Research Article

Medication Adherence and Quality of Life among Cardiology Patients in Guntur

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Abstract

To determine the levels of Medication adherence and Quality of life among patients with Cardiovascular Diseases (CVD). A prospective observational design was used to conduct this study. A total of 1158 patients with CVDs are recruited in the study who visits the cardiology departments in Guntur. Data were collected using Medication Adherence Rating Scale (MARS) and Short Form-36. The level of medication adherence among the patients, 73.2% were reporting high adherence, 14.8% were medium adherence and 12% were low adherent medication. Quality of Life (QOL) analysis by SF-36 shows significant effect in social functioning, pain and emotional wellbeing. Highest medication adherence was observed among the patients with CVDs. Factors effecting the quality of life social functioning, pain and emotional wellbeing in CVD patients.

Keywords: Medication adherence; QoL; MARS; SF-36

Introduction

Around the world, heart disease is rising to the top of the list of causes of death [1]. The leading cause of illness and mortality, accounting for around 18 million deaths globally each year, is cardiovascular disease [2]. The prevalence of cardiovascular disease is increasing drastically in countries like China, India, Pakistan and the Middle East, including Iran [3]. In developed nations; the United States, Europe and Japan have the highest, moderate and lowest rates of cardiovascular disease [4-6]. People with cardiovascular disease may experience a poor quality of life due to various physical and emotional symptoms, which can limit their daily activities and lead to high hospitalization and mortality rates.

Although treatment for cardiovascular disease have considerably improved over the past 50 years, patient adherence remains suboptimal with approximately 50% of patients failing to follow prescriptions [7,8]. In general, cardiac patients do not adhere to their treatments due to long term medication [9]. Previous literature indicates that medication adherence rates in chronic disease patients range between 40%-50% [10]. Medication adherence is crucial for patients with cardiovascular diseases as it directly impacts the effectiveness of treatment and clinical outcomes.

Medication adherence is defined as follows by the WHO: "Adherence is defined as the extent to which a person follows healthcare provider recommendations for medication, diet and lifestyles" [11].

CVD can reduce quality of life and shorten life span in advanced stages of the disease; even it is silent at first. The term Quality of Life was initially associated with health and functional status. However, it now encompasses people's current values, objectives, standards, and interests all are part of their comprehension of life. Quality Of Life (QOL) is a critical component of healthcare quality, as evidenced by numerous studies [12-14].

WHO defines "Quality of Life as individual's perceptions of their position in life in relation to their goals, expectations, standards and concerns, which can be determined by Physical, Psychological, Social and Environmental aspects" [15].

Patients frequently struggle with medication adherence for cardiovascular conditions, which can have a negative impact on their health and quality of life. Emphasizing the importance of adherence in improving treatment outcomes. The knowledge about quality of life and medication adherence of people in Guntur with cardiovascular disease.

Materials and Methods

A data collecting form has been prepared with the necessary information for the study. This covers patient demographics, religion, marital status, social habits, profession, education status, and any co-morbid problems they are suffering; it includes treatment chart information,

prescribed medications and therapy changes. MARS and SF-36 are used in the study to measure medication adherence and quality of life.

MARS (Medication Adherence Rating Scale)

MARS 10-itemself report instrument that asks questions and responds with a yes or no.0 is coded for non-adherence; 1 is coded for adherence. No response for the questions 1-6 and 9-10 are coded with 1 which indicates adherence; yes response to the questions 7 and 8 are coded with 1 which indicates adherence here. We have assigned the score to each patient based on their responses to the MARS questionnaire during their visits. The total score range between 0 (low medication adherence) and 10 (high medication adherence).

Score 0-3=Non adherence

Score 4-6=Moderate adherence

Score 7-10=Adherence

Short-form health survey (SF-36): SF-36 questionnaire consists of 36 questions divided into 8 domains. PF-physical functioning, RP-role limitations due to physical health problems, BP-bodily pain, GH-general health, VT-vitality (energy and fatigue), SF-social functioning, RE-role limitations due to emotional problems and MH-mental health. The domains can be classified into 2 summary scales:

1. Physical Component Summary (PCS): It comprises PF, RP, BP, and GH

2. Mental Component Summary (MCS): It comprises RE, SF, MH and VT domains.

Statistical analysis

All the raw data collected, recorded in data collection form was updated in sheets of Microsoft Office Excel 2007 and statistically analysis was done by using SPSS version 28.

Sequence of study

Patients were educated about the study's aims, data requirements, confidentiality, subject rights, and duties in layman language. Written informed permission was obtained. Initially, all patients were evaluated, and those who met the requirements were enrolled in the research. Data was collected and analyzed subsequently.

Results

Gender distribution

The study involved 1158 participants, consisting of 732 males and 426 females. This finding shows that males were approximately 26% more susceptible to cardiovascular events compared to female, (Table 1) (Figure 1).

Table 1: Gender distribution

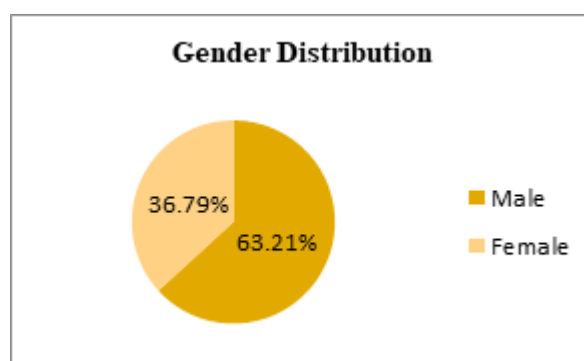| Gender	Subjects	Percentage
Male	732	63.21
Female	426	36.79

Figure1: Gender distribution

Age distribution

Majority of the patients belonged to 61 years-70 years of age, later occupies 51 years-60 years of age. As the percentages do not differ much, we conclude that 51 years to 70 years old has a high incidence of cardiovascular events. Very few patients are under the age of 40 years old (Table 2) (Figure 2).

Table 2: Age distribution

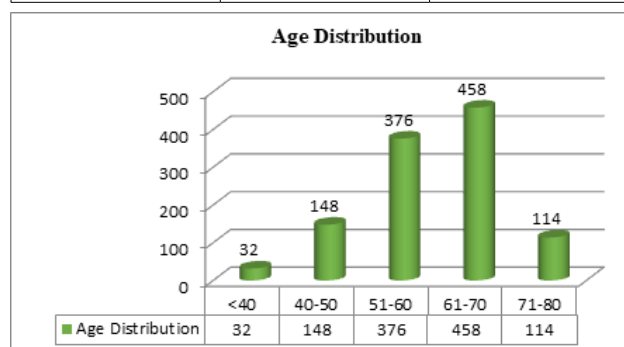| Age group	No. of persons	Percentage
<40	32	2.8
40-50	148	12.8
51-60	376	32.5
61-70	458	39.6
71-80	114	12.4

Figure 2: Age distribution

Religion

Among 1158 patients, 69.3%Hindus having the highest incidence of CVD, 16.8% Muslims having CVD, 13.9% Christians having CVD & others with no CVD (Table 3) (Figure 3).

Table 3: Religion distribution

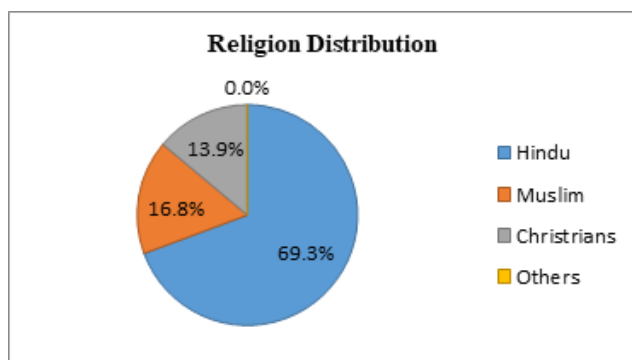| Religion	No. of patients	Percentage
Hindu	803	69.3
Muslim	194	16.8
Christians	161	13.9
Others	0	0.0

Figure 3: Religion distribution

Marital status

Highest incidences of CVD are observed in married patients with 88.3%, 11.4% in single/widow and 0.3% unmarried with least CVD (Table 4) (Figure 4).

Table 4: Patient marital status

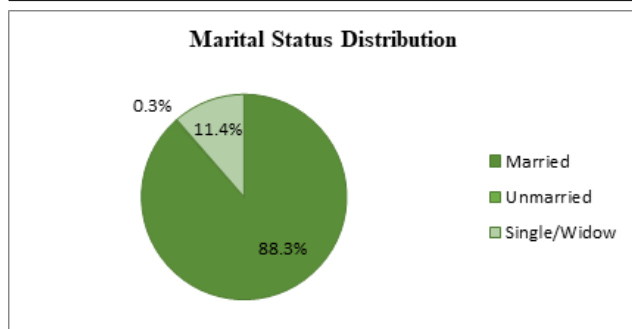| Patient marital status	No. of patients	Percentage
Married	1023	88.3
Unmarried	03	0.3
Single/widow	132	11.4

Figure 4: Marital status distribution

Education

53.5% were considered literate because 27.2% had qualified for SSC (10th class), 10.6% had discontinued education after Inter, 9.6% had completed their degree and the remaining 5.8% had postgraduate or higher education. 46.4% were illiterate (Table 5) (Figure 5).

Table 5: Education

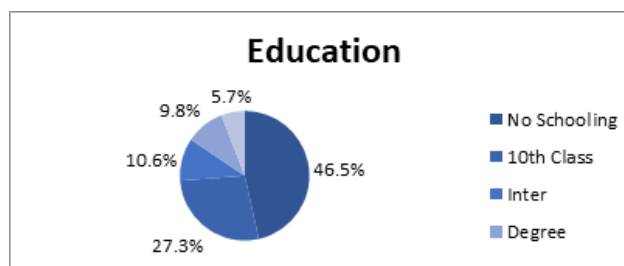| Education	No. of patients	Percentage
No schooling	538	46.4
10th class	316	27.2
Inter	123	10.6
Degree	114	9.8
PG and higher	67	5.7

Figure 5: Education

Occupation

The majority of the patients 33.2% were daily wages, we included farmers in this category as well. Next, 23.6% of patients were house wives (females).19.1% owned their own businesses in a variety of fields. 8.2% of members worked in either the private or public sectors 15.9% were retired employees, some of them are pensioners and others who are not (Table 6) (Figure 6).

Table 6: Occupation

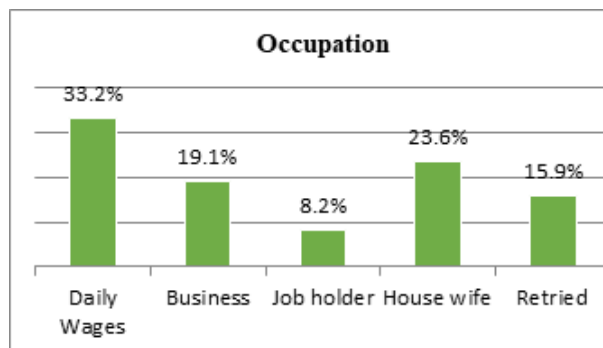| Occupation	No. of patients	Percentage
Daily wages	385	33.2
Business	221	19.1
Job holder	95	8.2
House wife	273	23.6
Retried	184	15.9

Figure 6: Occupation

Social habits

One of the most significant risk factors for various diseases or disorders is one's social habits. 36.4% of the patients use tobacco, either in chewable form or by smoking. 29.5% of patients do not have any habits such as smoking, tobacco use, or alcohol consumption. 9.4% are only alcoholics, they do not smoke or consume tobacco, the majority are daily consumers, with the remainder consuming on weekends and special occasions. 24.7% of the population is both an alcoholic and a smoker (Table 7) (Figure 7).

Table 7: Social habits

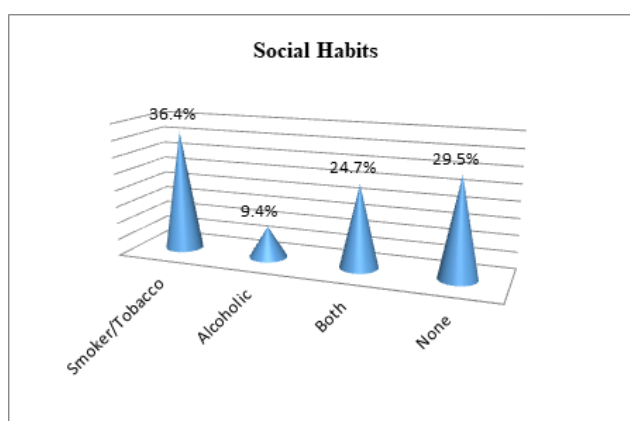| Social habits	No. of patients	Percentage
Smoker/tobacco	421	36.4
Alcoholic	109	9.4
Both	286	24.7
None	342	29.5

Figure 7: Social habits

Co-morbidities

The majority of the patients had both hypertension and diabetes mellitus, with 35.6% having the highest incidence. 31.8% had coronary artery disease. 13.5% had hypertension (which includes arrhythmia, heart failure and left ventricular disease among other things). 12.4% had Dilated cardiomyopathy, 6.7% had myocardial infarction, the least common cardiovascular event (Table 8) (Figure 8).

Table 8: Co-morbidities

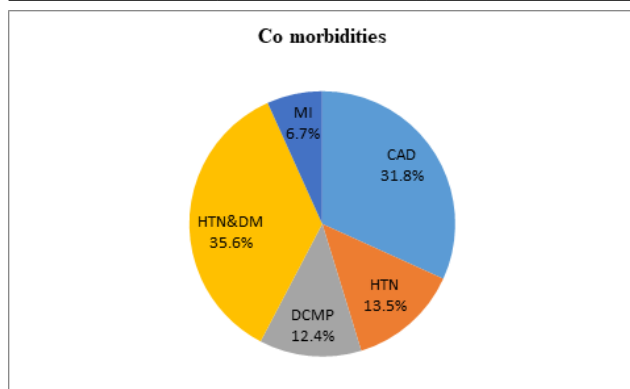| Co-morbidities	No. of patients	Percentage
CAD	368	31.8
HTN	156	13.5
DCMP	144	12.4
HTN and DM	412	35.6
MI	78	6.7

Figure 8: Co-morbidities

Prescribing pattern

1158 patients were included in the study, and the doctors either continued to prescribe the same medication or made little adjustments. Some patients changed to more potent treatment combinations, while others stuck with their original regimen. As, a result we considered each visit to be a new prescription. Therefore, 1158 × 4 visits=4632 Total number of prescriptions.

Dual therapy was highly prescribed (41.01%) among the 4632 prescriptions because its effectiveness and treatment outcome are superior to single drug therapy, which was provided in 34.5% of prescriptions. Dual therapy is generally preferred in patients who have not been able to reduce their high blood pressure to therapeutic levels.

Triple therapy was prescribed in 19.2% of prescriptions. 4.3% of prescriptions were of quadruple therapy, while only 0.86% was for penta therapy. Patients with severe illnesses were given quadruple and penta therapy. The type of therapy varies depending on the severity and the combination preferred depends on the patient's condition (Table 9) (Figure 9).

Table 9: Types of therapy prescribed

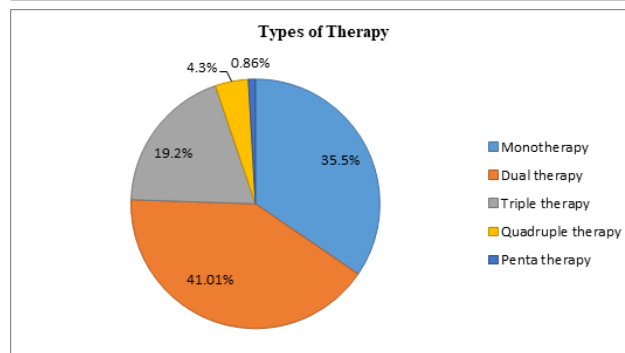| Types of therapy	Total no. of prescriptions	Percentage
Monotherapy	1600	34.5
Dual therapy	1900	41.01
Triple therapy	892	19.2
Quadruple therapy	200	4.3
Penta therapy	40	0.86

Figure 9: Types of therapy prescribed

Medication adherence

For a successful treatment medication adherence plays a crucial role. For each hospital visit, we recorded the patient's medication adherence score. So, that we can assess changes in adherence and counsel them appropriately. Approximately half of the patients were initially adherent to the medication during their first visit (49.9% were highly adherent), 23.3% were medium adherent and 27.1 were low adherent. We counselled all of the patients on medication use, the benefits of adhering to medications, and ideas for overcoming non-adherence which had increased in patients adhering to medication. Patients with high adherence increased gradually, while those with medium and low adherence decreased gradually. Some patients who were previously low adherence have improved to a medium level of adherence. During the fourth visit, we observed that 73.2% were highly adherent, 14.8% were medium adherent and 12% were low adherent (Table 10) (Figure 10).

Table 10: Medication adherence

Adherence	Initial (Visit I)		Visit II		Visit III		Visit IV	
	No. of patients	Percentage	No. of patients	Percentage	No. of patients	Percentage	No. of patients	Percentage
High	578	49.9	634	54.7	722	62.3	848	73.2
Medium	266	23.0	228	19.7	258	22.3	171	14.8
Low	314	27.1	296	25.6	178	15.4	139	12.0
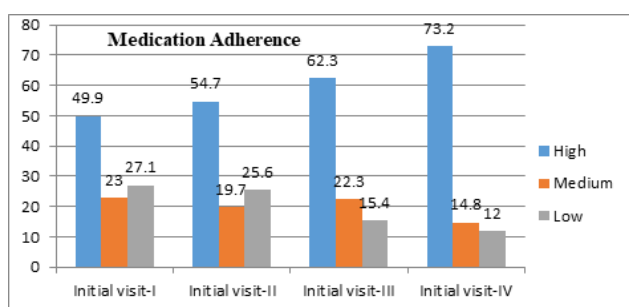
Figure 10: Medication adherence

Quality of life

To measure quality of life, short from 36 was used. A significant difference was observed in Pain, Emotional wellbeing and social functioning. The study found no significant differences in physical functioning, limitations due to physical health, emotional problems, energy fatigue, and general health between male and female patients.

The summary scales of the 2 domains are compared, physical component summary where males are higher in all domains (PF, RP, BP, GH) than females, in mental component summary where females are faintly higher in all domains (RE, SF, VT except MH) than male (Tables 11 and 12).

Table 11: SF 36

Question	Male		Female	
	Mean	SD	Mean	SD
Physical functioning	76.35	21.23	75	20.68
Limitations due to physical health	73.75	35.33	72.1	22.1
Emotional problems	62.16	44.56	65.83	41.68
Vitality (energy and fatigue)	56.25	16.67	57.13	23.86
Emotional well-being (mental health)	64.65	24.32	59.78	17.51
Social functioning	64.25	29.31	68.5	20.58
Pain	59.73	20.68	72.01	22.1
General health	73.5	20.58	75.9	16.42

Table 12: Summary scales of the 2 domains PCS AND MCS

Physical Component Summary			Mental Component Summary		
Domains	Male	Female	Domains	Male	Female
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)
Physical Functioning (PF)	76.35 (21.23)	75 (20.68)	Role limitations due to emotional problems (RE)	62.16 (44.56)	65.83 (41.68)
Role limitations due to physical health problems (RE)	73.75 (35.33)	72.1 (22.1)	Social Functioning (SF)	64.25 (29.31)	68.5 (20.58)
Bodily Pain (BP)	59.73 (20.68)	72.01 (22.1)	Vitality (energy and fatigue) (VT)	56.25 (16.67)	57.13 (23.86)
General Health (GH)	73.5 (20.58)	75.9 (16.42)	Emotional well-being (Mental Health) (MH)	64.65 (24.32)	59.78 (17.51)

Discussion

Cardiovascular disease is a chronic condition that need ongoing medication. CVD therapy is hampered by poor adherence and lifestyle factors. CVD treatment aims to enhance patient quality of life, which is a developing area of focus and has a significant chronic illness outcome.

Previous studies have shown that nearly 50% of patients do not adhere to their prescribed medications, leading to suboptimal therapeutic effects and negative health outcomes.

The present study evaluated adherence to cardiovascular medication and quality of life among cardiovascular diseases patients. Medication adherence is crucial as it directly impacts illness outcomes.

According to our study, the overall medication adherence was observed as high adherence 73.2%, medium adherence 14.8% and low adherence 12.0%. According to Qazi Kamran et al. (2023), the low adherence rate was observed to be 57.1%, which is very high when compared to the observations of our study [16].

Our study has revealed adherence rate was increased by 25.3%, moderate adherence rate decreased by 8.2% and low adherence rate decreased by 12.63%, Our study is in consistent with the study Sabu et al. (2016) where the adherence rate increased by 23.3%, low adherence rate decreased by 12.63%, but moderate adherence rate decreased by 25.3%, in our study it was decreased by 8.2% [17].

In 2022 study conducted in India among patients with hypertension, congestive heart failure and ischemic heart disease exhibited drug adherence as following 20.83%, 28.37% and 32% respectively [18]. Another study of 280 patients in rural India found that 32% of the patients shoed poor adherence to the treatment [19].

About 56% of the patients in Mallya SD et al. (2016) had education upto the 12th or 10+2 standard. Our study is in the similar line with 53.5% which might explain their high adherence rate [20].

This study revealed highest QoL score for male in Physical functioning (76.35) and female in General health (75.9); but lowest QoL score is same for both male and female in energy fatigue (56.25 and 57.13). In PCS domain significant difference was observed in pain, highest in women and in MCS domain significant difference was observed in Mental health (emotional wellbeing), highest in men.

Our results showed that there was no significant difference in quality of life between men and women. Our finding is in accordance with the studies done by Chatzinikolaou et al. (2021) [21]. Our observation contradicts previous research that suggested women often had lower quality of life than men.

According to our study, women had a higher QoL score on the pain, compared to male. Our results contradicted previous study done by Chatzinikolaou et al. (2021) that suggested men had a higher QoL score on the pain [21].

Conclusion

This study found that 73.2% of participants in the study were adherent to their medication. The study confirms that patients with CVD in Guntur experience significant impacts on the quality of life including pain, social functioning and mental health. More research is needed to enhance the adherence and quality of life of cardiovascular patients, which can help health care professionals to improve patient care.

Conflict of Interest

The author declares no conflict of interest.

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