A Prospective Examination of Antidepressant Use and Its Correlates in Acute Coronary Syndrome Patients

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Abstract

Background—The objective of this study was to describe the frequency and type of antidepressant use and its correlates 18 months following acute coronary syndrome (ACS) discharge.

Methods—661 ACS inpatients (75% response rate) recruited from 3 hospitals completed a sociodemographic survey and the Hospital Anxiety and Depression Scale (HADS), and clinical data were extracted from charts. A mailed survey 9 and 18 months post-discharge (81% retention rate) assessed self-reported antidepressant utilization, and the HADS was re-administered.

Results—Approximately 9% of participants reported antidepressant use both 9 and 18 months post-hospitalization, with 77% concordance in usage over time. Participants most frequently reporting using selective serotonin reuptake inhibitors (56.3%), and least often tricyclics (12.5%). Logistic regression ($p < .001$) revealed that antidepressant users were more likely to be anxious ($OR=1.20$), have more comorbidities ($OR=1.17$), and less likely to work full-time ($OR=0.42$), while number of medications, age and marital status were not related.

Conclusions—Patients with comorbid physical and mental conditions who are unemployed may be more likely to receive an antidepressant due to both greater depressive symptoms or greater exposure to healthcare providers which increases the potential of symptom recognition and treatment.

Depression is common among acute coronary syndrome (ACS) patients (Abbey & Stewart, 2000; Grace et al., 2005). The prevalence of major depression ranges around 15–20% (Lett et al., 2004), which is approximately three-fold higher than age-matched community-based prevalence studies (Blazer et al., 1994; Lavie et al., 1999), and the prevalence of elevated depressive symptoms has been reported as high as 50% (Lesperance et al., 2002). In addition

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to this emotional burden, depression has been implicated in the occurrence of recurrent coronary events and cardiac or all-cause mortality in ACS patients (Hemingway & Marmot, 1999; Smith & Ruiz, 2002). Not only is this the case for depressive disorder, but depressive symptomatology confers a relative risk between 1.5 and 2.5 for future cardiac morbidity and mortality (Lett et al., 2004), and a dose-response relationship has been supported (Lesperance et al., 2002). In fact, it has been suggested that the magnitude of this depressive effect is similar to that of traditional cardiac risk factors such as hypertension and dyslipidemia (Das & O'Keefe, 2006).

Unfortunately however, such depressive symptoms are grossly under-screened and under-treated (Grace et al., 2005). Evidence-based therapies for depression established in non-comorbid populations include psychotherapy and antidepressant medications (Pampallona et al., 2004). Indeed, selective serotonin reuptake inhibitors (SSRIs) represent safe and effective means of reducing depression in cardiac patients as well (Glassman et al., 2002; Jiang & Davidson, 2005; Mohapatra, et al., 2005). While evidence of cardiac risk reduction due to such pharmacotherapy (or psychotherapy) is lacking to date, reducing this emotional burden is also a worthy goal. The objective of this study was to examine the self-reported prevalence of antidepressant use, the class of medications reported, the consistency of this use over time, and the sociodemographic and clinical correlates of such use.

Methods

Procedure and Design

This study uses a prospective observational design, and is a secondary analysis of data collected within the context of a larger study on access to cardiac rehabilitation (CR). Ethics approval was obtained from participating sites. Participants were followed from admission for their index acute coronary syndrome (ACS) hospitalization for 18 months. Consecutive ACS patients were recruited on relevant cardiovascular units by a research assistant when medically stable. ACS diagnosis was confirmed based on indication in patient chart of detailed history, focused physical examination, diagnostic ECG changes (i.e., Q waves, and/or ST-T segment changes), and/or troponin levels above the 99th percentile of normal. Patients who had undergone concurrent percutaneous coronary interventions (PCIs), or acute coronary bypass (ACB) were also eligible. Exclusion criteria included being medically unstable, too confused to participate, previous participation in CR, being ineligible for CR based on Canadian Association of Cardiac Rehabilitation (Canadian Association of Cardiac Rehabilitation, 2004) guidelines due to musculoskeletal, vision, non-dysphoric psychiatric, or other comorbidities, or being unable to read or speak English. Those who met study criteria and agreed to participate signed a consent form and were provided with a self-report questionnaire. Consent was also obtained to extract cardiac clinical data from their medical charts. Nine and eighteen months later, participants were mailed a survey which assessed several variables including self-reported antidepressant usage.

Participants

Thirteen hundred and sixty-two consecutive ACS patients at Trillium Health Centre or University Health Network Toronto General or Toronto Western Hospitals in Ontario,

Canada were approached to solicit informed consent between September 2003 and August 2004. Of these patients, 661 consented to participate and 483 were ineligible for the study (response rate = 661/879=75%). Reasons for ineligibility were as follows: previous attendance at CR ($n=123$; 25.5%), lack of English language proficiency ($n=119$; 24.6%), too ill to participate ($n=98$, 20.3%), condition not indicated for referral to CR ($n=70$; 14.5%), patient too confused or experiencing cognitive impairment ($n=42$; 8.7%), comorbid musculoskeletal condition which precludes ambulation ($n=19$; 3.9%), or patient already participating in two studies ($n=5$, 1.0%). Other reasons ($n=7$, 1.4%) included isolation for infection control and moving to another province.

Characteristics of participants and non-participants are shown in Table 1. There were no significant differences in participation based on marital status. Of the patients approached, participants were significantly younger than those who declined or were ineligible to participate ($F(2) = 33.59$, $p < .001$; post-hoc LSD $ps < .001$). Significantly more males agreed to participate than females ($\chi^2(2) = 31.44$, $p < .001$). Participants' ages ranged from 33–91. The majority of participants self-reported their ethnocultural background as white ($n=509$, 81.4%), and the most frequent non-white ethnocultural backgrounds were South Asian ($n=49$, 7.8%), Black (e.g. Afro-Canadian, African, or West Indian; $n=16$, 2.6%), and Filipino ($n=12$, 1.9%).

Measures

In-hospital assessments—Sociodemographic data assessed in the baseline self-report survey included age, sex, ethnocultural background, marital status, work status, level of education, and gross annual family income. Postal codes were used to classify participants as urban or rural, with a zero in the second digit representing rurality as defined by Canada Post. Body Mass Index (BMI) was computed based on self-reported height and weight (kg/m^2). Participants were asked if they were current, past or non-smokers. They were also asked to check comorbidities from a list of 13 conditions including musculoskeletal, gastrointestinal and respiratory conditions. The number of conditions was counted and a total score was generated. Data were extracted from clinical charts including confirmation of reason for index hospitalization, cardiac medications, and disease severity (NYHA Class (The Criteria Committee of the New York Heart Association, 1994)).

The Hospital Anxiety and Depression Scale (HADS (Zigmond & Snaith, 1983)), a reliable and well-validated scale (Bjelland et al., 2002) was used to assess anxiety and depressive symptoms. The HADS is a 14-item self-report questionnaire: anxiety and depressive symptomatology were each measured through 7 items rated on a 4-point Likert-type scale. Total scores range from 0 to 21, where a score below 8 indicates the 'normal' range of subthreshold symptoms, a score of 9 to 10 represents moderate affective symptomatology, and a score of 11 or greater represents severe affective symptomatology (Zigmond & Snaith, 1983).

The Duke Activity Status Index (DASI; (Hlatky et al., 1989)) is a brief 12-item, self-administered survey to determine functional capacity. Participants were asked about their ability to perform common activities of daily living, such as personal care, ambulation, household tasks, sexual function, and recreational activities, which are each associated with

specific metabolic equivalents (METs). This valid and common tool correlates highly with peak oxygen uptake (Nelson et al., 1991).

Nine and eighteen month mailed assessments—These self-report surveys both requested participants gather their medication bottles and to list all their current medications, cardiac and otherwise. A total number of medications was computed, and antidepressant and anxiolytic medications were coded by class. The HADS was also re-administered in the final survey (i.e., in-hospital and 18 month post-discharge assessments).

Statistical Analysis

SPSS 14.0 was used for the following analyses. Following data cleaning and screening, differences between participating, ineligible and declining patients were tested by Pearson's chi-square and analyses of variance as appropriate. A descriptive examination was then performed, and open-ended medication responses were coded. Sex differences in baseline anxiety and depressive symptoms were tested by *t*-tests. Cohen's kappa was used to compute concordance between antidepressant use at 9 and 18 months post-hospitalization.

Differences in 18 month anxiety and depressive symptoms by 9 month antidepressant usage were compared using *t*-tests, then data were split by antidepressant usage and paired *t*-tests were computed to examine change in affective symptoms from hospitalization to 18 months post-discharge. In-hospital sociodemographic and clinical correlates of 9 month antidepressant use were explored using chi-square analyses and *t*-tests as appropriate.

Finally, a hierarchical logistic regression analysis predicting antidepressant usage 9 months post-hospitalization was performed. Significant correlates from the bivariate screening were entered into the model.

Results

Respondent Characteristics

Of the 661 consenting participants, 61 were ineligible and 506 were retained at the nine-month assessment (retention rate = $506/600 = 84.3\%$). Reasons for ineligibility were as follows: unable to reach/incorrect contact information ($n=34$; 5.1%), too ill to participate ($n=10$; 1.5%), deceased ($n=8$; 1.2%), and other reasons ($n=9$; 1.4%).

At 18 months post-discharge, 465 participants were retained in the study (81.4% retention rate). Characteristics of participants and those who declined or were ineligible at eighteen months from hospitalization are summarized in Table 2. Reasons for ineligibility were as follows: cannot reach/incorrect contact information ($n=55$; 61.1%), too ill to take part ($n=13$; 14.4%), deceased ($n=10$; 11.1%), previous participation in CR ($n=3$; 3.3%), and other reasons ($n=9$; 10.0 %) included onset of conditions which precluded eligibility for CR. Retained participants tended to be older, Caucasian, married/common law, have a higher family income, be a non-smoker, less likely to be diabetic, and have undergone a PCI procedure.

Anxiety and Depressive Symptoms In-Hospital and Eighteen Months Later

Table 3 displays the mean anxiety and depressive symptoms by sex at both time points. In hospital, 46 (7.1%) participants reported depressive symptoms in the moderate range, with 50 (7.7%) severe, for a total of 14.7% reporting elevated depressive symptoms. At 18 months, 21 (4.7%) participants reported depressive symptoms in the moderate range, with 26 (5.8%) severe, for a total of 10.5% reporting elevated depressive symptoms. Fourteen (3.2%) of participants reported elevated depressive symptoms at both time points. In hospital, 80 (12.3%) participants reported anxiety symptoms in the moderate range, with 137 (21.0%) severe, for a total of 33.2% reporting elevated anxiety symptoms. At 18 months, 38 (8.5%) participants reported anxiety symptoms in the moderate range, with 56 (12.6%) severe, for a total of 21.1% reporting elevated anxiety symptoms.

In hospital, depression and anxiety scores were highly correlated ($r=.60$, $p<.001$), and 74 (11.3%) participants had both elevated depressive and anxiety symptoms ($\kappa=.34$). Eighteen months post-discharge, depression and anxiety scores were again highly correlated ($r=.67$, $p<.001$), and 30 (6.7%) participants had both elevated depressive and anxiety symptoms ($\kappa=.33$). As shown, while there were no significant sex differences in depressive symptoms, there was a trend toward greater symptoms among females in hospital ($t = -1.77$, $p=.078$). Female participants reported significantly greater anxiety in hospital and 18 months later than male participants.

Antidepressant Usage

Nine months post-discharge, 48 (9.5%) participants self-reported taking an antidepressant medication. Classes of antidepressants reported were: SSRIs ($n=27$, 56.3%), serotonin and norepinephrine reuptake inhibitors (SNRIs; $n=8$, 16.7%), atypical antidepressants ($n=7$, 14.6%) and tricyclic antidepressants (TCAs; $n=6$, 12.5%). The most frequently reported drugs in the SSRI category were: citalopram (Celexa; $n=14$, 29.2%), sertraline (Zoloft; $n=6$, 12.5%), and paroxetine (Paxil; $n=5$, 10.4%). The only drug reported in the SNRI category was venlafaxine (Effexor; $n=8$, 16.7%). The drugs reported in the atypical category were: mirtazapine (Remeron; $n=5$, 10.4%) and bupropion (Wellbutrin; $n=2$, 4.2%). The most frequently reported drug in TCA class was amitriptyline ($n=4$, 8.3%). Three (6.3%) participants reported taking 2 types of antidepressants.

Eighteen months post-discharge, 40 (8.6%) participants self-reported taking an antidepressant medication. Of the 48 participants reporting antidepressant usage 9 months post-ACS discharge, 31 (61.4%) were still taking one at 18 months. The concordance of antidepressant usage at both time points was 77% (Cohen's κ). Escitalopram (Cipralex) was the only new antidepressant reported at the 18 month assessment. While the class of antidepressants was generally consistent from 9 to 18 months, 4 (8.3%) antidepressant users reported a different medication at 18 months, and for 2 (4.2%) this represented a change in antidepressant type.

Thirty-nine (7.7%) participants reported using an anxiolytic at 9 months, and 35 (7.5%) reported their use at 18 months post-hospitalization. All were benzodiazepines, and concordance in usage at both time points was 72% (Cohen's κ). Fourteen (2.8%)

participants reported using both antidepressants and anxiolytics at 9 months, and 11 (2.4%) reported using both at 18 months post-hospitalization.

The Relationship Among Antidepressant Usage and Anxiety and Depressive Symptoms

There were 61 (12.3%) participants with elevated depressive symptoms in-hospital who were retained in the study 9 months post-discharge, and at 9 months 14 (23.0%) reported taking an antidepressant. There were 152 (30.6%) participants with elevated anxiety symptoms in-hospital who were retained in the study 9 months post-discharge, and at 9 months 18 (11.8%) reported taking an anxiolytic.

Participants taking an antidepressant 9 months post-discharge reported significantly greater depressive ($M=5.66$, $SD=4.68$ vs $M=3.60$, $SD=3.38$, $p=.001$) and anxious ($M=8.46$, $SD=5.07$ vs $M=5.11$, $SD=3.74$, $p<.001$) symptoms 18 months post-discharge than patients not on antidepressants at 9 months. The data set was split by antidepressant usage. For participants who were not taking an antidepressant at 9 months, both depressive ($t=2.72$, $p=.007$) and anxiety ($t=5.90$, $p<.001$) symptoms decreased significantly by 18 months. However, for participants who reported taking an antidepressant at 9 months, anxiety symptoms ($t=2.89$, $p=.006$) improved significantly from hospitalization to 18 months later, but depressive symptoms ($t=1.34$, $p>.05$) did not.

Eighteen months post-discharge, 4 (9.5%) of the participants who reported elevated depressive symptoms were taking an antidepressant. At the same point, 14 (15.9%) participants who reported elevated anxiety symptoms self-reported taking an anxiolytic.

In-Hospital Correlates of Antidepressant Usage Nine Months Post-ACS Discharge

As shown in Table 4, participants self-reporting antidepressant usage were significantly more likely to be female, to have lower family income, less likely to be working full-time, to have a greater number of medical comorbidities, and to have lower functional status. Participants taking an antidepressant 9 months post-discharge also reported significantly greater anxiety and depressive symptoms while in hospital.

These significant correlates were entered into a hierarchical logistic regression analysis predicting antidepressant usage at 9 months. In-hospital anxiety and depressive symptoms were entered at step one, sociodemographic characteristics at step two, and clinical characteristics in step 3. As shown in Table 5, income was excluded from the model. This is due to the interrelationship between work status and income which may cause collinearity, and the latter variable was chosen to be excluded as it is perceived to be less reflective of personal socioeconomic status in this age group. The overall model was significant ($\chi^2 = 52.86$, $p<.001$), as were steps 1 ($\chi^2 = 35.40$, $p<.001$), 2 ($\chi^2 = 12.26$, $p=.002$), with only a trend for the clinical block ($\chi^2 = 5.20$, $p=.07$). According to the Wald criterion, participants taking antidepressants were significantly more likely to report anxiety but not depression, more comorbidities, and less likely to work full-time.

Discussion

Depressive symptoms negatively affect adherence to evidence-based therapies, quality of life, and health outcomes in cardiac patients (Glassman et al., 2003). This study prospectively examined antidepressant use in a sample of ACS patients. Rates of antidepressant use were just below 10% across the year and a half of ACS recovery. This is fairly consistent with a 2002 population-based study in Ontario which reported 15.7% antidepressant use among post-myocardial infarction patients (Benazon et al., 2005). The frequency of anxiolytic use (7.7%) was just slightly lower than antidepressant use. Due to lack of use of diagnostic interviews and assessment of psychotherapy rates, the current study is unable to discern whether the frequency of antidepressant use is appropriate to the rates of elevated depressive symptoms (over 10%).

These patients generally stayed on the medication consistently, with 77% concordance in antidepressant use from 9 to 18 months post-discharge. Only four patients changed antidepressant medications over the 9 months of assessment. Participants on antidepressants experienced significant decreases in their anxiety symptoms, but not their depressive ones (although mean depressive scores were within the 'normal' range for all participants by 18 months post-hospitalization). This poor antidepressant response and the few changes in medications suggest that physician follow-up was less than optimal. Previous studies have reported that follow-up by physicians regarding dosing and patient response to antidepressants is low (Wang et al., 2005; Young et al., 2001). However, given that there were no diagnostic clinical interviews incorporated into the study, our lack of assessment of other forms of therapy, and our non-randomized design, we cannot comment on the degree of symptom control afforded by the antidepressant utilization observed in the current study. It is promising though that over 60% of the patients on antidepressants remained on the medications for at least nine months, which should enable the drug to achieve effect.

The previous investigation of Ontario administrative data showed that 62% of the antidepressant use was from the SSRI class and 36% TCAs (Benazon et al., 2005). Similarly, the most frequent class of antidepressant used in the current study was SSRIs (56.3%), but TCA use was much lower at 12.5%. SSRIs have been shown to be safer among cardiac patients (Roose, 2003; Taylor et al., 2005), and indeed they were the most frequently used medications. TCA use is not recommended given evidence of cardiovascular toxicity (Thanacoody & Thomas, 2005) including increases in heart rate, orthostatic hypotension, and conduction delays (Roose, 2003). Fortunately, our findings suggest that TCA use has declined among ACS patients.

In a recent U.S. survey of cardiovascular physicians (Feinstein et al., 2006), 55.7% reported treating comorbid depression with antidepressant medication, with the most frequent medications being sertraline (28%), paroxetine (16.1%), and fluoxetine (10.8%). Bupropion was prescribed 4.4% and TCAs 3.8% of the time. The rates of sertraline use are not surprising given that the largest trial of antidepressant safety used sertraline (Glassman et al., 2002). However, in our study, use of citalopram was more frequent than use of sertraline. Similar to sertraline, citalopram is not likely to inhibit cytochrome p450 enzymes, thus minimizing interactions with cardiac medications (Solai et al., 2001). Rates of bupropion use

in our study were similar at 4.2%, and may have been prescribed to smoking patients, although this antidepressant may cause minor increases in blood pressure (Roose et al., 1991).

While depression and anxiety are highly comorbid disorders (Gorman, 1996; Lenze et al., 2000) and medications indicated for combatting depression also have anxiolytic effects (Wagstaff et al., 2002), it is noteworthy that anxiety symptoms were more strongly related to antidepressant usage than were depressive symptoms in the model. This finding warrants further study. A recent study showed that medical residents were more likely to correctly identify anxiety rather than depressive symptoms in their post-myocardial infarction patients (Huffman et al., 2006). It could be that the somatic symptoms of anxiety are more easily recognized than affective ones. Indeed a recent national survey of cardiovascular physicians showed that 79% reported no use of a standard depression screening method or tool (Feinstein et al., 2006). This suggests that more systematic screening of depressive symptoms through standardized tools such as the PRIME-MD (Spitzer et al., 1999) is needed to correctly and consistently identify elevated depressive symptoms. This screening could then lead to referral for clinical diagnosis as appropriate, and treatment with psychotherapy and antidepressant medication. An alternative explanation for the relationship between anxiety and antidepressant usage could relate to patient requests for medication or greater number of healthcare visits to quell their feelings of anxiety.

Work status was also related to antidepressant usage, such that those who were not employed full-time were more likely to be taking antidepressants. Generally, people who are unemployed have poorer mental and cardiovascular health (Jin et al., 1995). Indeed, participants in our sample who were not working full-time reported a greater number of comorbid conditions (2.33 vs 1.65, $p < .001$).

This greater number of comorbidities was also related to antidepressant usage. This could again be explained in several ways. Most importantly, depression is accompanied by numerous somatic symptoms such as anorexia, fatigue and painful physical symptoms. Second, the cognitive bias seen in depression may focus patients on their poor health and symptoms. Third, patients who have more comorbidities would have a greater number of healthcare visits, and therefore exposure to more providers who could screen for or recognize their depressive symptoms. Fourth, many side effects have been related to antidepressant use, for example, headaches, muscle pain and digestive problems (Whooley, 2006). However, these side effects usually remit after the first few weeks of treatment (Whooley, 2006), and would likely not lead to the development of comorbidities. Finally, patients with many chronic health conditions have a higher incidence of depression, including cancer for example (Evans & Charney, 2003). Therefore, coping with these chronic conditions may lead to depression, and ultimately antidepressant use. Interestingly, antidepressant usage was not related to number of medications used, but to number of comorbid conditions.

Caution is warranted when examining these results, most notably in relation to measurement issues. The use of self-report measures is open to social desirability bias and other errors in reporting. We could have more confidence in these results with physician-reported or

administrative data on clinical depression diagnoses and antidepressant prescriptions, although our self-report antidepressant data likely accurately reflect the antidepressant prescriptions which patients have filled. The lack of diagnostic interviews precludes any conclusions on appropriateness of the antidepressant prescribing, or the degree of remission afforded by treatment. Other measurement limitations relate to lack of data on unfilled prescriptions, antidepressant dosage, titration of dosages, side effects leading to discontinuation, and psychotherapy or other treatment referrals. Given the non-random study design, causal conclusions regarding the effectiveness of antidepressants cannot be drawn. Finally, generalizability is limited by the selection biases both in initial recruitment and in the characteristics of our retained sample of participants.

Overall, 15% of ACS patients reported moderate to severe depressive symptoms in hospital. Approximately 9% of participants reported using antidepressants at both 9 and 18 months post-hospitalization, with most patients using SSRIs. Antidepressant users were more likely to be anxious, retired or unemployed, and report more comorbidities. Gender was not significantly related to antidepressant use after controlling for confounding variables. Findings suggest that physicians may more easily identify patients' anxiety symptoms and use this information in the determination for the need for an antidepressant prescription. Moreover, ACS patients reporting a greater number of comorbid conditions likely visit a greater number of healthcare providers, and therefore have a greater chance of having their depressive symptoms recognized and treated. Clearly, we must continue to promote depression screening for all cardiac patients, to promote treatment through behavioral, psychotherapeutic and psychopharmacological means, and to continue the study of the mechanisms and effects of depression treatment on cardiac outcomes.

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Table 1

Self-Reported Characteristics of Participating, Declining, and Ineligible Patients at Baseline Recruitment

Characteristic	Participants (<i>n</i> =661)	Declined (<i>n</i> =218)	Ineligible (<i>n</i> =483)
Condition/Procedure ^{<i>I</i>} (%PCI)	405 (61.3%)	109 (50.2%)	184 (38.3%)*
Sex (%Female)	157 (23.8%)	77 (35.6%)	186 (38.6%)*
Marital Status (%married)	503 (76.1%)	160 (76.2%)	339 (71.5%)
Age (mean ± <i>SD</i>)	61.22 ± 11.30	65.96 ± 11.96*	66.48 ± 11.39*

*
p < .001^{*I*}
Extracted from medical charts

PCI, percutaneous coronary intervention

Table 2

Characteristics of Participating, Declining and Ineligible Patients at Eighteen Month Follow-Up Assessment
N=661

Characteristic	Participants (n=465)	Declined (n=106)	Ineligible (n=90)
Condition/Procedure ^I (%PCI)	290 (62.4)	69 (65.1)	43 (47.8) **
Sex (%Female)	110 (23.7)	28 (26.4)	19 (21.1)
Marital Status (%married or common law)	369 (79.4)	74 (69.8) *	58 (64.4) **
Age (mean $\pm$ SD)	62.70 $\pm$ 10.60	57.06 $\pm$ 10.92 [‡]	58.47 $\pm$ 13.54 **
Body Mass Index (mean $\pm$ SD)	28.32 $\pm$ 4.77	29.55 $\pm$ 5.72 *	28.77 $\pm$ 5.51
Activity Status (mean $\pm$ SD)	34.60 $\pm$ 17.35	32.59 $\pm$ 16.97	31.59 $\pm$ 17.83
NYHA Class [§] (%Class 1)	390 (88.8)	89 (87.3)	75 (91.5)
Diabetes (%yes)	96 (20.8)	35 (33) *	23 (26.1)
Arthritis (%yes)	111 (23.9)	21 (19.8)	22 (25.6)
Smoker (%current)	62 (13.5)	29 (27.9) *	23 (26.1)
Ethnocultural Background (%white)	374 (85.0)	70 (71.4) **	63 (76.8)
Education (%some post-graduate or greater)	238 (52.2)	53 (50.5)	48 (53.9)
Family income (% \$50 000CAD)	227 (59.4)	40 (47.1) *	30 (38.5) ***

*
 $p < 0.05$,

**
 $p < 0.01$,

 $p < 0.001$

^I
Extracted from medical charts.

PCI, percutaneous coronary intervention; NYHA, New York Heart Association.

Table 3

Anxiety and Depressive Symptoms In Hospital and Eighteen Months Post-Discharge by Sex

	In Hospital		18 Months Later	
	Males (n=504)	Females (n=157)	Males (n=355)	Females (n=110)
Anxiety	6.69±4.18	8.02±4.66 *	5.05±3.84	6.46±4.21 *
Depression	4.50±3.53	5.07±3.39	3.67±3.54	4.10±3.39

*
p=.001

Table 4

In-Hospital Correlates of Antidepressant Usage Nine Months Post-ACS Discharge, N=505

Correlate	Mean (SD)/n (%)			p-value
	Anti-depressant n=48 (9.5%)	No Anti-depressant n=457	Total N=505	
Age	60.6 (11.0)	62.4 (10.7)	62.3 (10.7)	0.262
Gender				
Female	21 (48.8)	92 (22.6)	113 (22.6)	0.000***
Marital Status				
Married/Common-law spouse	39 (81.3)	358 (79.0)	397 (79.2)	0.718
Gross Family Income				
Low: under \$50,000CAD/yr	23 (59)	149 (39.6)	172 (41.4)	0.020**
Self-Reported Ethnic Background				
White	39 (86.7)	363 (83.8)	402 (84.1)	0.621
Work Status				
Full-Time	13 (27.7)	208 (46)	221 (44.3)	0.016**
Education Level				
Some Post-Graduate or Greater	24 (50)	234 (52.5)	258 (52.2)	0.745
Procedure				
PCI	31 (64.6)	285 (62.9)	316 (63.1)	0.820
Living location				
Urban	44 (91.7)	406 (89.8)	450 (90)	0.686
Smoking Status				
Current	10 (20.8)	63 (14.1)	73 (14.7)	0.376
Past	21 (43.8)	233 (52)	254 (51.2)	
Never	17 (35.4)	152 (33.9)	169 (34.1)	
New York Association Heart Class				
Class 1	41 (91.1)	382 (89)	423 (89.2)	0.670
Cardiac Rehabilitation Enrollment				
Yes	18 (37.5)	180 (39.9)	198 (39.7)	0.745
Number of Self-reported Comorbidities	3.5 (2.48)	2.2 (1.9)	2.4 (2)	0.001***

Correlate	Mean (SD)/n (%)			p-value
	Anti-depressant n=48 (9.5%)	No Anti-depressant n=457	Total N=505	
Number of Cardiac Medications from Hospital Charts	4.9 (1.6)	4.8 (1.8)	4.8 (1.7)	0.592
Number of Self-reported Cardiac Medications at 9 Months	4.7 (1.6)	4.4 (1.4)	4.4 (1.5)	0.160
Body Mass Index	29.5 (5.2)	28.3 (4.7)	28.3 (4.7)	0.101
DASI: Functional Status	27.9 (17.4)	35.3 (16.9)	34.5 (17.2)	0.005**
HADS: Anxiety Symptoms	10.2 (4.1)	6.4 (4)	6.8 (4.1)	0.000***
HADS: Depressive Symptoms	6.5 (4.2)	4.2 (3.1)	4.4 (3.2)	0.000***

DASI, Duke Activity Status Index; HADS, Hospital Anxiety & Depression Scale

Note: All variables were assessed in hospital except self-reported cardiac medications and cardiac rehabilitation enrollment 9 months post-discharge.

* $p<0.05$,
** $p<0.01$,
*** $p<0.001$

Table 5

Hierarchical Logistic Regression of In-Hospital Correlates of Antidepressant Usage Nine Months Post-ACS Discharge

Variables	OR	(95% C.I.)
Anxiety Symptoms	1.20	(1.09–1.31) ***
Depressive Symptoms	1.05	(0.94–1.18)
Gender (Female)	0.67	(0.33–1.38)
Work Status (Full Time Work)	0.42	(0.20–0.89) *
Functional Status	0.99	(0.97–1.01)
Number of Self-reported Comorbidities	1.17	(1.01–1.36) *

OR, Odds Ratio; C.I., Confidence Interval

*
 $p < 0.05$,

 $p < 0.001$