



Prevalence of Undiagnosed Common Mental Disorders and its Association with Quality of Life among Patients Attending the Arrhythmia Clinic of a Large Tertiary Care Hospital in Southern India

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Abstract

Objectives: Studies performed in high-income countries have explored the prevalence of depression and anxiety among patients with cardiovascular diseases, such as coronary artery disease, heart failure, and atrial fibrillation. On the other hand, data are limited from low- and middle-income countries, particularly India. Moreover, there is a scarcity of data on how quality of life (QOL) parameters are affected by common mental disorders (CMD) including depression and anxiety. Accordingly, the aim of this study was to explore the prevalence of undiagnosed depression and anxiety in patients attending the arrhythmia clinic of a tertiary care hospital in Southern India and to determine the association of CMD with QOL.

Methods: This cross sectional study was performed on 282 patients attending the arrhythmia clinic of a tertiary care hospital in southern India. Depression and anxiety were assessed using the patient health questionnaire-9 (PHQ-9) and hospital anxiety and depression scale for anxiety (HADS-A), respectively. The patients' demographic characteristics and potential risk factors were also assessed, and QOL was determined using the short-form health survey (SF-36).

Results: In the present study, the prevalence of undiagnosed CMD (depression, anxiety, or both) was 45.74% among patients (32.98% with undiagnosed depression and 32.62% with undiagnosed anxiety). Depression and anxiety were important determinants of poor QOL. However, hypertension, diabetes mellitus, and smoking were not significantly associated with poor QOL in this study.

Conclusions: Depression and anxiety are important determinants of poor QOL. They are commonly reported among patients attending outpatient arrhythmia clinics. Therefore, a screening program for CMD may facilitate early diagnosis and intervention for patients attending arrhythmia clinics.

1. Background

Depressive disorders are expected to become the most common cause of disability-adjusted life year (DALY) by 2030 (1). Cardiovascular diseases such as coronary artery disease (CAD) and congestive cardiac failure are commonly associated with common mental disorders (CMD) such as depression and anxiety (2, 3). However, the association of CMD with arrhythmia has not been well studied.

In this regard, Patel D et al. showed that 28% of patients with atrial fibrillation had anxiety disorders, while 38% met the criteria for major depression (4). Besides, a certain proportion of patients attending arrhythmia clinics with cardiac symptomatology lacked the underlying car-

diovascular pathology. The aim of the present study was to investigate the prevalence of CMD in patients attending an arrhythmia clinic and to assess its association with QOL.

2. Methods

This cross sectional study was performed on patients aged ≥ 18 years, who attended the arrhythmia clinic of Christian medical college (CMC), Vellore, India between 01/01/2016 and 31/8/2016. Patients with a history of psychiatric diseases were excluded from the study. Written informed consents were obtained from all the patients before recruitment. The study was approved by the institutional review board and the ethics committee of CMC, Vel-

lore. The study protocol conforms to the ethical guidelines of the declaration of Helsinki (1975), as reflected in an approval from the institutional review board and ethics committee of CMC, Vellore.

After obtaining informed consents from eligible candidates, depression and anxiety were objectively assessed using the patient health questionnaire-9 (PHQ-9) and hospital anxiety and depression scale for Anxiety (HADS-A). Quality of life (QOL) was assessed using the short-form health survey (SF-36) for all the patients. All enrolled patients were evaluated for the presence of cardiovascular diseases (CVD). This helped determine the proportion of patients with no underlying CVD, although they presented with the related symptomatology. Differences were studied between groups of patients with and without CMD.

CVD was diagnosed in patients with 1 or more of the following characteristics: 1) history of typical angina; 2) documented coronary artery disease based on coronary angiogram, exercise stress test, or echocardiography; 3) documented bradyarrhythmia; 4) documented tachyarrhythmia; 5) positive electrophysiological study; 6) diagnosis of heart failure; and 7) structural heart disease diagnosed by echocardiography. The algorithm of the study is as follows:

1. Patients attending the arrhythmia clinic
2. Consenting patients enrolled
3. Demographic and clinical information collected and PHQ-9, HADS-A, and SF-36 administered
4. Analysis

SF-36: this scale has been validated in India by Sinha et al. and consists of 36 items which are divided into 8 domains (5). For each domain, the items are coded and transformed into a scale ranging from 0 (worst QOL score) to 100 (best QOL score) according to the standardized manual.

PHQ-9: It is a simple, quick, and reliable instrument for clinicians to diagnose depression (6). PHQ-9 is validated in India with high sensitivity, specificity, and accuracy for screening and diagnosis of depression (6).

HADS-A: It has been validated in India for the screening of psychological morbidities in patients with cancer (7). An optimal cut-off value of ≥ 8 for screening anxiety disorders confers a sensitivity of 82% and specificity of 79% (8).

2.1. Statistical Analysis

Sample size: a total sample size of 250 was required to estimate the prevalence of CMD with a precision of 5% at 95% confidence interval (CI).

Analysis of variables: The prevalence of depression was calculated at 95% CI. Continuous variables were presented as mean and standard deviation, while frequency and percentage were calculated for the categorical data. The association between the baseline characteristics and study outcomes (depression, anxiety, and QOL) was assessed using

independent t test for continuous variables and Chi square test for categorical data. All analyses were performed using Stata 11.0. (StataCorp, College Station, Tx, USA).

3. Results

The sociodemographic and baseline clinical characteristics of the participants are presented in Table 1. The mean age of the subjects was 50.783 ± 15.10 years. Overall, 101 (35.82%) out of 282 participants were female. Based on the findings, 75.53% of the participants had secondary or higher levels of education. Nearly 65.19% of the subjects were either from middle or higher socioeconomic classes (9).

The prevalence of undiagnosed depression was 32.98% (PHQ-9 scores > 10), and the prevalence of undiagnosed anxiety was 32.62% (HADS-A scores > 8). Overall, 129 (45.74%) participants had either depression, anxiety, or both (Figure 1). The mean QOL score was 56.67 ± 15.98 , based on SF-36 in our population. The mean score was significantly different between the groups with and without CMD (49.23 ± 14.71 vs. 62.89 ± 14.27 ; $P < 0.001$). Among all QOL parameters, except for physical functioning, the scores were significantly lower in the CMD group in comparison with the non-CMD group (Table 2).

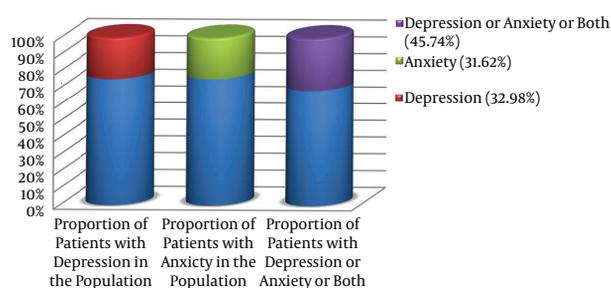


Figure 1. The Column Chart of the Prevalence of CMD

Based on the multivariate analysis, after adjusting for age, sex, socioeconomic status, and alcohol consumption, the CMD group had a significantly lower QOL (beta-coefficient, -12.61; 95% CI, -16.09, -9.12; Table 3). In this study, 65 (23.05%) patients were presented to the arrhythmia clinic with cardiovascular symptoms, although they did not have any cardiovascular diagnoses (Table 4). Out of 65 patients, 19 (29.23%) had anxiety, 19 (29.23%) had depression, and 27 (41.53%) had both anxiety and depression. The mean QOL score was 49.5 ± 13.23 in this group.

In total, 139 (49.3%) patients had underlying cardiovascular diseases. In this subgroup, the mean QOL score was

Table 1. Sociodemographic and Clinical Characteristics of the CMD and Non-CMD Groups^a

| Parameters | | CMD Group (n = 129) | Non-CMD Group (n = 153) | P Value |
|---------------------|------------------------|---------------------|-------------------------|--------------------|
| Sex | Male | 72 (55.81) | 109 (71.24) | |
| | Female | 57 (44.19) | 44 (28.76) | |
| Marital status | Married | 112 (86.82) | 128 (83.66) | 0.842 ^b |
| | Unmarried | 11 (9.15) | 14 (8.53) | |
| | Widow | 5 (3.88) | 9 (5.88) | |
| | Divorced | 1 (0.78) | 2 (1.31) | |
| Educational status | Illiterate | 11 (8.53) | 4 (2.61) | |
| | Primary | 28 (21.71) | 26 (16.99) | |
| | Secondary | 29 (22.48) | 53 (34.64) | |
| | Graduate | 42 (32.56) | 48 (31.37) | |
| | Postgraduate and above | 19 (14.73) | 22 (14.38) | |
| Economic status | Lower | 55 (42.64) | 46 (30.07) | 0.062 ^b |
| | Middle | 72 (55.81) | 101 (66.01) | |
| | Upper | 2 (1.55) | 6 (3.92) | |
| Smoking | Yes | 15 (11.63) | 16 (10.46) | 0.392 ^b |
| | No | 114 (88.37) | 137 (89.54) | |
| Alcohol consumption | No | 121 (93.80) | 131 (85.62) | 0.049 ^b |
| | Occasional | 8 (6.20) | 20 (13.07) | |
| | Daily | 0 (0.00) | 2 (1.31) | |
| Diabetes mellitus | Yes | 30 (23.26) | 30 (19.61) | 0.456 |
| | No | 99 (76.74) | 123 (80.39) | |
| Hypertension | Yes | 45 (34.88) | 65 (42.48) | 0.192 |
| | No | 84 (65.12) | 88 (57.52) | |

^aValues are expressed as No. (%).^bP value on Fisher's exact test.**Table 2.** QOL Parameters in the CMD and Non-CMD Groups^a

| Subgroups of SF-36 | All Patients | CMD Group | Non-CMD Group | P Value |
|--|---------------|---------------|---------------|----------------------|
| Physical functioning | 61.44 ± 23.09 | 59.73 ± 24.23 | 62.88 ± 20.08 | 0.26 |
| Role limitations due to physical health | 50 (0 - 75) | 25 (0 - 75) | 50 (25 - 75) | < 0.001 ^b |
| Role limitations due to emotional problems | 67 (33 - 100) | 33 (0 - 67) | 67 (33 - 100) | < 0.001 ^b |
| Energy or fatigue | 52.44 ± 17.59 | 48.13 ± 15.00 | 56.05 ± 18.78 | < 0.001 |
| Emotional wellbeing | 62.43 ± 20.44 | 53.53 ± 18.51 | 69.88 ± 19.00 | < 0.001 |
| Social functioning | 64.13 ± 21.87 | 57.75 ± 20.93 | 69.47 ± 21.26 | < 0.001 |
| Pain | 63.27 ± 27.67 | 53.04 ± 27.78 | 71.84 ± 24.57 | < 0.001 |
| General health | 48.98 ± 18.82 | 41.84 ± 17.30 | 54.97 ± 17.99 | < 0.001 |
| Total | 56.67 ± 15.98 | 49.23 ± 14.71 | 62.89 ± 14.27 | < 0.001 |

^aValues are expressed as mean ± SD or median (IQR).^bMedians are compared using nonparametric tests.

48.97 ± 16.16 in the CMD group and 62.71 ± 14.57 in the non-CMD group (based on SF-36); the difference was statistically significant ($P < 0.001$). In the CMD group, the QOL scores were not significantly different among patients with and without CVD; the same finding was reported in the non-CMD group. This finding implies that QOL is probably af-

ected more by CMD rather than CVD.

4. Discussion

To the best of our knowledge, this is the first cross sectional study performed in India to examine the prevalence

Table 3. Multivariable Analysis of Factors Associated with QOL

| Variables | Beta-Coefficient | 95% CI | P Value |
|--------------------------|------------------|-----------------|---------|
| Male | 2.47 | (-1.20, 6.14) | 0.19 |
| Age (≤ 40 years) | -1.85 | (-5.85, 2.16) | 0.37 |
| Alcohol consumption | 0.98 | (-4.66, 6.62) | 0.73 |
| Low socioeconomic status | -3.77 | (-7.33, -0.22) | 0.04 |
| CMD | -12.61 | (-16.09, -9.12) | < 0.001 |

Table 4. Distribution of Patients and QOL Scores with Respect to the Presence of CVD and CMD

| | CVD Present | | CVD Absent | |
|-------------|-------------|-------------------|------------|-------------------|
| | No. (%) | Mean QOL | No. (%) | Mean QOL |
| CMD present | 64 (22.70) | 48.97 \pm 16.16 | 65 (23.05) | 49.5 \pm 13.23 |
| CMD absent | 75 (26.60) | 62.71 \pm 14.57 | 78 (27.66) | 63.06 \pm 14.08 |

of CMD, such as depression and anxiety, in patients presented to the arrhythmia clinic of a tertiary care hospital.

In this regard, a large population-based urban study from Chennai revealed the prevalence of CMD to be 15.1% in the general population (9). Moreover, in a study performed in Vellore, India, the prevalence of CMD was 33.9% among primary care attendees. Depression (83.8%) was the most commonly diagnosed CMD (10). Moreover, prevalence studies in India have indicated depression (23% - 33.8%) as one of the most prevalent CMD among patients attending outpatient clinics of secondary-level hospitals (11, 12). There is however a scarcity of data on the prevalence of CMD in tertiary care settings.

Prevalence studies on anxiety disorders are severely lacking in the Indian context. Salve et al. reported a prevalence rate of 14% among patients attending a psychiatric outpatient clinic in Northern India (11). A meta-analysis revealed the prevalence of anxiety disorders in both rural and urban India to be around 20.7% (range, 18.7 - 22.7%) (13). In the present study, the prevalence of depression and anxiety was 32.98% and 32.62%, respectively. Evidently, the rates are higher than those reported in population-based epidemiological studies in different primary and secondary care settings in India.

Depression is associated with decreased adherence to medications and prevents successful modification of other cardiovascular risk factors. Additionally, it reduces participation in cardiac rehabilitation programs and is associated with higher healthcare utilization. It poses a higher cost burden for patients, besides reducing their QOL (14). Patients with high screening scores (PHQ-9 score of ≥ 10) should be referred for a more comprehensive clinical eval-

uation by a psychiatrist to develop an individualized treatment plan. Such patients should be also evaluated for other mental disorders such as anxiety (14).

SF-36, a medical outcome survey questionnaire has been widely validated as a QOL assessment tool. Albrecht and Fitzpatrick suggested QOL as an outcome measure in clinical trials for the assessment of health needs of a population (15, 16). In the present study, patients with CMD showed significant impairments in all QOL parameters (SF-36 score, 49.23 \pm 14.71 in the CMD group vs. 62.89 \pm 14.27 in the non-CMD group) (Table 4). After adjusting for age, sex, socioeconomic status, and alcohol consumption, presence of CMD was significantly associated with poor QOL [beta-coefficient, -12.61; 95% CI, -16.09, -9.12; Table 3].

Indian studies have revealed that depression is an important determinant of poor QOL in patients with type II diabetes mellitus, HIV & AIDS, and chronic obstructive pulmonary disease (17-19). As the present findings revealed, CMD in patients with underlying CVD is associated with moderate impairment in QOL (SF-36 score, 48.97 \pm 16.16 in the CMD group vs. 62.71 \pm 14.57 in the non-CMD group; $P < 0.001$; Table 3) (20). CMD impaired all QOL parameters, as depicted in Table 2. Not only mental dimension parameters, but also physical dimension parameters were equally affected by CMD. This finding also indicates the negative influence of CMD on physical functioning.

65 patients (23.05%) presented to arrhythmia clinic with symptomatology related to the cardiovascular system (eg, palpitations and dyspnoea), whereas no underlying CVD were reported. All these patients had poor QOL, as well as underlying depression or anxiety (mean QOL score, 49.5 \pm 13.23). The present study revealed that almost one-fourth of patients, presented to the arrhythmia clinic, had CMD without any underlying CVD. Depression and anxiety disorder patients can commonly present with CVD symptoms such as palpitations and dyspnoea (21, 22). Therefore, patients in arrhythmia clinics may need simultaneous screening for CMD, as well.

4.1. Strengths and Limitations

To the best of our knowledge, this is the first study performed in India to evaluate the prevalence of CMD in patients attending an arrhythmia clinic. We objectively measured the patients' QOL and tried to determine the association of CMD with QOL. Only few studies in India have presented data on objective QOL measurement by SF-36. Therefore, further studies in this area are required.

The present study also had certain limitations. Considering the cross sectional and single-centre design of the study, we may not be able to generalize the findings. In addition, there is a risk of referral bias, as the study was an institutional survey. It should be noted that the results

were not compared with normal-population cohorts, and the sample size was limited.

4.2. Conclusions

Undiagnosed CMD, such as depression and anxiety, are quite prevalent among patients attending arrhythmia clinics. In this study, nearly one-fourth of the outpatients had undiagnosed CMD without any underlying CVD, although they presented with cardiac symptomatology. Therefore, a high index of suspicion, coupled with routine screening, will help identify these conditions earlier and optimize the treatment process. Patients with CMD have poor QOL, irrespective of CVD; also, CMD is an important determinant of QOL.

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