The Role of Social Support in Health Status and Depressive Symptoms After Acute Myocardial Infarction
Evidence for a Stronger Relationship Among Women

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Background—Prior studies have associated low social support (SS) with increased rehospitalization and mortality after acute myocardial infarction. However, relatively little is known about whether similar patterns exist for other outcomes, such as health status and depressive symptoms, and whether these patterns vary by sex.

Methods and Results—Using data from 2411 English- or Spanish-speaking patients with acute myocardial infarction enrolled in a 19-center prospective study, we examined the association of SS (low, moderate, high) with health status (angina, disease-specific quality of life, general physical and mental functioning) and depressive symptoms over the first year of recovery. Overall and sex-stratified associations were evaluated using mixed-effects Poisson and linear regression, adjusting for site, baseline health status, baseline depressive symptoms, and demographic and clinical factors. Patients with the lowest SS (relative to those with the highest) had increased risk of angina (relative risk, 1.27; 95% confidence interval [CI], 1.10, 1.48); lower disease-specific quality of life (mean difference [β] = −3.33; 95% CI, −5.25, −1.41), lower mental functioning (β = −1.72; 95% CI, −2.65, −0.79), and more depressive symptoms (β = 0.94; 95% CI, 0.51, 1.38). A nonsignificant trend toward lower physical functioning (β = −0.87; 95% CI, −1.95, 0.20) was observed. In sex-stratified analyses, the relationship between SS and outcomes was stronger for women than for men, with a significant SS-by-sex interaction for disease-specific quality of life, physical functioning, and depressive symptoms (all P < 0.02).

Conclusions—Lower SS is associated with worse health status and more depressive symptoms over the first year of acute myocardial infarction recovery, particularly for women. (Circ Cardiovasc Qual Outcomes. 2010;3:143-150.)

Key Words: myocardial infarction ■ sex ■ social support ■ health status ■ depression

Low social support (SS) is associated with poorer outcomes among cardiac patients.1,2 However, much of the literature on this association has been dedicated to the traditional clinical outcomes of rehospitalization and mortality. Less attention has been paid to patient-centered outcomes and the constellation of challenges patients face during recovery has become a priority. Although traditional clinical outcomes of rehospitalization and mortality, such as angina, disease-specific quality of life, general physical and mental functioning and depressive symptoms over the first year of recovery. Overall and sex-stratified associations were evaluated using mixed-effects Poisson and linear regression, adjusting for site, baseline health status, baseline depressive symptoms, and demographic and clinical factors. Patients with the lowest SS (relative to those with the highest) had increased risk of angina (relative risk, 1.27; 95% confidence interval [CI], 1.10, 1.48); lower disease-specific quality of life (mean difference [β] = −3.33; 95% CI, −5.25, −1.41), lower mental functioning (β = −1.72; 95% CI, −2.65, −0.79), and more depressive symptoms (β = 0.94; 95% CI, 0.51, 1.38). A nonsignificant trend toward lower physical functioning (β = −0.87; 95% CI, −1.95, 0.20) was observed. In sex-stratified analyses, the relationship between SS and outcomes was stronger for women than for men, with a significant SS-by-sex interaction for disease-specific quality of life, physical functioning, and depressive symptoms (all P < 0.02).

Conclusions—Lower SS is associated with worse health status and more depressive symptoms over the first year of acute myocardial infarction recovery, particularly for women. (Circ Cardiovasc Qual Outcomes. 2010;3:143-150.)

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Low social support (SS) is associated with poorer outcomes among cardiac patients.1,2 However, much of the literature on this association has been dedicated to the traditional clinical outcomes of rehospitalization and mortality. Less attention has been paid to patient-centered outcomes and the constellation of challenges patients face during recovery has become a priority. Although studies assessing the association of SS with patient-centered outcomes have generally linked lower SS to poorer outcomes,3–11 conclusions remain limited by methodological issues. Many of these studies have been cross-sectional or prospective with only baseline and 1 follow-up assessment,5,6,11 providing limited evidence about whether the association between SS and outcomes varies during the course of recovery. Most have not focused on a post-AMI population,3,6,7,9–11 and many have examined single-sex populations3,4,8,10 or have been unable to control for important clinical variables.3,5,10 Moreover, there are conflicting results about whether SS provides comparable benefits for men and women,9,12–26 an important area for investigation because sex differences in factors such as coping behaviors and likelihood of depression suggest potential moderation by sex.

Our study evaluated whether baseline SS independently predicted patient-centered outcomes, using a large prospective cohort of patients hospitalized for AMI. Outcomes were assessed at multiple time points to examine whether associations varied over time. We hypothesized that lower SS...
would be associated with poorer angina control, disease-specific quality of life, general physical and mental functioning, and depressive symptom outcomes within the first year of AMI recovery. Moreover, we hypothesized that these associations would differ by sex.

WHAT IS KNOWN

- Low social support is associated with poorer outcomes among cardiac patients; however, much of the literature on this association has been dedicated to the traditional clinical outcomes of rehospitalization and mortality.
- Relatively little is known about whether the relationship between social support and outcomes varies over the course of recovery from acute myocardial infarction (AMI), and conflicting evidence is present about whether social support provides comparable benefits for men and women.

WHAT THE STUDY ADDS

- AMI patients with low social support at hospital presentation had worse patient-centered outcomes throughout the first year after their AMI than did patients with high social support, including greater risk of angina, poorer disease-specific quality of life, poorer general mental functioning, and more depressive symptoms.
- The relationship between social support at hospital presentation and outcomes did not vary over the first year of AMI recovery, except for angina.
- The relationship between social support at hospital presentation and patient-centered AMI outcomes was stronger for women than for men, with a significant social support–by–sex interaction observed for the outcomes of disease-specific quality of life, general physical functioning, and depressive symptoms.

Methods

Participants
Participants were recruited into the Prospective Registry Evaluating Myocardial Infarction: Events and Recovery (PREMIER), a 19-center study of 2498 patients hospitalized for AMI between January 2003 and June 2004. The methods of PREMIER have been described previously.27 Briefly, patients were age 18 years or older with increased troponin or creatine kinase-MB levels and additional evidence of AMI (>20 minutes of ischemic symptoms or ECG ST changes). Patients must have presented directly to the enrolling site or transferred within 24 hours of presentation. Patients who were incarcerated, developed elevated cardiac enzymes because of elective coronary revascularization, or did not speak English or Spanish were not included. The present study included 2411 patients after excluding those who died during their index hospitalization (n=17) or had incomplete baseline SS data (n=70).

Data Collection
Baseline patient data were collected by medical chart abstraction and in-person patient interviews administered within 24 to 72 hours of hospital presentation. Follow-up interviews were conducted by telephone at 1, 6, and 12 months after discharge by a national follow-up center. Institutional review board approval was obtained at each participating institution, and patients provided informed consent.

Measures
Perceived SS was measured by the 5 emotional SS items from the Enhancing Recovery in Coronary Heart Disease (ENRICHD) Social Support Inventory, a reliable and valid scale for cardiac populations.28 Items were measured on 5-point scales and summed to create a single score ranging from 5 to 25, with higher scores indicating greater perceived SS. This 5-item scale has been used previously21,28,29 and demonstrated strong internal consistency in our study (Cronbach α=0.91). Due to a non-normal distribution, SS scores were trichotomized: high SS (score, 25; referent group), moderate SS (score, 20 to 24), and low SS (score, 5 to 19), an approach consistent with previous studies.31

Patient health status was measured by the Seattle Angina Questionnaire (SAQ)30 and the Short Form-12 (SF-12).31 The SAQ is a 19-item, disease-specific measure that has demonstrated validity, reliability, and clinical responsiveness in cardiac populations30,32 and is predictive of mortality and rehospitalization.33,34 The SAQ Angina Frequency (AF) and Quality of Life (QoL) subscales were used for this study. Scores for both measures range from 0 to 100, with higher scores indicating better health status (less angina burden or better quality of life) and mean differences greater than 5 points considered clinically significant.30 Given the large percentage of patients without angina, and in accordance with previous studies,32 SAQ AF scores were dichotomized into any angina (score <100) or no angina (score=100).

The SF-12 is a reliable and valid generic health status measure that quantifies patients’ general physical and mental functional status.31 The SF-12 Physical Component Summary (PCS) and Mental Component Summary (MCS) subscales were used for this study. A score of 50 represents the US population average, with a 10-point change representing 1 standard deviation.

Patient depressive symptoms were measured by the 9-item Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PHQ-9), a valid and reliable measure for recognizing both major depression and subthreshold depressive disorder.35 Items were measured on 4-point scales and summed to create a single score ranging from 0 to 27, with higher scores indicating greater depressive symptomatology and a score of 10 or higher indicative of at least moderately severe depressive symptoms.

Statistical Analysis
SS categories were compared on baseline characteristics, as well as baseline and 12-month health status and depressive symptoms, using Pearson χ² or Fisher exact tests for categorical variables and analysis of variance for continuous variables. Secondary analyses examined associations by sex.

Hierarchical repeated-measures regression tested study hypotheses. Patients were excluded from these analyses if they lacked outcome data for baseline and at least 1 follow-up assessment. Therefore, of the 2411 patients eligible for study inclusion, 2252 (93%) were included in analyses for SAQ AF, 2215 (92%) for SAQ QoL, 2119 (88%) for SF-12 PCS and MCS, and 2101 (87%) for PHQ-9. Linear mixed-effects models were developed for the continuous, approximately normally distributed outcomes (SAQ QoL, SF-12 PCS, SF-12 MCS, and PHQ-9). Because the dichotomous outcome (SAQ AF) was not rare (>20% of patients reported angina), relative risks (RR) for angina were calculated directly using modified Poisson mixed-effects models.36 All models included repeated outcome measurements within subjects over time (1, 6, and 12 months) and a random effect for site to account for patient clustering by hospital. Initial models (accounting only for site, repeated outcome
measures over time, and baseline level of outcome) determined the
association of baseline SS with each of the 5 outcomes during the
follow-up period, averaged across all time points (1, 6, and 12
months). To determine whether the relationship between baseline SS
and outcomes varied over time, an SS-by-time interaction term was
added and retained in final models if statistically significant. Final
models further adjusted for sociodemographic characteristics (age,
sex, race, marital status, education, and primary insurance), medical
history (smoking status, prior coronary artery disease, hypertension,
hypercholesterolemia, prior stroke, congestive heart failure, chronic
renal failure, and chronic lung disease), clinical presentation (left
ventricular systolic dysfunction and final AMI diagnosis), and
hospital care (coronary angiography and number of quality of care
indicators eligible for and percent of those received). The 4 health
status models also adjusted for baseline depressive symptoms.
Formal tests of whether sex modified the SS-outcome relationships
were performed by including an SS-by-sex interaction term in the
fully adjusted models. To provide additional information on the
direction of the interactions, the fully adjusted models were also
stratified by sex, regardless of the significance of the SS-by-sex

Table 1. Baseline Patient Characteristics According to SS

<table>
<thead>
<tr>
<th>Social Support</th>
<th>Low (n=444)</th>
<th>Moderate (n=699)</th>
<th>High (n=1268)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sociodemographics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, y</td>
<td>59.7±12.6</td>
<td>60.8±13.2</td>
<td>61.1±13.0</td>
<td>0.047</td>
</tr>
<tr>
<td>Female</td>
<td>35.8</td>
<td>33.1</td>
<td>31.4</td>
<td>0.225</td>
</tr>
<tr>
<td>Caucasian*</td>
<td>69.9</td>
<td>78.6</td>
<td>72.6</td>
<td>0.002</td>
</tr>
<tr>
<td>Married*</td>
<td>37.2</td>
<td>61.8</td>
<td>67.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Working full- or part-time*</td>
<td>38.6</td>
<td>46.8</td>
<td>44.0</td>
<td>0.024</td>
</tr>
<tr>
<td>&gt;High school education*</td>
<td>46.9</td>
<td>51.0</td>
<td>47.0</td>
<td>0.196</td>
</tr>
<tr>
<td>No health insurance/self-pay*</td>
<td>15.4</td>
<td>12.7</td>
<td>11.5</td>
<td>0.109</td>
</tr>
<tr>
<td><strong>Medical history</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior MI</td>
<td>24.1</td>
<td>19.3</td>
<td>21.8</td>
<td>0.149</td>
</tr>
<tr>
<td>Prior PCI</td>
<td>18.5</td>
<td>16.0</td>
<td>18.8</td>
<td>0.298</td>
</tr>
<tr>
<td>Prior CABG</td>
<td>12.8</td>
<td>10.6</td>
<td>14.3</td>
<td>0.066</td>
</tr>
<tr>
<td>CHF</td>
<td>14.2</td>
<td>10.3</td>
<td>12.2</td>
<td>0.137</td>
</tr>
<tr>
<td>Hypertension</td>
<td>67.8</td>
<td>60.8</td>
<td>64.0</td>
<td>0.055</td>
</tr>
<tr>
<td>Diabetes</td>
<td>31.3</td>
<td>24.5</td>
<td>30.4</td>
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<tr>
<td>Hypercholesterolemia</td>
<td>50.5</td>
<td>45.5</td>
<td>50.5</td>
<td>0.086</td>
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<tr>
<td>Chronic lung disease</td>
<td>15.3</td>
<td>11.4</td>
<td>13.4</td>
<td>0.160</td>
</tr>
<tr>
<td>Chronic renal failure</td>
<td>11.9</td>
<td>8.3</td>
<td>10.5</td>
<td>0.113</td>
</tr>
<tr>
<td>Prior stroke/TIA</td>
<td>9.7</td>
<td>6.9</td>
<td>9.1</td>
<td>0.157</td>
</tr>
<tr>
<td>Smoked within past year*</td>
<td>46.5</td>
<td>38.9</td>
<td>33.3</td>
<td>&lt;0.001</td>
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<tr>
<td><strong>Clinical presentation</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute SBP, mm Hg*</td>
<td>142.3±34.1</td>
<td>138.4±29.6</td>
<td>138.6±30.9</td>
<td>0.005</td>
</tr>
<tr>
<td>Acute heart rate*</td>
<td>82.6±21.0</td>
<td>81.0±21.5</td>
<td>81.0±21.6</td>
<td>0.034</td>
</tr>
<tr>
<td>LVSD: Moderate/severe*</td>
<td>26.4</td>
<td>23.8</td>
<td>27.1</td>
<td>0.277</td>
</tr>
<tr>
<td>Final MI diagnosis</td>
<td></td>
<td></td>
<td></td>
<td>0.012</td>
</tr>
<tr>
<td>STEMI</td>
<td>38.3</td>
<td>47.6</td>
<td>41.5</td>
<td></td>
</tr>
<tr>
<td>NSTEMI</td>
<td>61.3</td>
<td>51.5</td>
<td>57.9</td>
<td></td>
</tr>
<tr>
<td>BBB or uncertain type</td>
<td>0.5</td>
<td>0.9</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td><strong>Hospital care</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coronary angiography</td>
<td>81.8</td>
<td>91.1</td>
<td>86.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>QOC indicators, No. eligible</td>
<td>5.0±1.4</td>
<td>5.2±1.3</td>
<td>5.1±1.3</td>
<td>0.070</td>
</tr>
<tr>
<td>QOC indicators, % received</td>
<td>87.9±16.9</td>
<td>88.4±16.9</td>
<td>86.6±18.1</td>
<td>0.152</td>
</tr>
</tbody>
</table>

MI indicates myocardial infarction; PCI, percutaneous coronary intervention; CABG, coronary artery bypass grafting; CHF, congestive heart failure; TIA, transient ischemic attack; SBP, systolic blood pressure; LVSD, left ventricular systolic dysfunction; STEMI, ST-segment elevation myocardial infarction; NSTEMI, non–ST-segment elevation myocardial infarction; BBB, bundle-branch block; and QOC, quality of care.

Data are presented as mean±standard deviation (continuous variables) or column-wise percent-ages (categorical variables).

*Missing data present: <1% for Caucasian, working full- or part-time, smoked within past year, LVSD; 1% to 3% for acute SBP, acute heart rate, >high school education, married; 5% for no health insurance/self-pay.
interaction term. Because the 5 outcomes were specified a priori and represent different domains of patient-centered outcomes, no adjustment for multiple comparisons was performed. Tests for statistical significance were 2-tailed, with \(p < 0.05\). All analyses were performed using SAS version 9.1 (SAS Institute Inc, Cary, NC) and R version 2.6.0 (R Foundation for Statistical Computing, Vienna, Austria).

**Results**

**Patient Characteristics**

Overall, patients had a mean age of 60.8 years and were predominantly white (74%), male (67%), and married (60%). Approximately 18% of patients perceived low SS at baseline, 29% moderate SS, and 53% high SS. Those with low SS were younger; had higher systolic blood pressure and heart rate at baseline; were more likely unmarried, nonwhite, and not working; and were more likely to have a history of diabetes and smoking (Table 2). Men with low SS were younger; had higher systolic blood pressure and heart rate at baseline; were more likely nonwhite, unmarried, and not working; and were more
likely to have a history of congestive heart failure, chronic renal failure, and smoking. Men with low SS were less likely to receive coronary angiography.

In bivariate comparisons of SS and outcomes at baseline and 12 months, patients with lower SS had a greater likelihood of angina, lower disease-specific quality of life, lower general physical and mental functioning, and more depressive symptoms (Table 3). Relationships were similar for men and women, although women tended to have poorer health status and depressive symptoms. Although outcomes improved across SS categories by 12 months, those with lower SS continued to report poorer outcomes than their high SS counterparts.

**Risk-Adjusted Associations Between SS and Outcomes**

In models accounting for site, repeated outcome measures over time, and baseline level of outcome, patients with low SS had a significantly greater risk of SAQ AF (RR, 1.43; 95% confidence interval [CI], 1.25, 1.64); lower mean SAQ QoL (mean difference [β] = -6.21; 95% CI, -8.09, -4.33), SF-12 PCS (β = -1.76; 95% CI, -2.77, -0.75), and SF-12 MCS (β = -2.47; 95% CI, -3.34, -1.60) scores; and higher mean PHQ-9 scores (β = 0.99; 95% CI, 0.57, 1.41) than their high SS counterparts. After further risk adjustment, SS remained significantly associated with all outcomes except SF-12 PCS (Figure). No significant differences were observed when comparing moderate SS patients with high SS patients.

For the SAQ QoL, SF-12 PCS, SF-12 MCS, and PHQ-9 models, the SS-by-time interaction was nonsignificant (all Ρ>0.30), suggesting no variation in the relationship between SS and these outcomes over time. For SAQ AF, the relationship varied significantly over time (Ρ<0.001). The RRs for angina at 1, 6, and 12 months for those with low compared with high SS were 1.09 (95% CI, 0.98, 1.21), 1.45 (95% CI, 1.19, 1.77), and 1.24 (95% CI, 0.87, 1.75), respectively.

Women tended to have poorer outcome scores on average than men, with the effect particularly pronounced among the low SS group (Figure). A significant interaction between SS (low versus high SS or moderate versus high SS) and female sex was observed for the fully adjusted SAQ QoL (Ρ=0.015; low SS×female sex: β= -4.89; 95% CI, -8.61, -1.16; moderate SS×female sex: β= -3.29; 95% CI, -6.38, -0.19), SF-12 PCS (Ρ=0.014; low SS×female sex: β= -3.12; 95% CI, -5.22, -1.02; moderate SS×female sex: β= -0.90; 95% CI, -2.64, 0.83), and PHQ-9 (Ρ<0.001; low SS×female sex: β= -1.41; 95% CI, 0.57, 2.25; moderate SS×female sex: β= 1.02; 95% CI, 0.32, 1.71) models. In sex-stratified analyses, the association of low SS with these outcomes was significant only for women (Figure). The significant SS-by-time interaction observed for the overall SAQ AF model bordered significance only for women in the sex-stratified models (Ρ=0.050). No significant interaction between SS and sex was observed for the SAQ AF (Ρ=0.321) and SF-12 MCS (Ρ=0.501) models; however, the relationship tended to be stronger for women (Figure).

**Discussion**

In the present prospective study, AMI patients with low SS have worse health status and more depressive symptoms during the first year of recovery than those with high SS. This pattern is consistent across a broad range of outcomes, is
particularly strong for women, and does not vary appreciably over time. For patients discharged with AMI, identifying factors such as SS, which may influence patient-centered outcomes, are important.

Our findings associating low SS with worse health status and more depressive symptoms are consistent with previous studies in cardiac populations. However, among these studies, many have not focused specifically on a post-AMI population used cross-sectional data or prospective data with only baseline and 1 follow-up assessment examined single-sex populations included patients from limited geographic areas or were unable to control for a wide range of clinical variables. Moreover, many of the studies examining health status have not taken depressive symptoms into account. This omission is particularly important because previous studies have demonstrated a strong association between SS and depression. In studies not controlling for depression, any observed effect of SS on health status may be partly or wholly attributable to the effect of depression.

Our work extends the insights from previous studies in a number of ways. First, we examined a broader range of outcomes, including both disease-specific and general health status and depressive symptoms. Interestingly, we found relationships appeared strongest for disease-specific quality-of-life outcomes, such as SAQ QoL. This result is not unexpected because disease-specific measures may be more sensitive than general measures to smaller but still clinically significant differences among patients with AMI. Second, we examined longitudinal data from baseline and 3 assessments during recovery. With few exceptions, studies of the relationship between SS and the outcomes of health status and depressive symptoms have not examined change in this relationship over time. With multiple assessments, we noted that this relationship did not appear to vary over the course of recovery, except for angina. This changing relationship between SS and angina over time may be explained by patients with high SS receiving more encouragement to seek care for angina symptoms than those with low SS during the early recovery period, but this hypothesis will require further investigation. Finally, by using a large cohort with a wealth of clinical variables, we were able to provide more extensive risk adjustment of associations than prior studies, identify associations between SS and health status outcomes that are independent of depression, and explore whether the relationship between SS and patient-centered outcomes is different for men and women.

For each of our selected outcomes, the effect of SS was stronger for women, with this variation by sex reaching statistical significance for the outcomes of disease-specific quality of life, general physical functioning, and depressive symptoms. Our finding of an interaction between SS and sex is in accord with some but not all studies investigating sex-specific effects of SS. Some studies have suggested that the effect of SS is stronger for men, whereas others have found no differences by sex. Methodological differences in the definition of SS, sample composition, and small sample size probably explain, in part, these apparently inconsistent results. Differences in outcomes are another potential explanation, with the majority of previ-

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**Figure.** Risk-adjusted models of SS and outcomes. Accounts for site and repeated outcome measures over time. Risk-adjusted for baseline health status, baseline depressive symptoms, age, sex, race, marital status, education, primary insurance, smoking status, prior coronary artery disease, hypertension, hypercholesterolemia, prior stroke/transient ischemic attack, congestive heart failure, chronic renal failure, chronic lung disease, left ventricular systolic dysfunction, final myocardial infarction diagnosis, coronary angiography during index hospitalization, and number of quality of care indicators eligible for during index hospitalization and percent of those received. Adjusted for all of the above, except baseline health status. P<0.02 for SS-by-sex interaction.
ous studies focused on traditional clinical outcomes such as mortality.

Our analyses focusing on patient-centered outcomes are particularly timely given the growing awareness of the importance of health status for recovering AMI patients\(^1\) and recent recommendations for routine depression screening among all cardiac patients.\(^2\) Practically speaking, our results indicate that patients with low SS, particularly women, have more negative health symptoms than patients with high SS. Studies across a range of disciplines have demonstrated that SS can be increased via intervention and lead to health improvements.\(^3\) The ENRICHD trial, a large, randomized, controlled trial of cognitive-behavioral therapy among post-AMI patients with depression and/or low SS, demonstrated modest improvements in low SS with intervention.\(^4\) Even though the intervention was not effective in reducing risk of reinfarction or death, secondary analyses revealed a small improvement in 6-month general mental functioning.\(^5\) Although ENRICHD demonstrated only small benefits of intervention, it is premature to conclude that more compelling benefits are not possible. Determining the most effective means of intervening and targeting appropriate patient groups will be important for future research.

The mechanism linking SS to health outcomes remains unclear. Psychological, behavioral, and physiological pathways have all been suggested and extensively reviewed.\(^6\) Sex could influence any number of these pathways. Differences in coping behaviors of men and women are one possibility. Because women are more likely to seek SS, particularly emotional SS, in reaction to stressors,\(^7\) they may value SS to a greater degree and understandably experience greater consequences when they lack SS. The greater prevalence of depression among women, observed in both community\(^8\) and AMI populations,\(^9\) is another possibility. Because depression and low SS tend to co-occur, depression may amplify the effects of SS on outcomes. Arguing against the primacy of this possibility, we report an association between SS and outcomes that is independent of depression.

There are several limitations to this study. First, we examined only perceived SS. Although some researchers suggest that perceived SS is most strongly associated with AMI prognosis,\(^1\) other conceptualizations of SS, such as structural aspects and quality of SS, have been described.\(^2\) Second, reverse causality is possible, in that poor health status or depressive symptoms initially could be influencing perceptions of SS; however, our assessment of SS preceded the outcomes reported in this study. SS may also be a proxy for other unmeasured variables that could lead to worsened outcomes. Finally, results from this multisite study, which included a variety of institution types and geographic locations, may not generalize to AMI patients seen at other institutions or AMI patients who do not speak English or Spanish.

Our study identified risk-adjusted associations between low SS and poorer outcomes within the first year after hospitalization for AMI; however, the effect of SS appears to be stronger for women. Further studies are needed to clarify the mechanisms by which men and women benefit from SS and whether sex-targeted interventions could improve outcomes.

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Disclosures
Dr Spertus owns the copyright to the Seattle Angina Questionnaire. The other authors report no conflicts.

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