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Emotional Health; Social Health

Social Support May Protect Against Development of Posttraumatic Stress Disorder: Findings From the Heart and Soul Study

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Abstract

Purpose. No prospective studies have examined the association of poor social support and development of posttraumatic stress disorder (PTSD) in patients with chronic illness. This study addresses this knowledge gap.

Design. This prospective study examines the relationship of social support to the subsequent development of PTSD during a 5-year period.

Setting. San Francisco Veterans Affairs Medical Center.

Subjects. A total of 579 participants with cardiovascular disease did not have PTSD at baseline and returned for the 5-year follow-up examination.

Measures. PTSD measured by Computerized Diagnostic Interview Schedule for DSM-IV. Social support measured by Interpersonal Support Evaluation List (ISEL).

Analysis. Unconditional ordered logistic regression analyses were performed to yield the odds ratio of developing PTSD for a one-standard-deviation change in ISEL score.

Results. Of 579 participants who did not have PTSD at baseline, approximately 6.4% ($n = 37$) developed PTSD. Higher baseline perceived social support was strongly protective against development of PTSD ($OR = .60, p = .001$). Results remained significant after adjustment for age, sex, race, income, and depression ($OR = .69, p = .04$). Of social support types examined, the “tangible” and “belonging” domains were most strongly associated with future PTSD status.

Conclusion. Social support may impact development of PTSD. Interventions that optimize social support may be part of a PTSD prevention program designed to help individuals at risk of developing PTSD. (*Am J Health Promot* 2014;28[5]:294–297.)

Key Words: Social Support, Posttraumatic Stress Disorder, Prospective Study, PTSD Prevention, Chronic Disease, Prevention Research. Manuscript format research; Research purpose: modeling/relationship testing (association testing); Study design: quantitative; Outcome measure: behavioral health; Setting: clinical/health care; Health focus: emotional health/social health; Strategy: skill building/behavior change/culture change; Target population: adults; Target population circumstances: education/income level, race/ethnicity

INTRODUCTION

Numerous studies have demonstrated strong links between posttraumatic stress disorder (PTSD) and physical illness,^{1,2} and patients with PTSD are at greater risk for developing several chronic medical conditions, including cardiovascular disease (CVD).^{3,4} It is also recognized that patients with chronic medical conditions, including CVD, are vulnerable to the development of PTSD,^{5–7} and PTSD can lead to worse disease outcomes.^{8,9} Therefore, identifying factors that may protect patients with chronic illness from developing PTSD is important.

Previous retrospective studies have found that poor social support following traumatic events increases the risk of development of PTSD and maintenance of chronic PTSD symptoms. A meta-analysis that examined posttrauma social support as a predictor for PTSD reported a small to medium protective association ($r = -.28$).¹⁰ A previous meta-analysis on the subject reported evidence of a moderate pro-

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fective relationship between social support and PTSD symptoms ($r = -0.40$).¹¹ However, no studies have focused specifically on the role of social support for patients with chronic illness. In addition, Ozer and colleagues¹⁰ noted that the retrospective nature of the measurement of social support in most of the PTSD literature was a serious limitation that should be addressed with prospective longitudinal studies. They also suggested a further study to explore particular types of social support (emotional support vs. other kinds of social support) as predictors for PTSD.

This analysis of a prospective longitudinal study examined the association between social support and development of PTSD during a 5-year period in a cohort of patients with CVD. In addition to evaluating the association with overall social support, three discreet subdomains of social support (appraisal, belonging, tangible) were separately examined.

METHOD

Participants

The Heart and Soul Study is a prospective cohort study of psychological factors and health outcomes in adults with stable CVD. Detailed methods of the study have been previously described.^{4,12} Between September 2000 and December 2002, a total of 1024 ambulatory men and women aged 37 to 94 years with established CVD were enrolled, including 438 from two Department of Veterans Affairs medical centers (San Francisco Veterans Affairs Medical Center and the Veterans Affairs Palo Alto Health Care System), 346 from a university medical center (University of California, San Francisco), and 238 from nine public health clinics (Community Health Network of San Francisco). To be eligible, participants needed to have a history of myocardial infarction, angiographic evidence of stenosis of 50% or greater in one or more coronary vessels, evidence of exercise-induced ischemia (by treadmill electrocardiogram or stress nuclear perfusion), or a history of coronary revascularization. Individuals unable to walk one block or those planning to leave the area within 3 years were excluded. Informed consent

was obtained from all participants and appropriate institutional review boards approved the research protocol.

Measures

PTSD was measured by using the Computerized Diagnostic Interview Schedule for DSM-IV (CDIS), a validated computer-based interview administered by trained research personnel.¹³ The CDIS has a sensitivity of 88% and specificity of 73%, compared with gold standard clinician interviews, and has been widely used in large epidemiologic studies.

Social support was measured by using a 12-item version of the Interpersonal Support Evaluation List (ISEL), with three domains of support, each evaluated with four items. The “tangible” subscale measures perceived availability of material aid (e.g., having someone to help one move to a new house if needed), the “appraisal” subscale measures perceived availability of someone to talk to about one’s problems (e.g., having someone to share one’s most private worries and fears with), and the “belonging” subscale measures perceived availability of people one can do things with (e.g., having someone to go to the movies with). The 40-item version of the ISEL scale has alpha and test-retest reliability of approximately .90. The subscales have internal consistency and test-retest reliabilities that range from .70 to .80, with moderate intercorrelation.¹⁴ The 12-item version of the ISEL has been widely used in health-related research.^{15–17} Depression was measured with the validated nine-item Patient Health Questionnaire, and sociodemographic variables and health behaviors were measured with standardized questionnaires, as previously described.¹⁷

Procedures

Of the 1024 eligible participants, 667 (80% of surviving participants) returned for the 5-year follow-up examination. Of these, 579 participants did not have PTSD at baseline and are included in these analyses. Baseline measurements of social support and other variables were compared for individuals who developed PTSD during the 5-year follow-up period vs. those who did not develop PTSD during this period.

Data Analysis

Data for the two groups (did not develop PTSD vs. developed PTSD) were summarized by using means and standard deviations for continuous measures (ISEL scores) and counts and proportions for categorical variables (PTSD outcome). p values were calculated using, as appropriate, χ^2 tests or t -tests. ISEL scores were normally distributed on a continuous scale with a wide range and so were entered in models as standard deviation units. Unconditional ordered logistic regression analyses were performed to yield the odds ratio of developing PTSD for a one-standard-deviation change in ISEL score. Stata version 11.1 (Stata-Corp, College Station, Texas) was used for data analysis.

Results for ISEL score as a predictor of PTSD were adjusted for age and sex. Interactions of ISEL score and potential moderators, such as income, race, and depression, were also evaluated. The three domains of social support (appraisal, tangible, and belonging) were highly collinear and were examined in separate models.

RESULTS

During 5 years of follow-up, 37 individuals developed PTSD (6.4%) and 542 individuals did not develop PTSD. Development of PTSD was significantly associated with younger age, white race, lower income, depression, and poorer social support (Table 1).

Participants with greater social support at baseline were significantly less likely to develop PTSD (OR = .60, $p = .001$, 95% confidence interval = .44–.82) (Table 2). Results remained significant after adjustment for age, sex, race, income, and depression. Of the three domains of social support examined, tangible and belonging domains were most strongly associated with PTSD (Table 2). There were no significant interactions between social support and the model covariates.

DISCUSSION

In this cohort of patients with CVD, patients with greater perceived levels of baseline social support were less likely to develop PTSD during 5 years of

follow-up. This prospective study adds to prior work demonstrating that social support may protect against the development of PTSD. Social support may prevent PTSD by conveying a message that one is taken care of and protected, which promotes cognitions that the world is safe, helps regulate emotions such as fear, anxiety, and mistrust, and enhances self-efficacy and control.¹⁸ Social support also decreases avoidant coping behaviors, such as passive isolation,¹⁸ which are associated with the development of PTSD.^{19,20}

Our results demonstrate that tangible and belonging support are more strongly associated with the development of PTSD than appraisal support. Persons who have high tangible support and high belonging support believe that specific actions will occur at their request and that they can be given material aid, which may increase their sense of self-efficacy and control after a traumatic event. Moreover, perception of threat severity and controllability during and immediately following traumatic events has been associated with PTSD.²¹ Belongingness to a support network and access to tangible resources may reduce one's perception of threat and influence the likelihood of an individual engaging in active coping strategies (e.g., reaching out for help).²² Together, these may contribute to a lower likelihood of developing PTSD after a potentially traumatic event.

In contrast, participants who believe they have high appraisal support may feel they have someone to confide in and may demonstrate more adaptive coping strategies, but this may not be sufficient to protect against PTSD. These findings are consistent with previous research studying the negative impact of psychosocial resource loss on the development of PTSD in the aftermath of trauma.²³ Greater access to psychosocial resources that can be called upon following trauma may serve to buffer the negative impact of exposure and contribute to recovery. This may be particularly important among individuals also managing a chronic illness, which can tax one's coping reserve or increase the need to rely on others for additional tangible support, such as assistance with physical tasks.

Future studies should examine the relationship of the degree to which

Table 1
Characteristics of Participants Who Developed PTSD vs. Participants Who Did Not Develop PTSD*

| Characteristic | PTSD (n = 37) | No PTSD (n = 542) | p |
|--|---------------|-------------------|--------|
| Age, y | 59 ± 12 | 67 ± 10 | <0.001 |
| Male, No. (%) | 29 (78) | 458 (85) | 0.32 |
| White, No. (%) | 28 (76) | 317 (58) | 0.04 |
| High school education, No. (%) | 8 (22) | 141 (26) | 0.92 |
| Annual income under \$20,000, No. (%) | 23 (62) | 232 (43) | 0.02 |
| Currently employed, No. (%) | 6 (16) | 147 (27) | 0.15 |
| Live alone, No. (%) | 11 (30) | 178 (33) | 0.69 |
| Married, No. (%) | 13 (35) | 254 (47) | 0.17 |
| Alcohol use, No. (%) | 7 (19) | 128 (24) | 0.51 |
| Current smoking, No. (%) | 6 (16) | 76 (14) | 0.72 |
| Self-reported physical activity(X/wk), No. (%) | 23 (62) | 378 (70) | 0.33 |
| Depression, No. (%) | 14 (38) | 76 (14) | <0.001 |
| Social support | | | |
| ISEL, total score | 34.1 ± 9.1 | 38.1 ± 6.9 | <0.001 |
| ISEL, appraisal domain score | 11.9 ± 3.4 | 12.8 ± 2.8 | 0.06 |
| ISEL, belonging domain score | 10.8 ± 3.6 | 12.4 ± 2.7 | <0.001 |
| ISEL, tangible domain score | 11.5 ± 3.1 | 12.9 ± 2.6 | 0.001 |

* Results presented as mean (±SD) or No. (%) as appropriate. PTSD indicates posttraumatic stress disorder; and ISEL, Interpersonal Support Evaluation List.

one is embedded in a social network (belongingness), the ways in which these networks are used at the time of or in the immediate aftermath of an event, and access to psychosocial resources that can provide tangible support (e.g., financial assistance) to differential trajectories of recovery from trauma exposure.

Several limitations of the study must be considered. Most of the participants were older men, and all participants had existing CVD. Therefore, results

may not generalize to women or to other patient populations. The limited number of participants who developed PTSD over the course of the study may have reduced our statistical power to evaluate other covariates involved in the association of social support and PTSD. We used a validated social support measure, but the questions reflect participant's perceptions of social support, and future research could evaluate more objective measures. We also lacked detailed data on the occur-

Table 2
Unadjusted and Adjusted Associations of Social Support With the Development of PTSD†

| Social Support Variables | Model 1 | | Model 2 | | Model 3 | |
|-----------------------------|---------|-------------|---------|-------------|---------|------------|
| | OR | 95% CI | OR | 95% CI | OR | 95% CI |
| Total ISEL score | 0.60 | 0.44–0.82** | 0.60 | 0.44–0.83** | 0.69 | 0.49–0.99* |
| ISEL appraisal domain score | 0.74 | 0.54–1.0 | 0.74 | 0.54–1.0 | 0.88 | 0.62–1.2 |
| ISEL belonging domain score | 0.59 | 0.43–0.81** | 0.61 | 0.44–0.84** | 0.69 | 0.49–0.98* |
| ISEL tangible domain score | 0.60 | 0.44–0.82** | 0.59 | 0.43–0.82** | 0.67 | 0.47–0.96* |

† All values are per standard deviation. Model 1: Unadjusted odds ratios for social support. Model 2: Odds ratios for social support were adjusted for age, sex, and race. Model 3: Includes additional adjustments for annual income and depression. PTSD indicates posttraumatic stress disorder; OR, odds ratio; CI, confidence interval; and ISEL, Interpersonal Support Evaluation List.

* $p < 0.05$.

** $p < 0.01$.

rence of traumatic events and therefore could not specifically examine whether social support was also associated with a reduced occurrence of trauma. Finally, as this is an observational study and not a controlled trial, we cannot establish a causal association of social support and PTSD, and it is possible that unmeasured factors are responsible for the observed association.

Despite these limitations, results of this prospective longitudinal study add to evidence for an association between greater social support and decreased development of PTSD. Results also provide rationale for controlled trials to examine the effect of interventions that optimize social support on the development of PTSD.

SO WHAT? Implications for Health Promotion Practitioners and Researchers

What is already known on this topic?

Previous retrospective studies have reported that poor social support following traumatic events increases the risk of development of posttraumatic stress disorder (PTSD). Patients with chronic medical conditions are vulnerable to the development of PTSD, and PTSD leads to worse disease outcomes.

What does this article add?

No studies have addressed the limitation of the retrospective study design through analysis of a prospective longitudinal study that focuses on the role of social support in patients with chronic illness. This study fills that knowledge gap.

What are the implications for health promotion practice or research?

Our findings have implications for clinical providers, may help guide program curriculum for social support interventions, and add to the growing body of evidence that social support may protect against development of PTSD. Interventions that optimize social support may be part of a PTSD prevention program designed to help individuals at risk.

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