Effect of Living Alone on Patient Outcomes After Hospitalization for Acute Myocardial Infarction

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Considerable attention has been devoted to the effect of social support on patient outcomes after acute myocardial infarction (AMI). However, little is known about the relation between patient living arrangements and outcomes. Thus, we used data from PREMIER, a registry of patients hospitalized with AMI at 19 United States centers from 2003 through 2004, to assess the association of living alone with outcomes after AMI. Outcome measurements included 4-year mortality, 1-year readmission, and 1-year health status using the Seattle Angina Questionnaire (SAQ) and the Short Form-12 Physical Health Component scales. Patients who lived alone had higher crude 4-year mortality (21.8% vs 14.5%, p <0.001) but comparable rates of 1-year readmission (41.6% vs 38.3%, p = 0.79). Living alone was associated with lower unadjusted quality of life (mean SAQ −2.40, 95% confidence interval [CI] −4.44 to −0.35, p = 0.02) but had no impact on Short Form-12 Physical Health Component (−0.45, 95% CI −1.65 to 0.76, p = 0.47) compared to patients who did not live alone. After multivariable adjustment, patients who lived alone had a comparable risk of mortality (hazard ratio 1.35, 95% CI 0.94 to 1.93) and readmission (hazard ratio 0.99, 95% CI 0.76 to 1.28) as patients who lived with others. Mean quality-of-life scores remained lower in patients who lived alone (SAQ −2.91, 95% CI −5.56 to −0.26, p = 0.03). In conclusion, living alone may be associated with poorer angina-related quality of life 1 year after MI but is not associated with mortality, readmission, or other health status measurements after adjusting for other patient and treatment characteristics. © 2011 Elsevier Inc. All rights reserved. (Am J Cardiol 2011;108:943–948)

Considerable attention has been devoted to the effect of social support and living arrangements on patient outcomes after acute myocardial infarction (AMI). Although living alone has been associated with an increased risk of acute coronary syndrome in the general population, the relation between living alone and outcomes after AMI is not well understood.[1] Although some studies have found a positive association between living alone and mortality after AMI,[2] others have not.[3] Furthermore, no studies have examined the impact of living alone on quality of life or functional status after AMI. The purpose of this study was to characterize the relation between living alone and outcomes after AMI including mortality, rehospitalization, and health status.

Methods

We used data from the Prospective Registry Evaluating Myocardial Infarction: Events and Recovery (PREMIER), a national prospective registry of patients hospitalized with AMI. Registry procedures and baseline data have been previously published.[4] In brief, PREMIER enrolled 2,498 patients with MI from 19 United States centers from January 1, 2003 through June 28, 2004. To be eligible patients had to be ≥18 years of age, have an AMI confirmed by cardiac enzymes, and show supporting signs or symptoms of AMI in the form of prolonged ischemia or electrocardiographic ST-segment elevation changes. For these analyses, patients with missing information on living alone were also excluded (n = 53) as were patients who were not discharged to hospice, nursing facilities, acute care, nonacute hospitals, or had expired (n = 181).

Information on patient demographics, clinical presentation, and treatment were obtained from detailed chart abstractions and baseline interviews administered during the index hospitalization. As part of the interview, patients were asked about their living arrangements at home and categorized as living alone or with others. Patients also completed the Enhancing Recovery in Coronary Heart Disease Patients (ENRICHD) Social Support Instrument (ESSI), a 7-item

Table 1

Patient and clinical characteristics of sample

Variable	Living Alone		p Value
	Yes (n = 471)	No (n = 1,793)	
Age (years), mean ± SD	62.7 ± 13.5	59.3 ± 12.3	<0.001
Women	200 (42.5%)	523 (29.2%)	<0.001
Race			0.004
White	321 (68.3%)	1,354 (75.9%)	
Black	129 (27.4%)	344 (19.3%)	
Hispanic	12 (2.6%)	43 (2.4%)	
Asian	2 (0.4%)	5 (0.3%)	
Other	6 (1.3%)	37 (2.1%)	
Marital status			<0.001
Married	51 (11.0%)	1,301 (73.0%)	
Divorced	145 (31.2%)	162 (9.1%)	
Separated	31 (6.7%)	51 (2.9%)	
Widowed	145 (31.2%)	113 (6.3%)	
Single (never married)	8 (18.1%)	126 (7.1%)	
Common law	6 (1.3%)	23 (1.3%)	
Other	3 (0.6%)	5 (0.3%)	
Employment status			<0.001
Full time	130 (27.7%)	713 (40.1%)	
Part time	39 (8.3%)	150 (8.4%)	
Unemployed	301 (64.0%)	916 (51.5%)	
Living location			<0.001
Owned home	229 (48.8%)	1,351 (76.2%)	
Owned home or apartment	199 (42.4%)	264 (14.9%)	
Relative or friend's home	19 (4.1%)	140 (7.9%)	
Nursing home or assisted living	7 (1.5%)	3 (0.2%)	
Homeless	5 (1.1%)	4 (0.2%)	
Other	10 (2.1%)	11 (0.6%)	
Pet ownership	146 (31.1%)	896 (50.1%)	<0.001
Medical care payer			<0.001
Commercial/preferred provider organization	136 (30.2%)	789 (45.8%)	
Health maintenance organization	50 (11.1%)	225 (13.1%)	
Medicare	155 (34.4%)	334 (19.4%)	
Medicaid	32 (7.1%)	93 (5.4%)	
None/self-pay	54 (12.0%)	214 (12.4%)	
Other	24 (5.3%)	67 (3.9%)	
Usual source of care			0.002
None	57 (12.2%)	191 (10.8%)	
Private doctor's office	211 (45.0%)	869 (49.0%)	
Health maintenance organization or prepaid health plan	30 (6.4%)	139 (7.8%)	
Neighborhood clinic	27 (5.8%)	167 (9.4%)	
Hospital outpatient clinic	121 (25.8%)	358 (20.2%)	
Hospital emergency room	14 (3.0%)	21 (1.2%)	
Other	7 (1.5%)	25 (1.4%)	
Avoided acquiring health care because of cost	108 (23.3%)	304 (17.2%)	0.003
Body mass index (kg/m^2)			<0.001
<18.5	11 (2.5%)	20 (1.2%)	
18.5–25	139 (31.7%)	351 (20.5%)	
25–30	147 (33.5%)	629 (36.7%)	
30–35	87 (19.8%)	437 (25.5%)	
35–40	41 (9.3%)	165 (9.6%)	
>40	14 (3.2%)	110 (6.4%)	

Table 1

(*continued*)

Variable	Living Alone		p Value
	Yes (n = 471)	No (n = 1,793)	
Smoker	293 (62.2%)	491 (27.4%)	0.918
Alcohol use			0.248
Never	161 (71.6%)	691 (71.3%)	
Less than monthly	34 (15.1%)	140 (14.4%)	
Monthly	15 (6.7%)	64 (6.6%)	
Weekly	6 (2.7%)	53 (5.5%)	
Daily	9 (4.0%)	21 (2.2%)	
Diabetes mellitus	139 (29.5%)	491 (27.4%)	0.359
Hypertension	321 (68.2%)	1,100 (61.3%)	0.007
Hypercholesterolemia	220 (46.7%)	908 (50.6%)	0.129
Congestive heart failure	59 (12.5%)	181 (10.1%)	0.127
Peripheral arterial disease	34 (7.2%)	127 (7.1%)	0.919
Previous myocardial infarction	115 (24.4%)	360 (20.1%)	0.040
Medication or counseling for depression	78 (16.7%)	207 (11.6%)	0.004
Clinical presentation and treatment			
Myocardial infarction diagnosis			0.586
ST-elevation myocardial infarction	199 (42.3%)	801 (44.7%)	
Non–ST-elevation myocardial infarction	270 (57.3%)	980 (54.7%)	
Bundle-branch block/ uncertain	2 (0.4%)	12 (0.7%)	
Killip class			<0.001
I	328 (79.0%)	1,301 (86.4%)	
II	73 (17.6%)	152 (10.1%)	
III	9 (2.2%)	30 (2.0%)	
IV	5 (1.2%)	23 (1.5%)	
Left ventricular systolic dysfunction			0.287
Normal	239 (50.7%)	971 (54.3%)	
Mild	99 (21.0%)	390 (21.8%)	
Moderate	82 (17.4%)	263 (14.7%)	
Severe	51 (10.8%)	165 (9.2%)	
Creatinine (mg/dl), mean ± SD	1.5 ± 1.9	1.4 ± 1.5	0.048
Aspirin at arrival	447 (97.4%)	1,694 (96.6%)	0.386
β Blocker at arrival	396 (92.7%)	1,507 (91.7%)	0.469
Angiotensin-converting enzyme inhibitor for left ventricular systolic dysfunction at discharge	105 (89.0%)	313 (80.3%)	0.030
β Blocker at discharge	418 (94.6%)	1,576 (91.6%)	0.036
Baseline health status and social support measurements			
ESSI score, mean ± SD	20.4 (5.6%)	22.7 (4.0%)	<0.001
Seattle Angina Questionnaire quality of life, mean ± SD	59.7 (24.4%)	62.5 (23.2%)	0.022