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SYSTEMATIC REVIEW

PREVALENCE OF DEPRESSION IN PATIENTS WITH CARDIAC INSUFFICIENCY AND CORRELATION WITH DETERMINANTS

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Abstract

Background: Depression is one of the major causes of morbidity and loss of productivity in the world. Regardless of age, ethnicity and gender, it is known that its impact increases after major stressful events. Other major causes are chronic diseases, such as heart failure. The condition shows greater frequency and prevalence today, because of the aging population, the growth of population dispersion and other risk factors like hypertension and diabetes as well as the increase in the life expectancy of sufferers, due to current therapeutic interventions. Thus, depression has become chronic and the challenge of fighting inevitably incurs psychosocial effects.
Aim: This research paper (systematic review) aims to investigate the prevalence of depression in patients with heart failure in association with determinants.
Method & Material: This is a systematic review. In particular, a literature search was conducted in the electronic databases ProQuest, PubMed, EBSCO and Google Scholar, using the key-words: heart failure, prevalence and depression.
Results: A total of ten surveys met the selection criteria. According to the results on the prevalence of depression, a moderate to high prevalence among patients with heart failure is presented, as well as an increased risk of mortality and clinical manifestations. Depression increases in patients with heart failure, as age, gender and race affect it similarly compared to what has been observed in the general population. The NYHA class II and III in advanced age and people with a prior history of myocardial infarction show a strong positive correlation with depression, too.
Conclusions: Mental health problems affect the entire sphere of activities of a patient. Management is feasible and guaranteed only in a controlled living environment. Nurses, having the privilege of close contact with patients, can promptly diagnose depression symptoms and intervene as members of an interdisciplinary team. In Cyprus, no other research studies exist concerning the assessment of the prevalence of depression in patients with heart failure.

Key words: : Heart failure, prevalence, depression.

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INTRODUCTION

Depression has become one of the major causes of morbidity and loss of productivity worldwide.[1]Although it concerns individuals of any age, nationality and gender, its impact is known to increase in individuals experiencing major psycho pressing events.[2] In the last category chronic diseases are included according to the contemporary literature, like chronic heart disease. Cardiovascular diseases, especially chronic heart failure, have a higher incidence and prevalence due to the aging population, the increase in the population dispersion of risk factors (such as arterial hypertension and diabetes) and the increased life expectancy of patients due to improved therapeutic potential. Of course, there are other disease factors today, too. Consequently, depression as a condition has been linked to the cultural context and the modern trends of everyday life. According to empirical observation and new scientific data, an important correlation between depression and chronic heart failure, exists.

Moreover, depression is one of the major mental health disorders, characterized by prolonged dysthymia and a reduced interest in daily activities.[3] The disease has spread worldwide, with a prevalence estimated as close to 10% of the world's population.[2] There is considerable variation in the geographical frequency and distribution of depression diagnoses, reflecting both the health service organizations in each country and the differences in lifestyle and temperament of the people in various places of residence.[3]

There is great concern that depression significantly aggravates the quality of life of sufferers, both because of the organic manifestations (psychosomatic syndromes such as appetite disorders, dyspeptic complaints, informal abdominal pain, irritable bowel syndrome, fibromyalgia and chronic fatigue syndrome) and the effects on productivity and, therefore, the socio-economic sphere.[4] For this reason, it is one of the priorities of the World Health Organization in the area of public and community health, with the aim of increasing the awareness of healthcare professionals in early diagnosis and the types of primary care treatment.[2]

In the context of scientific research efforts to understand the causes and mechanisms that promote and maintain depression, chronic diseases dominate with chronic heart failure playing an indisputable role. In particular, depression appears to occur at a different time point, depending on the nature, significance and individual characteristics of each disease.[5] However, its occurrence is found to aggravate the general health of the individual and his or her response to treatment. This leads to feelings of failure, which in turn deepen the depressive psychopathology, forming an endless vicious circle.[6]

In terms of heart failure, the incidence of depression appears to significantly increase in relation to the general population as shown in a series of epidemiological studies published over the last decade.[7] Available epidemiological data cover a broad geographical range, with the center of origin in Europe, America and Asia, indicating that the phenomenon is universal and probably global. Indeed, depression seems to be a frequent problem, significant and independent of the main organic disease that is contributing to the deterioration of the heart failure sufferers' quality of life.[8] In the appearance of depression, not only does chronic disease contribute, but also individual demographic, sociological, epidemiological and disease data.[7]

Recent studies also show the role of sex as a predisposing factor for depression. Among the general population, women with heart failure appear more prone to depression, with a frequency up to 50% higher than in men.[9] This differentiation, in turn, reflects both endogenous hormonal changes and the inferior socio-economic position of woman over men in most countries of the globe.[10] Interestingly, in studies at the United States, the frequency of depression in patients with heart failure is shown to be higher in the black population, running above 50%.[9] A statistically significant finding in the United States, however, seems to reflect other constitutional parameters beyond income (e.g. religious tradition and family organization) that are likely to be protective against the occurrence of depression in blacks with heart failure.[10]

In the case of age, there is an unexpected finding, that the incidence of depression is greater in younger patients with heart failure than in older patients. This reversal in relation to the observed trend in the general population may reflect the difficulty of younger people to accept the serious socio-economic impact of heart failure compared to older people.[11] In addition,

it is likely that a supportive family environment and financial security in older people contributes to the better management of the disease.[11,26]

Published studies about heart failure show a high incidence in Cyprus, roughly comparable to that described for most countries.[12] However, there are particular public health challenges that relate to significant delays in diagnosis and establishing barriers to health services, resulting in a significant increase in morbidity and a decrease in patient quality of life.[13] The available data offer limited to safe generalizations. There is no information about the extent and characteristics of this problem in Cyprus though, where both the organization of health services and the socio-economic environment are significantly different from Greece.[23-25]

AIM

The aim of the pesent review was to assess the prevalence of depression in patients with chronic heart failure and its correlation with determinants. More specifically, to highlight the problem of depression in chronically ill patients as a major challenge for public health and to investigate the possible existence of risk factors predictive of depression in the population to be used for the development of targeted prevention programs.

MATERIAL AND METHODS

This study is a systematic review in the electronic databases ProQuest, PubMed, Ebsco and Google Scholar with the keywords heart failure, prevalence and depression. The main research questions that have been addressed in the context of the proposed study are:

• Which NYHA I, II, III, IV classes are more vulnerable to developing severe depression in a heart failure patient?

• What variables affect the occurrence or absence of depression in heart failure patients?

What are the roles of sex, age, duration of illness, nationality, type of treatment, and co-occurrence?

• Is there a difference in the prevalence rates of depression between hospital and non-hospital patients with heart failure.

Selection Criteria

• Participants in the surveys should be over 18 years of age.

• The articles refer to depression of people with heart failure.

• The articles chosen should be open access written in Greek or English.

• The articles should also be peer reviewed.

• Inclusion of articles published within the timeframe of 2000 to 2015.

Exclusion Criteria

Articles not evaluated by a scientific committee and articles written in a language other than Greek and English.

Expected Benefits

This systematic review has as primary objective to bring to light the key public health issues related to a disease with an ever-increasing incidence in Cyprus due to the aging of the population and the increase in the incidence of metabolic syndrome components.

Early detection of depression in patients with heart failure is critical for early intervention and avoiding a consequent loss of quality of life in affected individuals.

The results of the study may be the trigger to start designing a depressive management tool for patients with heart failure in Cyprus.

Search Method

From the initial bibliography search in three databases using the words "heart failure, prevalence and depression", 32,388 articles were found. From these 32,343 articles were excluded because they did not refer to the depression of people with heart failure. After reading the titles and abstracts, about forty-five articles were found. Thirty articles were excluded because there was no full access to them and the remaining five articles were written in a language other than Greek and English. From the reading of the entire articles, those related to the purpose of the present study were selected. See diagram 1.

RESULTS

The search of the studies was made in the ProQuest, PubMed, Ebsco and Google Scholar online databases. From ProQuest, four studies,[12,14,17] were found, in Google Scholar, 7[9,10,16-19] and

in PubMed 3 studies.[9,16,19] Two studies were found in all three databases in all four databases.[9]

From the ten cross-sectional studies included in the search, one was quantitative[14] and one used both qualitative and quantitative approach.[15] One of the surveys was a pilot one which was conducted in Southern India by Deb Debasree et al. in 2007.[17]

Three studies aimed to assess the prevalence of depression among outpatients with heart failure[9, 10, 14] and seven measured depression in hospitalized patients with heart failure. Gottlieb et al. in 2004 showed that depression is elevated in heart failure patients with age, gender and race affected in ways similar to those of the general population.[9] Depression rates among hospitalized patients range from 13% to 77.5%, and outpatients rates of 13% to 42% have been reported. Adewuya et al. in 2006 in Nigeria showed that psychosocial factors lack social support and low socio-economic status, many of which are independent of depression, and have been implicated in the development of heart failure.[14]

Two studies provided an estimation of the prevalence of depression in elderly patients with heart failure who have been urgently hospitalized.[8, 19]

Polikandrioti et al. in 2015, aimed to investigate the factors related to anxiety and depression experienced by patients being treated with heart failure in Greece.[16] Its results suggest that family status plays an important role in whether a patient with heart failure is likely to have major depression or not. The results below show that divorced and widowed patients are more likely to have major depression than married patients (35.6% vs. 19.2%) even though married patients are 59% less likely to have major depression than their unmarried counterparts. In addition, patients with a low (<1 year) and moderate (2-5 year) duration of the disease are 69% and 61% less likely to have major depression than those with a long-term disease.[16]

In the results of Freedland et al., in 2003, the prevalence ranges from as low as 8% among patients in New York Heart Association category I, with failure as high as 40% among patients in class IV. The relationship between depression and KA class may be further influenced by age, with younger patients (<60 years) being more vulnerable to depression. Faller et al. in 2007 aimed to investigate the prevalence and prognostic significance of depression in a group of out-patientswith symptomatic heart failure, and compared the findings in men and women. The prevalence of suspected major depression was 13% (minor depression, 17%) and not different between the sexes.[15]

In India, Deb Debasree et al 2007 conducted research aimed to assess the prevalence of depression and anxiety disorders in patients with heart failure in the Indian population and to analyze the risk factors. The results recorded that NYHA Class II and III, with advanced age and previous history of myocardial infarction, show a strong positive correlation with depression and anxiety. Patients receiving b-blockers and statins have been reported to experience higher levels of depression.[17] These results agree with other studies, too.[17, 19]

Depressive symptoms are evident in elderly patients treated with heart failure, especially in women. Women have more frequent depression symptoms than men, 48% versus 36% as reported in Lesman-Leegte et al in 2006, from the Netherlands.[11]

Research activity on that field has been carried out in Greece,[11, 17] the Netherlands,[17] India,[16] Nigeria[15, 17] and Spain. As determined by the selection criteria, the participants had to be adults, the venue had to be inside and outside the clinic, and the articles reported or evaluated the prevalence of depression of patients with heart failure.

In terms of sampling, nine quantitative studies of the above used a sample of 80-1000 individuals and two qualitative investigations used a sample of 10-682.

Tools used in surveys for depression assessment in patients with heart failure

The Minnesota Living with Heart Failure Questionnaire was used by Gottlieb et al. in 2004 and Polikandrioti et al., in 2015.[9,16] The MLHEART FAILURE questionnaire was designed to measure the effects of heart failure on EQ. It consists of 21 questions that include two sub-scales: the emotional and the physical.

The Patient Health Questionnaire PHQ-9 was used to detect

depression in patients with heart failure as well as to investigate the role played by psychological parameters and perceptions about the disease in shaping the quality of life.

The Beck Depression Inventory was used in three studies and consists of 21 self-reported depression questions designed to help mental health professionals assess the mood, symptoms and behaviors of people suffering from depression. Each answer is given a score of zero to three to show the severity of the symptoms.[9,15,20]

Freedland et al., in 2003 also used a modified version of the Diagnostic Schedule, a structured interview designed to diagnose major psychiatric disorders in a credible and authoritative manner, according to the Diagnostic and Statistical Manual of Mental Disorders.[15]

The Geriatric Depression Scale (GDS) was used in a survey in Spain.[19] The GDS was created by Yesavage et al and has been extensively tested and used with the elderly population. The GDS Long Form is a short, 30-point questionnaire in which participants are asked to answer yes or no about how they felt last week.

Lesman-Leegte et al., in 2006 used the CES-D Depression Inventory in seventeen hospitals in the Netherlands. The CES-D scale is a short scale self-report designed to measure depressive symptomatology in the general population.[11]

W. K. Zung's self-assessment depression scale was deployed in a Debian study in Southern India by Deb Debasree et al., in 2007. The Zung Scale includes twenty questions. Each question has four possible answers describing the respondent's assessment is scored, respectively, from 1-4.

The Mini-International Neuropsychiatric Interview (M.I.N.I.) was applied to Nigeria research by Adewuya et al. in 2006. It is a brief structured interview for the major psychiatric disorders in DSM-IV. The goal is to evaluate and monitor patients with greater efficiency and accuracy. It is intended only as a tool to facilitate accurate data collection and the treatment of symptoms by trained personnel.[14]

Polikantriotis et al. in 2015 used the Minnesota Living with Heart Failure Questionnaire and the HADS Hospital Anxiety and Depression Scale in Greece. It is a scale of fourteen self-assessment elements developed to detect depression, anxiety and depression, and emotional discomfort among patients treated for a variety of clinical problems. Seven of the data relate to anxiety and seven relate to depression[16].

DISCUSSION

The aim of this systemic review was to investigate the prevalence of depression in patients with cardiac insufficiency and establish a correlation with determinants. From the literature search, ten investigations carried out met the selection criteria.

This systematic review provides evidence of a moderate to high prevalence of depression among patients with heart failure, as well as an increased risk of mortality and clinical manifestations.[9,14,15,16,20] The reduction of depressive symptoms arises through a variety of therapeutic interventions. The relationship between depression and heart failure is a relatively new but rapidly growing area of interest in cardiology research. In fact, very few articles were published on this subject before 1990. The increase in research coincides with the rise in HF as a health care problem in the US over the past ten years. Heart failure is the fastest and most developed form of cardiovascular disease, and represents more than one million annual hospital admissions and an estimated $ 60 billion in annual health care costs[21]. Because patients with heart failure have high mortality and attenuation rates, the study of depression characteristics in this population is a critical area of research in seeking to improve the quantity and quality of life.[27,28]

Depression increases in patients with heart failure, with age, gender and race affecting in ways similar to those observed in the general population. In terms of age, it has been found that the higher the age, the more negatively the patient with UA is affected. Depression is very common in elderly patients with heart failure and is associated with various medical and psychosocial factors. Given high prevalence of depression and the poor prognoses in patients with depressive symptoms, simple diagnostic tools and effective treatment advocate the systematic screening of depression in these patients.[19] The relationship between depression and heart failure may be further influenced by age as shown by Freedland et al. in 2004, with younger patients (<60 years) being more susceptible to the condition. Younger patients with more severe symptom are

among most commonly affected.

Depressive symptoms are evident in elderly patients, especially women. Severe depressive symptoms are similar to other indicators of the severity of left ventricular dysfunction. Forty-one percent of patients surveyed had symptoms of depression with women more often reporting depression symptoms than men, 48% versus 36%.[11] In a survey by Gottlieb et al, women are more likely (64%) to be depressed than men (44%). Among men, blacks (34%) tend to have less depression than Caucasians (54%).

Class II and III NYHA, with advanced age and a previous history of myocardial infarction, show a strong positive association with depression and anxiety. Patients receiving beta-blockers and statins have been reported to have higher levels of depression.[19] Timely diagnosis of mood disorders can help in long-term management and a better quality of life in patients with heart failure.[17] For example, the prevalence of depression ranges from as low as 8% among patients in the New York Heart Association category I to as high as 40% among patients in class IV.[15]

Psychosocial factors, a lack of social support and low socioeconomic status, many of factors which are independent of depression, have also been implicated in the development and progression of heart failure and should be taken into account when assessing the impact of depression on the disease. There is a trend in current research to compare rates of depression in Nigeria with western countries, showing slightly higher depression rates due to the low socio-economic situation of patients in Nigeria.[14]

As for the prevalence rates of major depression at 95% confidence intervals, it has been found in ten studies of heart failure patients that the highest rate is recorded in Spain at 49% and the lowest in Cyprus at 13%.[19] The overall assessment of the 10 major depression studies identified using post-analytical testing was 25%.

Compared to patients with major depression, the sample of patients with heart failure had a lower score on physical health, while to the contrary, emotional health secured a better score. However, patients at a more advanced stage of ST (Stage 3) had similar outcomes to the sample with major depression as regards emotional health. The findings also show that depression and heart failure have a significant share in rhythm disturbances (predisposing patients to arrhythmias) that may, in part, have a devastating effect on the depression of those with a severe prognosis.[19]

It is worth mentioning that in all these investigations it has been found that patients who are well informed about their health problems are less likely to develop depression than those who are less well informed. As shown, the degree of information affects the major depression of patients.

Addressing depression problems in patients with heart failure can help improve the quality of life of these patients and may improve the long-term outcome of depression.

With this systematic review, it has been found that there are no studies in Cyprus concerning the assessment of the prevalence of depression in patients with heart failure and there is in high demand to design relative research projects.

CONCLUSIONS

Based on the recommendations of the WHO, the European Commission and the overall results of this study, the integration of mental health services into primary health care is a challenge, but also a priority for health systems. In order to achieve the goal of de-institutionalization and reintegration of mental patients, interventions are needed at both the central and regional level. These initiatives require both organizational changes and targeted information as well as continuing education campaigns. Thus, the management of mental illness as an extension and "side effect" of a chronic organic disease should become a public health priority in Cyprus since, as the present study shows, it is an extremely frequent complication in an extremely vulnerable group of patients; and any delay comes at the expense of the sufferers, and also of society as a whole.

Since mental health problems affect the entire sphere of activities of the person affected, management is only possible if a controlled living environment is assured. Multiple levels of support, depending on the degree of autonomy and the severity of individual assistance (e.g. self-care, therapeutic communities, day clinic and home care) should be developed. PFM services should detect the needs of this population and sug-

gest the ideal disposition of existing resources, while at the same time informing and ensuring the consensus of the local community.

A second parameter concerns the need to create an interdisciplinary intervention team, involving the patient and his or her environment, which will guarantee gradual and sustained medical monitoring and psychosocial integration. This group may be coordinated by the family doctor and a community nurse, who usually have a personal relationship with the patient. As an alternative implementation of the above approach, it has been proposed to transform existing mental health structures from closed to open primary care units, incorporating general-family medical services. In this case, already available resources can be better utilized and chronic mental patients remains in contact with a familiar environment (if they have been hospitalized in the past); but now they have a wider supportive and guidance system for all their health needs.

Particularly in the case of people with mental illness in the context of organic disease (heart failure), the role of the corresponding physician (cardiologist) is called to foster the close relationship already built with the patient so he or she can be the link between the patient and the larger mental health group. As this systematic review shows, an initial diagnosis of mental illness should then refer the individual to mental health services for better investigation and treatment. Nurses, having the privilege of close contact with patients, often diagnose symptoms of depression early on and intervene to inform members of the multidisciplinary team to deal with them. Also, with a holistic approach to the patient encouraging coverage of both his or physical as well as psychosocial needs, nurses can contribute to a better prognosis of CA.

Particularly important for the successful integration of mental health services is the continuation of primary care, which can be ensured through the horizontal interconnection of the general practitioner with mental health professionals. It is typical that the review of the surveys selected note that in various developed economics and medical countries, patients and general practitioners report the difficulty of communicating – with direct access to professional help as a major barrier to effective outpatient care for people with a psychopathology. Consequently, the development of uninterrupted and continuous communication channels must be ensured by appropriate administrative interventions right from the planning and programming stage.

Finally, the results of the research conclude that it is crucial for the success of any project to continue training and re-training the health professionals involved, while strengthening them with the formal assignment of responsibilities and, possibly, the self-management of resources.

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ANNEX

FIGURE 1. Flow chart of the systematic review

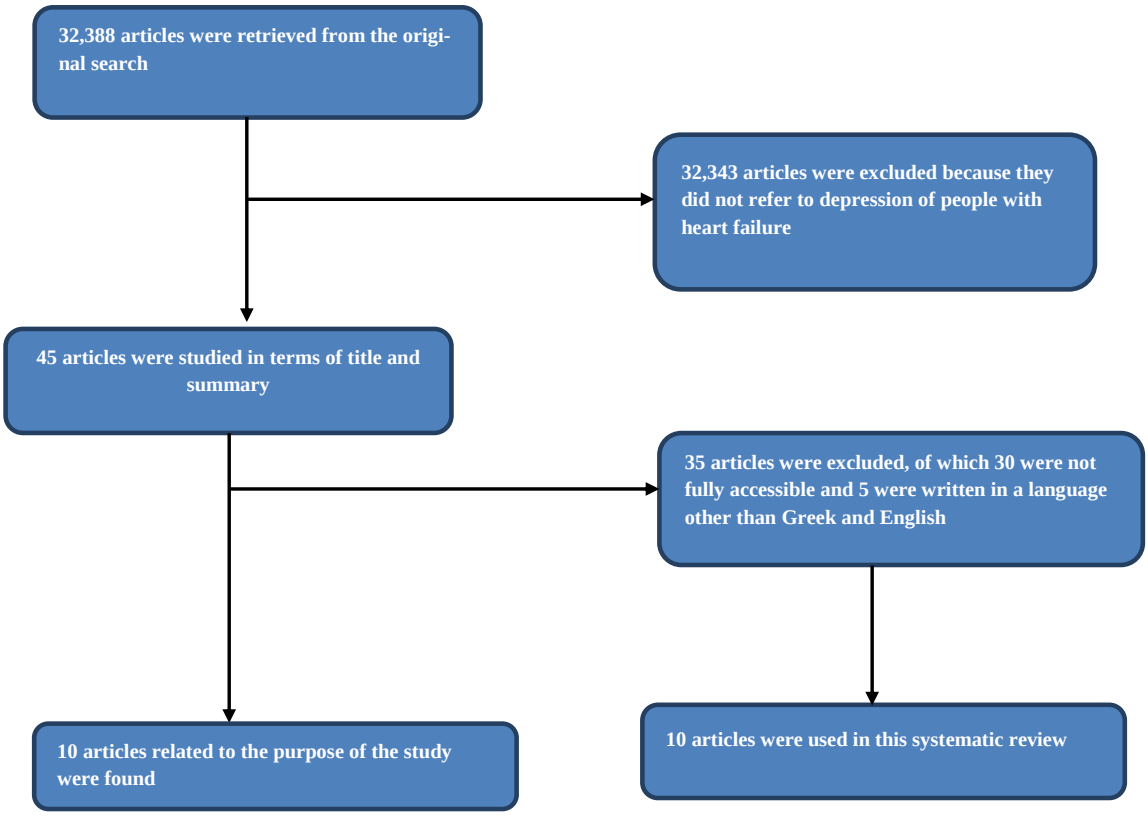

TABLE 1. Characteristics of the studies included in the systematic review (2000-2015).

Researchers - Year	Country	Sample	Type of Study	Aim	Research tools	Results - Main Findings
Gottlieb SS, Khatta M, Friedmann E, Einbinder L, Katzen S, Baker B et al,2004	USA	155 patients	quantitative	To determine the prevalence of depression in outpatients with heart failure	• Minnesota Living with Heart Failure Questionnaire • Beck Depression inventory	Depression is increased in patients with RA, with age, gender and race being affected in ways similar to those observed in the general population. Depression rates among hospitalized patients range from 13% to 77.5%, and outpatients, rates of 13% to 42% have been reported,
Deb Debasree , Khandelwal Smita , Kansal Nitin , Gonsalves James,2013	India	82 patients	Pilot study	Assess the prevalence of depression in patients with CAD in the Indian population	Zung questionnaire	Class II and III NYHA, with advanced age and previous history of myocardial infarction, showed a strong positive association with depression and anxiety. Patients receiving β-blockers and statins have been reported to have higher levels of depression
Ivonne Lesman-Leegte a, Tiny Jaarsma a , Robbert Sanderman b , Gerard Linssen c , Dirk J. van Veldhuisen,2006	Holland	572 patients with heart failure	quantitative	Determination of the prevalence of depressive symptoms in elderly patients treated with UA	CES-D	Depressive symptoms are evident in elderly patients treated with heart failure especially in women. Women more often report symptoms of depression than men 48% versus 36%.
Adewuya, Abiodun O, Ola, Bola A ,Ajayi, Olufemi E, Oyedeji, Adebayo O, et al 2006	Nigeria	105 outpatients with heart failure	qualitative	It aims to estimate the prevalence of major depressive disorder in Nigeria in outpatients with UA	MINI 25	Psychosocial factors lack of social support, and the low socio-economic situation, many of which are independent of depression, have also been implicated in the development and development of the CA
Freedland, Kenneth E. ; Rich, Michael W., Skala Judith A.	USA	682 patients with heart	Mixed method	It aims to assess the prevalence of depres-	1. Schedule 2. Beck Depression	The prevalence ranges from low as 8% among patients in the New

RN, MA, Carney, Robert M. PhD, Dávila-Román, Victor G. MD, and Jaffe, Allan S. MD 2004		failure		sion in a larger sample of hospitalized patients with CA and to identify demographic, medical, psychosocial and methodological factors	inventory	York Heart Association category I failure to high as 40% among patients in class IV. The relationship of depression and KA class may be further influenced by age, with younger patients (<60 years) being more vulnerable to depression
Faller H, Störk S, Schowalter M, Steinbüchel T, Wollner V, Ertl G, Angermann CE. 2007	Germany	986 outpatients with heart failure	quantitative	To investigate the prevalence and prognostic significance of depression in a group of symptomatic CA patients and to compare findings in males and females.	PHQ-9	The prevalence of suspected major depression was 13% (minor depression, 17%) and was not different between the two sexes
Jiang W, Alexander J, Christopher E, Kuchibhatla M, Gaulden LH, Cuffe MS, et al,2001	USA	374 patients	quantitative	To determine the prevalence and relationship of depression with the outcomes of patients treated with heart failure What is the relationship of depression with the increased risk of mortality and re-encephalitis in patients with UA	Beck Depression inventory	Total mortality was 7.9% at 3 months and 16.2% at 1 year. These increased risks were independent of the New York Heart Association age class, baseline ejection fraction, and ischemic CA etiology. Major depression is common in patients receiving UA and independently associated with poor prognosis.
Pilar Guallar -Castillóna, b, María del Mar Magariños-Losadac, Carmen Montoto-Oterod, Ana I. Tabuencaa,Carlos Rodríguez -Pascualc, Maite Olcoz-Chivac, Manuel Conde -Herrerae , Concepción Carreñof, Pedro Conthed, Eduardo Martínez- Morentíngg,José	Spain	433 patients	quantitative	To assess the prevalence of depression, and to identify the medical and psychosocial factors in elderly patients treated with UA	Geriatric depression scale	Depression was more common in patients with the following characteristics: NYHA functional class III-IV

R. Banegasa, Fernando Rodríguez-Artalejo .(2006)						
Polikandrioti M, Goudevenos J, Michalis LK, Koutelekos J, Kyristi H, Tzialas D, Elisaf M. Hellenic J Cardiol. (2015)	Greece	190 patients	quantitative	Investigating the factors associated with anxiety and depression experienced by patients with UA.	1. Minnesota Living with Heart Failure Questionnaire 2. HADS scale	Family status plays an important role in whether a patient with UA is likely to have major depression. Divorced and widowed patients alone were more likely to have major depression compared to married patients (35.6% vs. 19.2% p = 0.046). also showed that married patients were 59% less likely to have major depression than their unmarried counterparts. In addition, patients with a low (<1 year) and moderate (2-5 year) duration of the disease were 69% and 61% less likely to have major depression than those with long-term disease.
Lossnitzer N , Herzog W, πελαργός S, άγρια B, Müller-T Tasch, Lehmkuhl E, Zugck C, Regitz-Zagrosek V, Pankuweit S, Maisch B, Ertl G, Gelbrich G,Angermann CE (2013)	Germany	839	quantitative	To investigate the incidence and prognostic factors of depression in patients with RA.	PHQ-9	Events of major (major) depression were observed in 61 (7.3%) and 47 (5.6%) of the population. Depression was recurrent in 15 (25%) and 16 (34%), respectively. Multiple regression analysis revealed the following variables that predict small or large depression are: Previous depressive episode Space Trust Visits / year to general practitioner New York Heart Association Physical function