Impact of Completed Cardiac Rehabilitation Program on Depression Level in Patients with Heart Failure with Reduced Ejection Fraction

Thesis

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By

Abdelrahim Saad Chahat
M.B.B.Ch, Tripoli University 2009

Under Supervision of

Dr. Khaled Mohamed Said
Assistant Professor of Cardiology
Faculty of Medicine – Ain Shams University

Dr. Mohamed Elsayed Zahran
Assistant Professor of Cardiology
Faculty of Medicine – Ain Shams University

Dr. Yasser Alaa Eldin Mahmoud
Lecturer of Cardiology
Faculty of Medicine – Ain Shams University

Faculty of Medicine - Ain Shams University
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Abdelrahim Saad Chahat

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List of Abbreviations

Abb.	Full term
ACEI	*Angiotensin-converting enzyme inhibitor*
AHA	*American Heart Association*
ANOVA	*Analysis of variance*
ARBs	*Angiotensin receptor blocker*
ARNI	*Angiotensin receptor neprilysin inhibitor*
BDI	*Beck Depression Inventory*
BMI	*Body mass index*
BNP	*Brain natriuretic peptide*
BP	*Blood pressure*
CBT	*Cognitive behavioral therapy*
CHF	*Congestive heart failure*
CO2	*Carbon dioxide*
CR	*Cardiac rehabilitation*
CRT	*Cardiac resynchronization therapy*
CRT-D	*Defibrillator with cardiac resynchronization therapy*
CVD	*Cardiovascular disease*
DM	*Diabetes mellitus*
ECG	*Electrocardiography*
EDV	*End-diastolic volume*
ENRICHED	*Enhancing Recovery in Coronary Heart Disease Patients Investigators*
ESC	*European Society of Cardiology*
ESV	*End-systolic volume*
HAM-D	*Hamilton Rating Scale for depression*
HART	*Heart Failure Adherence and Retention Trial*
HF	*Heart failure*

List of Abbreviations cont...

Abb.	Full term
HFACTION	*Heart Failure: A Controlled Trial Investigating Outcomes of Exercise Training*
HFmEF	*Heart failure heart failure with mid-range ejection fraction*
HFpEF	*Heart failure heart failure with preserved ejection fraction*
HFrEF	*Heart failure with reduced ejection fraction*
H-ISDN	*Hydralazine and isosorbide dinitrate*
HRmax	*Maximum heart rate*
HRR	*Heart rate reserve*
HRrest	*Heart rate at rest*
Ht	*Height*
HTN	*Hypertension*
ICD	*Implantable cardioverter-defibrillator*
LVAD	*Left ventricular assist device*
LVEF	*Left ventricular ejection fraction*
MDD	*Major depression disorder*
mes/ms	*Millisecond*
METs	*Metabolic equivalents*
MHz	*Megahertz*
MI	*Myocardial infarction*
MLHFQ	*Minnesota living with heart failure questionnaire*
MRA	*Mineralocorticoid receptor antagonist*
NH	*Neurohormonal*
NYHA	*New Your Heart Association*
OMT	*Optimal medical therapy*

List of Abbreviations cont...

Abb.	Full term
Pts	*Patients*
RAA	*Renin–angiotensin–aldosterone*
SAD HART	*Sertraline Antidepressant Heart Attack Randomized Trial*
SD	*Standard deviation*
SSRI	*Selective Serotonin Reuptake Inhibitors*
TCA	*Tricyclic Antidepressants*
TNF	*Tumour necrosis factor*
VE/VCO2	*Ventilatory equivalent ratio for carbon dioxide*
wt	*Wight*

INTRODUCTION

Heart failure (HF) is a growing chronic health condition affecting more than 20 million people worldwide.[**1**] Symptoms of depression are a common co-morbidity affecting as many as 42% of patients with heart failure (HF), and are associated with a poor quality of life and adverse prognosis. **[2-4]** Symptoms of depression have negative impacts not only on daily social and domestic activities, but also on hospitalization and mortality rates in HF patients.**[5]**

Furthermore, depression has been shown to be an independent predictor of future cardiac events in patients with heart failure, regardless of disease severity, making it worthwhile to consider among other cardiac risk factors, such as diabetes and smoking.[**6**]

Thus, a reduction in the patient's depressive symptoms has become of prime importance for therapeutic intervention. Despite recent advances in pharmacological management, however, treating the symptoms of depression is especially challenging in HF patients because they are often on complex medications and have multiple co-morbidities.[**2**] Non-pharmacological interventions, such as exercise training, have been demonstrated as potential treatments for depression and may be comparable with antidepressant therapy,[**7 -9**] but these effects are not well identified in patients with HF.

Theoretically, exercise (as part of cardiac rehabilitation program) may provide important advantages over pharmacotherapy, including fewer drug interactions and more involvement of patients in their self-care. Some studies,[**10-14**] including the largest Heart Failure—A Controlled Trial Investigating Outcomes of Exercise Training (HF ACTION),[**14**] indicated that exercise resulted in a modest reduction in depressive symptoms. Several other studies reported no benefits with exercise training on depressive symptoms in HF patients.[**15-19**] Thus, uncertainty remains with regard to the effects of exercise training on depressive symptoms in patients with HF.

Moreover, scarce data are available in the middle-east populations in general and Egyptian patients in particular, who have different etiology, ethnic, cultural backgrounds and risk factors from those patients in the west.

Aim of the Work

We investigated the impact of a 12-week completed cardiac rehabilitation program on depressive symptoms in patients with heart failure with reduced ejection fraction.