

Research Article

Prevalence of Depression Among Elderly Patients Hospitalized for Cardiovascular Disease

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Article Info

Received: Apr 18, 2022

Accepted: May 19, 2022

Published: May 26, 2022

Archived: www.jclinmedsurgery.com

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Abstract...

Background: The present study aimed to determine prevalence of depression among elderly hospitalized cardiac patients.

Method: A cross-sectional study design is used with purposive criterion sampling. Total of 200 patients were recruited, who were 65 years of age or older with chronic cardiac problems. These patients were admitted to a cardiac ward at King Fahad Medical City from April 2018 till April 2020. Originally developed Geriatric Depression Scale (GDS) was used as instrument to collect the data, which is composed of 30 basic mental health related questions.

Result: According to the GDS-15 score interpretation, it is found that 22.6% of the participants had mild depression, 35.3% of the patients had moderate depression, while 4.9% of the patients were suffering from severe depression. However, there was no significant effects of gender on onset of depression in these patients. However, 15% of the married and 17.5% unmarried patients had to go through moderate depression. The patients who were already diagnosed with other diseases did not face the depression as much as those who had no comorbidities.

Conclusion: The patients' health outcomes could be improved by proper diagnosis and management of depression among elderly hospitalized cardiac patients that can save the cost of the healthcare system.

Keywords: Cardiology; Depression; Geriatric depression scale; Inpatients.

Abbreviation: GDS: Geriatric Depression Scale; AHA: American Heart Association; CCU: Coronary Care Unit; ICD-10: International Classification of Diseases 10th Edition; DSM-IV: Diagnostic and Statistical Manual 4th Edition.

Citation: Mekdad S, Asiri Y, Saker F, AAlsayed A. Prevalence of Depression Among Elderly Patients Hospitalized for Cardiovascular Disease. *J Clin Med Surgery*. 2022; 2(1): 1013.

Introduction

Depression is a crucial mental health issue. Globally, approximately 322 million individuals are affected with depression [1]. Depression is the single major contributor to suicides (800,000 annually) and disability (7.5%, 2015), worldwide [2]. In Saudi Arabia, elderly persons comprise of 4.19% of the total population, and is projected to reach 25% by 2050. Depression is common in elderly population may because of Isolation, loss of income, chronic diseases, elderly abuse, mobility restrictions etc., [3]. Various studies have identified depression as a major disorder that affects one to five adults throughout their life [4,5]. Correllet al., [6] depression accounts for the major cause of morbidity and poor quality of life among cardiovascular patients. Previous studies have listed depression as the primary risk factor leading to detrimental cardiovascular incidents, which is majorly high for older patients [5,7]. However, the adequate treatment of depression remains as low as 20%, which is significantly low for cardiovascular patients [8].

The prevalence of depressive disorder has recorded for patients admitted in hospital across various countries, such as Kenya (42%) [9], Pakistan (48.5%) [10], Ethiopia (29.4%) [11], and Mekele, Ethiopia (54.6%) [12]. Mekdad et al., [13] highlighted those depressive cases are most in elder maybe cause of slow recovery. Studies have suggested a higher prevalence of depression among geriatrics with a chronic medical condition and an increased rate of hospitalization [13,14]. The symptoms include low mood, reduced energy, difficulties in focus, poor sleep etc. depression in elders increase placement of life care facility [15]. Depression among these patients is treatable; however, its screening is difficult because of communication difficulties. Depression may even cause delayed recovery from medical illness, increased health care **utilisation and hospitalisation**, and increased probability of suicidal urge [16]. Several tools are used to screening **the prevalence of depression in elderly people**; GDS is the standard and shortest version. To overcome the prevalence of depressive disorder among the heart patients, an advisory was issued by the American Heart Association (AHA), which suggested the screening of the patients for depression [17]. However, its implementation in the clinical practices remains inadequate. Even though the statistics for the patient screening have improved from 2009, these remain low for the inpatients, which only reflected 3% of the cases in 2015 [5,18,19].

Given the high prevalence rate of depression among older patients, this study intends to assess the prevalence of depression in the elderly patients in Saudi Arabia. The inadequate use of screening intervention promotes evaluating the particular research area. The respective population is selected given the increased medication and the adverse impact due to drug to person interaction (digoxin use in older adults) along with the coexistence of other disorders.

Similarly, study determines the prevalence of depression in chronically ill cardiac patients and determines the relationships between depression, health status, and hospitalization. The study has also identified the gap in current assessment, diagnosis, and management of depression among elderly patients with cardiac disorders, and the impact of untreated cases on admitting and health care utilization and cost.

Materials and methods

Study design

This cross-sectional study is conducted among elderly population belonging to different socio-economic and demographic groups of Saudi Arabia. The Research Ethics Committee of the Faculty of King Fahad Medical City approved the study. The directors of the medical institute granted an official permission. Verbal consent was obtained from elderly persons after comprehensive description of the objective and nature of the study. Confidentiality of data was ensured and they were informed that gathered data will be used merely for the research objective.

Study population and sample

The study population constitutes 200 elderly patients with depression. The purposive criteria sampling was used for recruiting the participant's formula that used to Calculate sample size: $n = 4pq/E^2$. Where "p" is the positive character, $q = 1-p$ and $E =$ allowable error of p (20). The selection of participants was based on the determined inclusion and exclusion criteria. The age of these patients was 65 years or older, who had been admitted to a cardiac ward at King Fahad Medical City. Participants were included when: (1) 60 years or above, (2) admitted in cardiac ward, (3) admitted at King Fahad Medical City, (4) elderly cardio-hospitalized patients who can fill the self-assessment questionnaire, and (5) did not have Alzheimer disease. On the contrary, participants were excluded if: (1) suffering from deafness, articulation disorders, and aphasia.

Data collection

The prevalence of depression among elderly patients and the relationship of depression with other factors such as medical condition and social support was evaluated using the GDS. GDS is a self-report measure of depression in patients, who can respond in a "Yes/No" format. This scale was originally developed as a 30-item instrument; however, 15-item validated Arabic version was employed in the presented study. Questionnaire in the GDS comprise of patients' socio-demographic and health characteristics, including; formal education, experienced cognitive dysfunction, medical illness, a history of psychiatric illness, a family history of psychiatric illness, and marital status, were documented. The obtained data related to the prevalence of depression among elderly patients with cardiac diseases and its interrelation with patient's socio-demographic data, level of education, gender, marital status, and mean age. Out of the 15 items, the prevalence of depression was indicated in 10 items when answered positively whereas the rest (1, 5, 7, 11, 13) indicate depression when answered negatively. Depression was suggested on a score higher than five. The scale was translated into Arabic and approved to be valid and reliable by El-Husseini [21]. GDS is used extensively in the literature to evaluate depression in such populations with reliability and consistency [22-24].

Data analysis

The collected data in the study was analyzed using SPSS Version 21. The descriptive analysis was employed for testing of the study variables. Descriptive statistics determined the prevalence and percentage of diagnosed cases. The significance in bivariate analysis was tested through Chi-square. Multiple re-

gression analysis was also used for examining the association between the variables.

Results

Two hundred thirty elderly cardiac patients were originally screened for depression. However, patient who did not fulfill the inclusion criteria were excluded from the study, in which 3.9% (9) of them had Alzheimer's Disease, 3.9 % (9) of the patients could not fill the GDS-15 form because of hearing difficulties, and 5.2% (12) patients refused to fill the form. Finally, 87 % (200) of these patients responded to filling the GDS-15 questionnaire. In the finally selected patients, 58%, (n=116) were males and 42% were females (n=84). Their ages ranged from 65-101 years with a mean of (75 +/- 7.5) years. Among these, most of the patients were married (69%, n=138) and had Saudi Nationality (98%, n=196). All of the recruited patients were on Poly-pharmacy, (taking more than five medications, mean 7.3+/-2). Regarding the educational status, about 51 % (n=102) of these patients were illiterate. Out of the 200 patients, 2% (n=4) were employees and live-in hostel, and approximately 11% (n=22) were living alone or with the housemaid. While 88 % (n=176) of these patients were living with a family or a family member. The full Baseline characteristics of patients have been shown in Table 1.

Table 1: Baseline patients' characteristics.

Total number of patients (200)	Number	Percentage
Males	116	58 %
Females	84	42%
Mean age of geriatrics	75+/-7.5	75+/-7.5
Education level		
Illiterate	102	51 %
Primary School	40	19.2%
Intermediate	40	19.6%
Secondary School	14	7%
Bachelor Degree	6	2.9%
Living with family or family member	176	88%
Married Status	138	69 %
Percentage of patients with diabetics	172	86 %
Polypharmacy	200	100%
Number of patients admitted to CCU	116	58%
Number of patients admitted to cardiac wards	84	42%

*CCU: Coronary Care Unit.

Depression was diagnosed in about 63% (n=126) of the screened population by using the GDS-15 validated scoring Arabic version. Based on the interpretation of GDS-15 scores, about 37%, (n=74) of these patients were not depressed, about 22.6 % (n=45) were mildly depressed (GDS-15 scores between 5 and 8), about 35.3 % (n=71) had moderate depression (GDS-15 scores between 9 and 11), Results revealed that 4.9 % of these patients (n=10) were severely depressed (GDS-15 scores between 12 and 15) (Figure 1A).

Data obtained from GDS Score were analyzed using IBM, Statistical Package for the Social Sciences (SPSS). Pearson Chi-Square Test was applied to observe the effects on mental health of the cardiac patients. Results show that the depression levels among patients admitted in the CCU (Coronary Care Unit) were

significantly higher (0.001) as compared to the patients who were admitted in regular cardiac wards (Figure 1B). However, there was no significant (0.480) effects of gender on depression levels among these patients (Figure 1C).

We found a close relationship between marital status and depression. Married elderly cardiac patients were less likely to have depression, as compared to the unmarried (Figure 1D). Some of these participants were already depressed before admitting to the hospital. About 7.8% (15 patients) were already diagnosed, and they were on anti-depressant medication. Four of those patients had a GDS-15 score of less than 5, which mean they were not depressed at the time of study. Whereas, other 4 patients were still found depressed (Figure 1E).

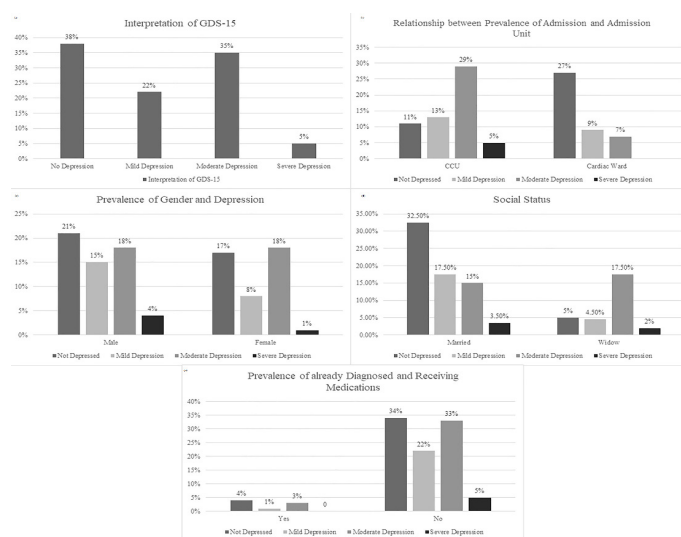


Figure 1: (a) Prevalence of depression among the hospitalized patients; (b) Relationship between the prevalence of depression and admission unit; (c) Relationship between prevalence of gender and depression; (d) Relationship between marital status and prevalence of depression; (e) Prevalence of already diagnosed and receiving medications among the geriatrics.

Table 2: Correlations between socio-demographic variables and GDS scores.

Total Number of patients 200	Depression; Number (Proportion)			p-value Chi-Square
	None	Mild	Severe	
Gender				
Males	54.4%	73.3%	76.1%	0.021
Females	45.5%	26.6%	23.8%	
Education level				
Illiterate	6.7%	15.5%	14.2%	<0.001
Primary School	45.5%	48.8%	47.6%	
Intermediate	37.3%	26.6%	33.3%	
Secondary School	10.4%	8.8%	4.7%	
Bachelor Degree	2.2%	6.6%	14.2%	
Living with family or family member	83.5%	68.8%	38.0%	0.519
Percentage of patients with diabetics	2.2%	11.1%	9.5%	
Polypharmacy	11.9%	13.3%	38.0%	
Number of patients admitted to CCU	54.4%	73.3%	76.1%	
Number of patients admitted to cardiac wards	45.5%	26.6%	23.8%	

Table 3: Mean Scores for GDS- 15.

S.no	Statements	Mean Score
1	Are you satisfied with your life?	2.54
2	Have you dropped many of your activities and interest?	2.11
3	Do you feel that your life is empty?	1.98
4	Do you often get bored?	2.65
5	Are you in good spirits most of the time?	3.12
6	Are you afraid that something bad is going to happen to you?	2.01
7	Do you feel happy most of the time?	2.99
8	Do you often feel helpless?	1.98
9	Do you prefer to stay at home, rather than going out and doing new thing?	2.65
10	Do you feel you have more problems with memory than most?	3.34
11	Do you think it is wonderful to be alive now?	1.39
12	Do you feel pretty worthless the way you are now?	2.24
13	Do you feel full of energy?	2.64
14	Do you feel that your situation is hopeless?	1.72
15	Do you think that most people are beter off than you are?	1.63

Table 4: Shows the results for the regression analysis, which depict that depression among individuals was significantly linked to their admission to CCU (0.005), an education level (0.000), marital status (0.000), and family support. However, it found an insignificant association with gender (p-value 0.195).

Variables	R Square	F-Value	Beta	T-value	P-Value
(Constant)	0.844	210.663		1.574	.117
Gender			.131	1.302	.195
CCU			-.137	-2.874	.005
Marital Status			.623	13.477	.000
Education			.403	4.959	.000
Family Support			-.076	-.988	.324

The group of subjects with mild and severe depression was dominated by women in both groups, respectively (Table 2). Majority of the study subjects had completed their primary school and were in relationships. Statistically significant differences were observed between the educational status, gender and the presence of depressive symptoms ($p < 0.001$).

Discussion

Depression is a major issue in all ages especially for elders with health issues and it is often associated with high co-morbidities. It is not a natural part of aging, as some health care professionals think [25]. Depression in such patients is under-diagnosed due to gaps in knowledge about assessment and diagnosis of depression. In study, the prevalence of depression was found to be 63% by using the GDS-15 Arabic version as a screening tool. The overall prevalence rate of depression observed in this study was higher as compared to other groups of studies like a study by Shehtah et al., [26] which was a cross-sectional study in Saudi geriatrics shows prevalence rate of 39% among primary care patients with chronic illness, using the geriatric depression scale as an assessing tool [26]. A study comparing Indian cardiac patients and Saudi cardiac patients reported that

the rate of depression was about 13.2% among Saudi cardiac patients, in contrast to a higher prevalence of 34.4% in Indian Cardiac patients [27].

The higher prevalence rate in this study could be found because these patients were hospitalized in the cardiac center. The response rate among these patients may differ from younger patients in the symptoms of depression and the comorbidities of depression. Risk factors for the development of depression are different for elderly ill cardiac patients. Treatment may also be different, including patient's response; treatment should be individualized in this population to optimize therapeutic outcomes [28].

This study has identified 76.1% women with severe depressive symptoms and 73.3% women with mild depressive symptoms. The proportions, in men were 23.8% and 26.6%, respectively. Similar findings were obtained by Górska-Ciebiada et al., [29]. A relationship was found between depressive symptoms, and factors including marital status and educational status. However, no correlation was identified with the gender. In some instances, the treatment of depression in elderly patients can reduce the overall cost of health care. Cost savings were greater than the costs of providing psychiatric consultation and treatment of depression [30,31]. The potential cost savings for the treatment of depression in older adults may be best appreciated by the long-term prospective study. Unutzer et al., [32] found that patients, who received one year of depression treatment in the primary care setting, had lower average costs for all their health care over five years. However, there was a correlation between health care utilization and prevalence of depression. Pharmacists can help in detecting medications that potentially increase the risk of depression. Especially to those who are hospitalized for other disorders like cardiac failure are at higher risks.

Based on the findings, the study recommends adopting a multidisciplinary approach among hospitalized cardiac patients including close monitoring of the patient at initial stages for determining the disease severity from mild to moderate. Collaborative work practices can be used for facilitating better management along with a referral to mental health experts. For improving the treatment outcomes, different aspects can be considered for determining a treatment plan for hospitalized geriatrics patients with depression. Such as for the medical aspect, different stages and heart failure etiology can be determined, along with the challenges in the pharmacological treatments. The impact of different comorbidities can be considered including sleep apnea, kidney as well as diabetes. Also, physical examinations can be held for frailty and mobility, i.e., weakness, inactivity, slowness, exhaustion, and fall risk. Mind and emotional aspects of the patients can be considered, including the impact of self-management skills, along with the screening of depression. Lastly, social environment context must also be studied concerning social support at home, or community level along with his financial resources.

This study has relied upon self-reported comorbidities. Thereby, the actual prevalence of such morbidities was not evaluated. In addition, all co-morbidities were undertaken as a single variable undertaking the heterogeneity of medical circumstances. With the limitation in results case-mix in the study sample was purely reflected from the findings and that other populations would offer different outcomes with different comorbidity. Future studies need to address the relationship between medication adherence and depression in hospitalized

cardiac patients. There is also a need to study the role of clinical pharmacists in depression management.

Conclusions

The study showed that prevalence of depression symptoms in elderly hospitalized cardiac patients was high and associated with a high level of hospitalization, increased utilization of health care system, decreased quality of life, and higher comorbidity especially. In this, the majority remain undiagnosed, despite the availability of effective treatments for depressed elderly hospitalized cardiac patients. It showed that GDS-15 is a good screening instrument for patients with depression as defined by International Classification of Diseases 10th Edition (ICD-10) and Diagnostic and Statistical Manual 4th Edition (DSM-IV). This study differs from others studies conducted in this context with respect to the region. As depression in elderly hospitalized cardiac patients has been reported but such studies are lacking in the Saudi region. Proper and early diagnosis and treatment of depression in hospitalized cardiac patients will help in a cost-saving of the health care system and improve quality of life for those populations.

Declarations

Acknowledgements: The author is thankful to all the associated personnel, who contributed for this study by any means.

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