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Research Article

### ASSESSMENT OF MEDICATION ADHERENCE AND RISK FACTORS IN CARDIO VASCULAR PATIENTS

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**Abstract:**

*Cardiovascular diseases have become the single leading cause of death and disease burden globally in low and middle income or countries such as India. The aim of study is to evaluate medication adherence and risk factors and obtaining results from effective counseling.*

*The objectives where to measure medication adherence and risk factors in cardiovascular patients.*

*The methodology involves subjective who satisfy the study category taken into study and patient consent form was taken, subject information was collected using data collection forms and details of subjects were received. MMAS form was filled by patients for 3 follow ups and assessed.*

*Data collected by using data collection form includes MMAS-8 criteria of assessing medication adherence and risk factors which we commonly see in CARDIO VASCULAR patients. The p value found to be insignificant and the patients are somewhat adhered to medication after second follow up.*

*The patients were improved on medication adherence after second follow up. The gradual increase had observed with the adherence. Finally, this study states lack of medication adherence is leading cause for the progression of the disease and leading to death.*

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## INTRODUCTION TO CARDIO VASCULAR DISEASES:

### INTRODUCTION:

The care of patients with cardiovascular problems has become increasingly complex. For some patient's treatment, based on evidence and recommended by guidelines now includes agents that prolong life, alleviate symptoms, and reduce admissions to hospital. Simultaneously, the treatment of underlying causative factors, including hypertension, coronary artery disease, and dyslipidaemia has evolved rapidly, increasing the number of pharmacological agents that are considered necessary for many patients with heart failure. The burden of heart failure falls disproportionately on elderly people, who often are simultaneously afflicted with many other conditions. Thus, practitioners typically face the challenge of managing not a single condition but multiple conditions requiring multiple medications.

**AIM:** To assess the medication adherence and risk factors in cardiovascular patients in tertiary care hospital.

### OBJECTIVES:

1. To assess the medication adherence in the cardiovascular patients with polypharmacy condition.
2. To assess the risk factors in cardiovascular patients.

### RESULTS:

#### 1 Age wise distribution of cardiovascular diseases

**Table:1** The table describes the age wise distribution of the patients with cardiovascular diseases. According to the data the patients with the age group 46-55 were highly affected and age group 18-25 were unaffected.

Age	No. of Patients	Percentage
18-25	0	0%
26-35	07	4.66%
36-45	24	16%
46-55	48	32%
56-65	42	28%
>65	29	19.33%

**Table:1** The table describes the age wise distribution of the patients with cardiovascular diseases. According to the data the patients with the age group 46-55 were highly affected and age group 18-25 were unaffected.

#### 2 Gender wise distribution of the patients with cardiovascular disease

**Table: 2** Describes the Gender wise distribution of the patients with cardiovascular disease. Total 150 patients were taken out of which 85(57%) were males and 65(43%) were females.

Gender	No. of Patients	Percentage
Male	85	57%
Female	65	43%

### METHODOLOGY:

This is a "Prospective Observational Study". Patients who were admitted in the Department of cardiology & general medicine suffering with cardiovascular diseases during six months period will be included. Patient information was collected through a data collection form and it contains the data regarding demographic details, vitals, presenting complaints, past medical & medication history laboratory parameters, type of drug received, current medications prescribed, response, discharge and follow up parameters, were collected and that data will be tabulated and analyzed by using the suitable statistical tools.

### Inclusion Criteria:

- Patients of age above 18 years
- Subjects with cardiovascular diseases and may or may not with other comorbidities
- Subjects who are willing to provide accurate information

### Exclusion Criteria:

- Subjects who are under the age 18 years.
- Subjects who are not willing to provide information
- The subjects with other co-morbidities other than listed in data collection form

### 3 Distribution of patients based on food habits.

**Table:3** Describes the food habits of all the cardio vascular patients in the study. In that vegetarians are 31 and non-vegetarians are 119. Non vegetarians are predominantly more than vegetarians.

	Vegetarians		Non-vegetarians	
	Male	Female	Male	Females
<b>No.of Patients</b>	21	10	64	55
<b>Percentage</b>	14%	6.66%	42.66%	36.66%

### 4 weight wise distribution of the patients with cardio vascular disease

**Table:4** Describes the weight wise distribution of the patients with cardio vascular disease and the patients with under body weight were 36(28%), the patients with normal body weight category were 32(24%), the patients with overweight were 36(24%), the patients with obesity were 54(36%).

Category	No .of Patients	Percentage
Under weight	28	19%
Normal	21	21%
Over weight	36	24%
Obesity	54	36%

### 5 Social habits wise distribution of the patients with cardiovascular disease

**Table:5** Describes the Social habits wise distribution of the patients with cardio vascular disease. Among all alcoholics are 63 and non-alcoholics are 88. And smokers are 65 and non-smokers are 85. Both non alcoholics and non-smokers are high in the number because women are also included in the study.

Social habit	No. of Patients	Percentage
Alcoholic	63	42%
Non alcoholic	88	58%
Smoking	65	43%
Non smoking	85	57%

### 6 Sleep status of the patients with cardiovascular disease

**Table:6** Describe the sleep status of the patients with cardio vascular disease. Among those 55 patients are experiencing normal sleep and 95 patients are with disturbed sleep.

Status of sleep	No. of patients	Percentage
Normal	55	37%
Disturbed	95	63%

### 7 Physical work wise distribution of the patients with cardiovascular disease

**Tab:7** Describe that Physical work wise distribution of the patients with cardio vascular patients. And the patients with regular physical exercise were 37 and the patients without any physical exercise were 113. More people are not doing any physical activity in their busy life's.

	No. of patients	Percentage
Physical activity	37	37%
No physical activity	113	75%

**8 Blood pressure wise distribution of the patients with cardio vascular patients**

**Tab: 8** Describes that the distribution of patients with hypertension and with normotension in cardio vascular disease. And the distribution is 112 patients are with hyper tension and consists 75% of total population and who are not having HTN is 38 members and consists of 25% of total patients.

	NO. OF PATIENTS	PERCENTAGE (%)
HYPERTENSION	112	75%
NORMOTENSION	38	25%

**9 NO. of Patients with diabetic in cardiovascular patients**

**TAB: 9** Describes the distribution of the patients with diabetics in cardio vascular patients. And the patients with diabetics were observed to be 86 and consist of 57% of total and non-diabetic are 64 and consists of 43% of all.

	NO. OF PATIENTS	PERCENTAGE
DIABETIC	86	57%
NON-DIABETIC	64	43%

**10 FOLLOW UP 1:**

**Tab: 10** Describes the distribution of the patients based on how patients adhered to the medication. In this first follow up total 13 patients was adhered; 96 patients were moderately adhered and 41 patients was non adhered to medication.

Follow up 1	Adherence	Moderate	Non adherence
Male	7	51	27
Female	6	45	14
Total	13	96	41

**11 FOLLOW UP 2**

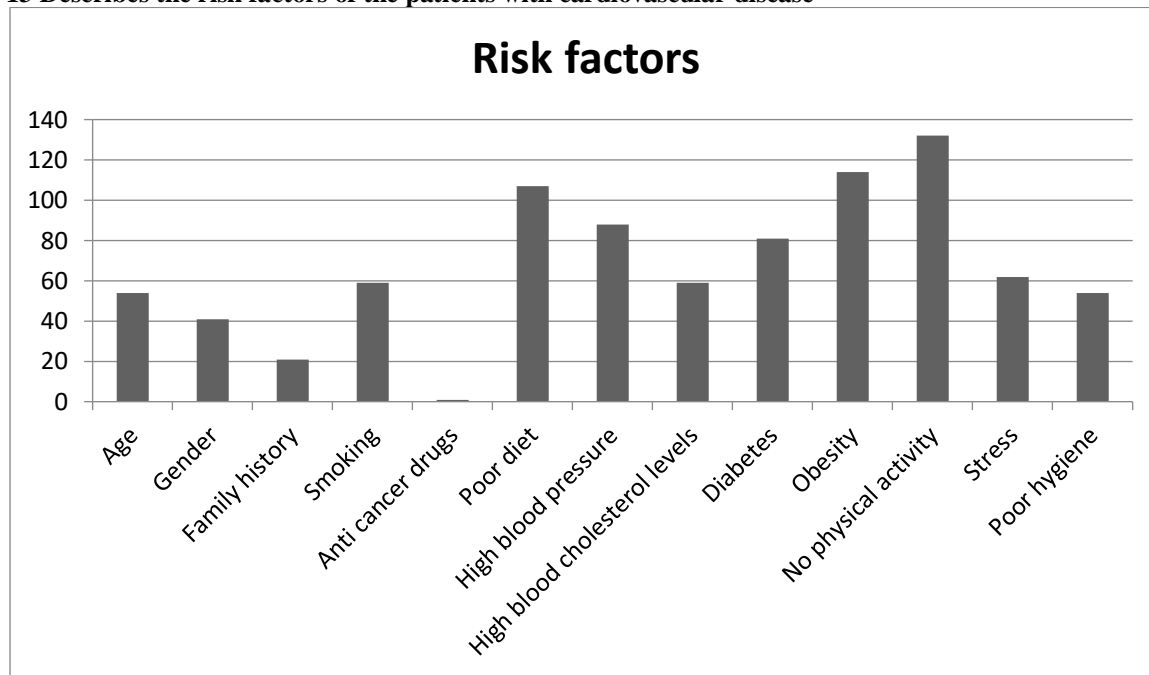
**Tab: 11** Describes the distribution of the patients based on how patients adhered to the medication. In this second follow up total 66 patients was adhered; 73 patients were moderately adhered and 11 patients was non adhered to medication.

Follow-up 2	Adherence	Moderate	Non adherence
Male	33	44	8
Female	33	29	3
Total	66	73	11

**12 FOLLOW UP 3**

**Tab: 12** Describes the distribution of the patients based on how patients adhered to the medication. In this third follow up total 94 patients was adhered, 38 patients were moderately adhered and 18 patients was non adhered to medication at finally.

Follow up 3	Adherence	Moderate	Non adherence
Male	55	20	10
Female	39	18	8
Total	94	38	18

**13 Describes the risk factors of the patients with cardiovascular disease****Fig 1**

**Tab:13 Describes the risk factors of the patients with cardiovascular disease and this consists patients with no physical activity observed with 132, obesity 114, poor diet 107, HTN 88 and other risk factors too. It is showed graphically in fig 1.**

**Tab:13**

S.No	Risk factor	No.of patients
1	Age	54
2	Gender	41
3	Family history	21
4	Smoking	59
5	Anticancer drugs	1
6	Poor diet	107
7	High blood pressure	88
8	High cholesterol levels	59
9	Diabetes	81
10	Obesity	114
11	No physical activity	132
12	Stress	62
13	Poor hygiene	54

**DISCUSSION:**

Cardiovascular diseases have become the single leading cause of death and disease burden globally in low and middle-income countries such as India. Cardiovascular diseases have become the single leading cause of death and disease burden globally in low and middle-income countries such as India. The relatively early onset age of cardiovascular diseases in India in comparison to Western countries also implies that most productive ages of the patient's life are lost fighting the disease. Deaths associated with cardiovascular events remains constant in many countries due to lack of new therapeutic approaches for prevention and treatment of cardiovascular diseases.

A

cross-sectional study included patients diagnosed with heart failure visiting for the follow-up to both inpatient and outpatient departments of a tertiary care cardiac center of Karachi, Pakistan. Medication adherence level was assessed using a validated Morisky Medication Adherence Scale (MMAS-8). The total MMAS-8 score was calculated by adding all of the 8 individual question scores and patients with a score of eight were classified as adherent, otherwise non-adherent. A total of 200 patients were included in this study, out of which 61.5% (123) were males and 38.5% (77) were females. The mean age of the patient was  $56.86 \pm 12.74$  years ranging over 20 to 85 years with the majority of the patients, 68.5% (137), above 50 years of age. More than half, 54% (108), of the patients were rural residents and majority were Urdu (39.5%) speaking followed by Sindhi (19.5%) and Pushto (19.0%) speaking. Almost all, 99.5% (199) were married and 52% (104) patients were uneducated.

In our study to assess medication adherence we used MMAS-8 system with questionnaire consists of eight questions. The patients who come under inclusion criteria those are above 18 years age and patients with cardiovascular problems with other co-morbidities and who are willing to provide the information. And patients were asked to fill the answers for the questions which are in the MMAS-8 criteria for the first follow-up. And we conducted two follow-ups successively and collected the answers for the same questions. We scored the questions one mark for each question. Actually, the patients who will get score 8 out of 8 are considered under medication adherent category. If they said no for any question, they will consider as Non adherent for the medication. As we collected information for three follow-ups major number of patients were not adherent to medication for first follow-up. As we collected data from age groups

above 18 years, we observed the patients within age group 46 to 55 were more in number i.e., 48 members out of 150 consists of 32% list of total patients. And male patient were found to be at high risk consists of 85 members out of 150 i.e., 57% out of all. And majorly affected people are from urban background consists of 90 members (60%). A study was conducted at KCMC located in Kilimanjaro region-Tanzania. KCMC is a referral hospital which serves for over 15 million people in the northern, eastern and central zone of Tanzania. The hospital has a capacity to serve for 500-800 inpatients per day. This current study revealed a higher prevalence of both lifestyle and intermediate risk factors for HTN and CHD among clinically managed patients from a referral hospital in Tanzania. This indicates inadequate management of these risk factors among patients visiting the cardiac clinic. Poor management and monitoring of these risk factors can delay treatment outcome and cause more health complications, which will pose more health cost to the patients.

These patients should be well educated on lifestyle modification, especially on healthy dietary habits and need for increased physical activity. Patients should also be well encouraged to reduce the amount of salt to the recommended levels (<5 g/day), for lowering blood pressure. This study further demonstrated the key role played by inflammatory markers particularly CRP and ALT in determining CVDs risk. This study highlights the need for further mechanic studies on determining how inflammatory markers (CRP and ALT) are involved with the pathogenesis of CHDs in this cohort of patients.

As like above study we too collected information about risk factors. In our study we selected major risk factors, a list of 14. They include age, gender, family history, smoking, anti-cancer drugs, poor diet, hypertension, high cholesterol, diabetes mellitus, obesity, no physical activity, stress and poor hygiene. Poor diet is major risk factor we observed in our patients (107 - 71.3%) along with that obesity also a major risk factor in 114 patients (74%). And age, smoking, HTN, obesity, poor hygiene, high cholesterol, diabetes and other risk factors are also considered as major risk factors. Among all these having no physical activity is the major risk factor that we observed in our study among all 150 patients.

**CONCLUSION:**

The Study showed that the patients with cardiovascular disease in the tertiary care hospital are not adhered to their medication at our first follow up. But after careful counselling in the second and third

follow up, medication adherence was increased among patients. Initially the scores of MMAS-8 scores was very low and seems more no. of patients were not adhered to their medication. But after counselling in 2<sup>nd</sup> and 3<sup>rd</sup> follow ups, The patients started scoring high in MMAS-8 test. Simultaneously risk factors assessment was also done and found that not having physical activity and obesity are the main leading risk factors which we observed in our study. And also age, poor diet, hypertension, diabetic mellitus, etc are also observed significant risk factors.

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