the higher the satisfaction with social support. For linear mixed models (LMMs), all predictors were mean centered.

In LMMs, missing data are required to be missing at random (Twisk, 2003). Both logistic regression and pattern mixture models (Hedeker, 1997) were used to determine the missing at random. For continuous outcomes, even informative missing of information has little impact on predictions with LMMs (Twisk). Based on both logistic regression and pattern mixture models, missing data were missing at random.

Descriptive statistics were conducted to examine baseline psychosocial status, including depression, anxiety, total coping, and social support. Based on the cut-off points for anxiety (STAI ≥ 40) and depression (BDI-II ≥ 13), psychologically distressed spouses (anxious or depressed) were identified as spouses with either symptoms of anxiety or depression at baseline. The demographic characteristics were compared between psychologically distressed spouses and nondistressed spouses. Chi-square tests or *t* tests were used to compare groups on categorical or continuous variables.

Linear mixed models were used for longitudinal analysis. Both fixed and random effects were explored for a best model. Fixed models were examined first. Unconditional means and unconditional growth models were used. Random effects were explored to see if they improved prediction using Akaike's Information Criterion and Bayesian Information Criterion. Treatment group was added to all initial models based on the design of the PRHAT study. Separate sets of analyses were conducted for all spouses and psychologically distressed spouses.

First, spouse biological factors (age and gender) were examined to see if they contributed to changes in spouse depression. Second, spouse baseline psychological factors (anxiety, depression, and coping) were examined. Third, spouse baseline social factors (amount of and satisfaction with social support) and patient baseline factors (age, gender, elapsed time since most recent MI, anxiety, depression, coping, amount of and satisfaction with social support). Within the sets of analyses above, after individual predictors were examined, combined analysis was conducted to identify parsimonious models for the independent contributions of

Table 1 Demographic Characteristics of Spouses (N = 442)

Characteristics	Frequency (%)	M (SD)	Range
Age (yr)		57.65 (10.28)	27–82
Gender			
Female	381 (86.2)		
Male	61 (13.8)		
Relationship to patient			
Spouse	413 (93.4)		
Domestic partner	29 (6.6)		
Completed secondary school			
Yes	365 (82.6)		
No	77 (17.4)		
Employment			
Full-time	154 (34.8)		
Part-time	90 (20.4)		
Unemployed	198 (44.8)		
Patient age (yr)		60.94 (9.52)	33.1–84.3
Patient NYHA class			
I	345 (78.1)		
II	86 (19.5)		
III	10 (2.3)		
IV	1 (.2)		
Time (mo) since most recent MI		44.72 (60.98)	0–340
Anxious (≥ 40 on STAI)	82 (18.6)		
Depressed (≥ 13 on BDI-II)	67 (15.2)		

Note. NYHA = New York Heart Association functional classification for congestive heart failure; MI = myocardial infarction; STAI = State/Trait Anxiety Inventory, BDI-II = Beck Depression Inventory-II.

each predictor to spouse depression after controlling for the effects of the other predictors. The criterion of $p < .20$ was chosen to identify potential confounding variables while minimizing the bias that could occur with automatic stepwise selection and avoiding the underselection of variables that could occur with a smaller criteria (i.e., $p < .05$; Greenland, 1989). Those predictors with $p < .20$ in the individual analyses were included in the combined models. The most parsimonious model with the best fit was identified through a series of combined analyses.

Results

Descriptive statistics

A total of 442 spouses and domestic partners of MI survivors were included in analyses. In the PRHAT study, the data set included individuals (N = 460) who were spouses, domestic partners, or others who lived with the MI survivor and were willing to use CPR and AEDs. The current study focused on spouses/domestic partners: 17 participants in PRHAT were excluded including a brother or sister of the patient (n = 2), son or daughter (n = 10), friend (n = 4), or other relative of the MI survivor (n = 1). From the

Table 2 Characteristics of Demographic and Baseline Psychosocial Factors between Psychologically Distressed (anxious or depressed) Spouses and Nondistressed Spouses

Characteristics	Distressed (n = 113)		Nondistressed (n = 332)		p
	n (%)	M (SD) ^a	n (%)	M (SD) ^a	
Age (yr)		56.29 (10.24)		57.93 (10.20)	.142
Gender					
Female	96 (85)		280 (87)		.593 ^b
Male	17 (15)		42 (13)		
Coping		92.97 (15.93)		100.42 (15.24)	<.001
Social support					
Amount		17.39 (11.35)		22.66 (13.80)	<.001
Satisfaction		31.61 (5.19)		33.88 (3.73)	<.001

^a Numbers indicate the mean of each variable, except for gender which indicates frequency.

^b Tests are t tests except for gender which indicates χ^2 .

exclusion criteria, one spouse scored 15 on the ALFI-MMSE was excluded. Table 1 provides the demographic characteristics of the spouses (n = 442) used in the analysis.

The mean spouse age was 57.65 years. Approximately 86.0% of the spouses were female. Spouses were relatively highly educated, 82.6% completed secondary school. More than 50% of spouses were employed either full-time or part-time. Most patients (97.6%) had New York Heart Association (NYHA) class I or II heart failure.

Psychologically distressed spouses

A total of 113 spouses (26%) were psychologically distressed (STAI ≥ 40 or BDI-II ≥ 13) at baseline. Demographics and baseline psychosocial characteristics were compared for spouses who were and those who were not psychologically distressed (Table 2). There was no significant difference in gender distribution or mean age between spouses who were psychologically distressed and those who were not. Psychologically distressed spouses had significantly lower total coping scores [$t(361) = 3.918, p < .001$], lower amount of social support [$t(233.48) = 3.99, p < .001$], and lower satisfaction with social support [$t(153.1) = 4.265, p < .001$] than those who were not distressed.

Parsimonious models of changes in spouse depression

All spouses

Spouse depression did not change over time ($p = .650$; see Table 3). Spouse biological factors (age and gender) did not predict changes in depression, but spouse and patient baseline depression scores predicted changes in depression (Figures 2 and 3). Depression increased over time for spouses who at baseline had lower depression scores ($p < .001$). Spouse depression also

Table 3 Parsimonious Linear Mixed Model for Predicting Changes in Depression (SQRT) among All Spouses (N = 442)

Parameter	Estimate	SE	df	t	p	95% Confidence interval	
						Lower bound	Upper bound
Intercept	2.315	0.073	815.8	31.775	<.001	2.172	2.458
Time elapsed ^a	0.001	0.064	349.6	0.022	.982	-0.124	0.126
Bs_anxiety	-5.193	3.958	354.1	-1.312	.190	-12.977	2.591
Bs_depression	1.153	0.058	781.5	19.904	<.001	1.039	1.267
Bs_coping	-0.002	0.002	359.6	-0.887	.376	-0.006	0.002
Bp_anxiety	2.457	4.276	346.7	0.575	.566	-5.952	10.867
Bp_depression	-0.064	0.059	791.7	-1.085	.278	-0.178	0.051
Bp_satisfaction	0.032	0.084	344.0	0.383	.702	-0.133	0.197
Time	-0.015	0.033	600.5	-0.455	.650	-0.079	0.049
Time \times Bs_depression ^b	-0.230	0.027	593.8	-8.449	<.001	-0.283	-0.176
Time \times Bp_depression ^b	0.088	0.027	607.4	3.216	.001	0.034	0.141

Note. SE = standard error; Bs = baseline spouse; Bp = baseline patient.

^a Dichotomized elapsed time in months since most recent myocardial infarction.

^b Bs_depression and Bp_depression were transformed as SQRT.

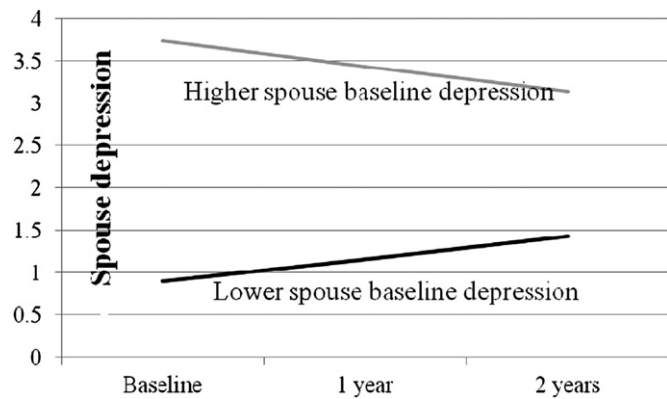


Figure 2. Change in spouse depression according to baseline spouse depression (1 SD above vs. 1 SD below the M) among all spouses ($N = 442$).

increased when the patient's baseline depression was higher ($p = .001$). There was significant random intercept ($p < .001$) indicating initial depression scores significantly differed among spouses.

Psychologically distressed spouses

Spouse depression did not change over time ($p = .204$; see Table 4). Spouse biological factors (age and gender) did not predict changes in depression, but spouse and patient baseline psychosocial factors predicted changes in spouse depression (Figures 4–6). Depression increased over time for psychologically distressed spouses who at baseline had lower depression scores ($p < .001$). Spouse depression increased over time for those who had more social support at baseline ($p = .023$). Spouse depression also increased over time when the patient's baseline depression scores were higher ($p < .001$). The significant random intercept ($p = .004$) indicated that initial depression scores significantly differed among psychologically distressed spouses.

Discussion

A total of 26% of spouses were psychologically distressed ($STAI \geq 40$ or $BDI-II \geq 13$) at baseline. Psychologically distressed spouses did not cope well and had lower amount of and satisfaction with social support than those who were not distressed. Psychologically distressed spouses have both higher psychological risk factors for chronic disease and fewer social resources that could modify this risk. Spouse age and gender were not related to spouse anxiety or depression scores.

Table 4 Parsimonious Linear Mixed Model for Predicting Changes in Depression (SQRT) among Psychologically Distressed Spouses ($N = 113$)

Parameter	Estimate	SE	df	t	p	95% Confidence interval	
						Lower bound	Upper bound
Intercept	2.223	0.231	201.9	9.640	<.001	1.768	2.678
Bs_depression	1.284	0.141	202.1	9.129	<.001	1.007	1.561
Bs_amount ^a	-0.143	0.107	202.0	-1.339	.182	-0.354	0.068
Bp_depression	-0.213	0.122	201.9	-1.753	.081	-0.453	0.027
Bp_coping	-0.006	0.004	103.0	-1.473	.144	-0.014	0.002
Time	0.143	0.112	157.0	1.274	.204	-0.079	0.365
Time \times Bs_depression ^b	-0.366	0.069	160.2	-5.303	<.001	-0.503	-0.230
Time \times Bs_amount ^b	0.120	0.052	161.4	2.303	.023	0.017	0.224
Time \times Bp_depression ^b	0.216	0.058	155.5	3.698	<.001	0.101	0.331

Note. SE = standard error; Bs = baseline spouse; Bp = baseline patient.

^a Refers to amount of social support.

^b Bs_depression, Bp_depression, and Bs_amount were transformed as SQRT.

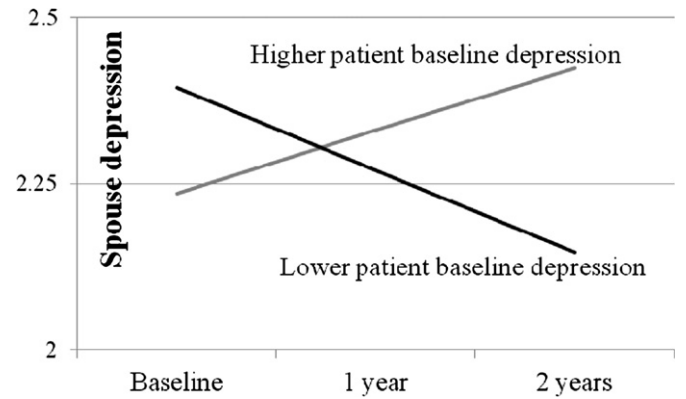


Figure 3. Change in spouse depression according to baseline patient depression (1 SD above vs. 1 SD below the M) among all spouses ($N = 442$). The black line indicates lower patient baseline depression.

In the parsimonious models for all spouses and the subgroup of psychologically distressed spouses, time was not a significant predictor of changes in depression, suggesting that depression could not be explained by time on its own. Depression increased or decreased over time according to the baseline depression score or amount of social support score for spouses of post-MI patients. This finding is consistent with a 10 year longitudinal follow up of 37 wives of post-MI patients. Approximately 50% of wives had a low level of depression and the proportion of severely depressed wives was stable during the whole period (Arefjord et al., 1998). In contrast, among partners of 196 patients with implantable cardioverter defibrillators, depression decreased over 6 months after implantation (Pedersen et al., 2009). Differences among the two studies may be due to different sample sizes, study periods, study settings, or instruments used to assess depression. Differences could also reflect adaptation after an acute event of MI. In both longitudinal studies and the current study, a community living sample was recruited some time after the acute event. In contrast, Pedersen et al. included hospitalized patients who would not have adjusted to their illness.

Spouse gender was not associated with overall or changes in depression. However, spouse gender was related to psychological distress in other studies. Women were more psychologically distressed among spouses of patients who underwent coronary artery bypass graft (Mahler & Kulik, 2002), partners of heart failure patients (Luttik, Lesman-Leegte, & Jaarsma, 2009), and female partners of chronically ill patients (Hagedoorn, Buunk, Kuijter, Wobbes, & Sanderman, 2000; Lutzy & Knight, 1994; Pinquart & Sorensen, 2006). Since our spouses were married to more clinically stable patients (more than 97% of patients had NYHA I or II),

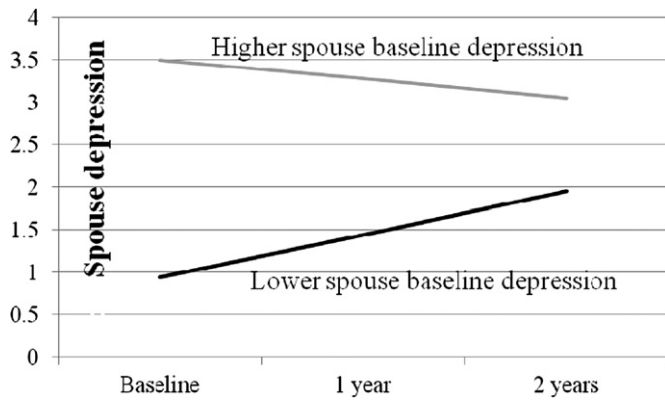


Figure 4. Change in spouse depression according to baseline spouse depression (1 SD above vs. 1 SD below the M) among psychologically distressed spouses (N = 113).

they might have had less psychological distress than those with patients who were in more severe health status.

Average baseline depression score in the entire sample of spouses was 6.93, which was below the cut-off point of 13 for depression. In addition, the mean BDI-II score in this population (M = 6.93, SD = 6.18) was lower than the mean score (M = 8.61, SD = 7.69) from another study of depression using the BDI-II in the general population (Segal, Coolidge, Cahill, & O’Riley, 2008). In the current study, 15.2% of spouses were depressed at baseline, which is almost twice the prevalence of depression (8.7%) in the general population (Strine et al., 2008). Therefore, on average, all spouses of post-MI patients had lower depression scores than the general population did, but the prevalence of depression was higher than that of the general population.

Higher patient baseline depression predicted higher spouse depression. Patient baseline depression scores were also related to changes in spouse depression over time. Among all spouses, spouse depression increased over time among spouses of patients who had higher baseline depression. In a national sample of over 5,000 older married couples (Siegel, Bradley, Gallo, & Kasl, 2004), as one spouse experienced more depressive symptoms at baseline or an increase in depressive symptoms between longitudinal observations, the other spouse was more likely to report depressive symptoms at 2-year follow up. Depression seems to be contagious among individuals and between spouses in particular (Joiner & Katz, 1999). The current study provides additional support for the hypothesis that spouses living with depressed patients might be at greater risk for depression.

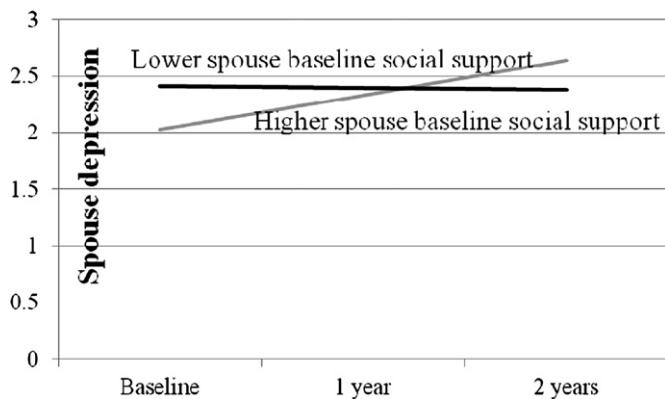


Figure 5. Change in spouse depression according to spouse baseline social support (1 SD above vs. 1 SD below the M) among psychologically distressed spouses (N = 113). The black line indicates lower spouse baseline social support.

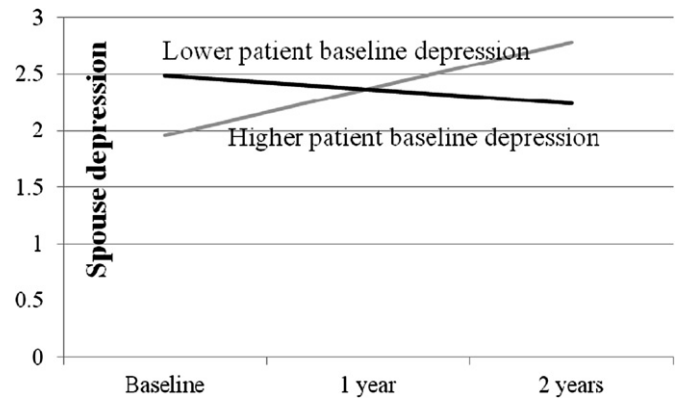


Figure 6. Change in spouse depression according to patient baseline depression (1 SD above vs. 1 SD below the M) among psychologically distressed spouses (N = 113). The black line indicates lower patient baseline depression.

For psychologically distressed spouses, depression increased over time for those who had higher social support at baseline but the variance was small between the two groups (higher social support vs. lower social support at baseline). Depression remained stable over time for spouses with lower social support at baseline while depression increased over 2 years for those who had higher social support at the study entry. Identifying the reason behind the relationship between social support and changes in depression warrants further study.

Strengths and limitations

Little is known about the longitudinal changes in depression for spouses of post-MI patients. Many studies are qualitative or cross-sectional. As a longitudinal study, the current study shows the trajectories of depression in spouses of post-MI patients. Also, most studies included spouses only. By including both spouses and patients, this study provides evidence that psychosocial distress is interrelated within couples. Many studies have small sample sizes. This study included 442 couples from multiple sites in four countries. The large sample size enabled subgroup analyses for psychologically distressed spouses. The subgroup analysis contributed to developing unique models to predict spouse psychosocial distress.

The current study has several limitations. Both study groups received interventions in terms of CPR or/and AED use. Thus, the changes in depression may be different from post-MI patient couples who did not receive the training. In addition, patient couples voluntarily participated in the study. The generalizability of study is limited due to the selective characteristic of individuals who joined the clinical trial. In addition, most of patients (97.6%) had mild heart failure (NYHA class I or II). The study findings may not be applicable to spouses of patients with more severe cardiovascular disease. The couples had a longer elapsed time since the most recent MI (median = 18 months) than in most studies. During the period, they may have improved their emotional status. Therefore, models developed in this study are not appropriate for spouses in the acute post-MI phase.

Implications for nursing

It is the nurse’s role to assess the physical and psychological needs of the patient and his/her spouse. Based on the parsimonious models developed in this study, baseline spouse and patient psychosocial variables predicted changes in spouse depression.

Increased spouse depression was associated with lower baseline spouse depression and higher baseline patient depression scores. Patient depression was related to increased spouse depression over time as well as poor health outcomes for patient themselves. Depression is a risk factor for mortality as well as morbidity in post-MI patients (Bush et al., 2001; Denollet, Sys, & Brutsaert, 1995; Frasure-Smith, Lespérance, & Talajic, 1993; Irvine et al., 1999; Kaufmann et al., 1999). This indicates the most vulnerable subgroup would be depressed patient couples. Couple interventions may be a cost-effective way to improve both the spouses' and patients' psychosocial status (Moser & Dracup, 2004).

Future research

A tailored intervention could be developed based on the initial assessment of psychosocial distress to test its effectiveness to help spouses cope with cardiovascular disease and to prevent or decrease psychological distress as time passes. Spouses who participated in a randomized controlled trial of an illness perception intervention for MI patients showed lower anxiety about the patient and lower distress about the patient's symptoms (Broadbent, Ellis, Thomas, Gamble, & Petrie, 2009). Although this study did not examine depression, the finding provides some direction for future research in spouses of post-MI patients.

Conclusion

Spouse baseline depression and social support influenced changes in spouse depression over time. Predictors of the changes differed among all spouses or subgroups of psychologically distressed spouses. Spouse baseline depression scores were the significant predictor for spouse depression for all spouses and the subgroup of those who were psychologically distressed. In the social realm, patient baseline depression predicted changes in spouse depression for all spouses and psychologically distressed spouses. Within a family unit, psychological responses between the spouse and patient are closely related to each other. This study is an important step towards understanding longitudinal changes in the psychological status of spouses of patients for evaluating the need for interventions. Spouse depression deteriorated even though they had low depression scores or high social support at baseline. It is crucial to consistently assess psychosocial factors of patient couples when they make a visit to clinic so as to decrease psychological distress of spouses.

Conflict of interest

The authors declare no conflict of interest.

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