

**Original Article**

**FACTORS CONTRIBUTING FOR NONCOMPLIANCE OF FOLLOW-UP CARE AMONG POST CARDIAC PATIENTS**

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**ABSTRACT**

**Objective:** Compliance in following healthy diet, physical activity schedule, cessation of smoking and alcohol, medication adherence and regular follow up is very essential component in the management of patients with cardiovascular disease to prevent reoccurrence and reduce mortality. Hence the study was conducted with the aim to assess the factors contributing for noncompliance of follow-up care among post cardiac patients.

**Methods:** Cross-sectional research design was employed with 50 samples who matched the inclusion criteria were selected by convenience sampling technique. Demographic variables data were collected by using structured questionnaire followed by assessed the factors contributing for noncompliance using checklist.

**Results:** The findings of the current study revealed that all physical, psychological, economical, social and spiritual factors were highly influenced the noncompliance. Of these, the highest percentage 80% reported lack of accessibility as well financial support and around 70% percentage reported side effects of medication and low health literacy.

**Conclusion:** Health care providers need to be focussed on interventional strategies especially health education in discharge plan to ensure that these patients adhere to follow up including medication adherence, following physical activity plan, dietary modification, lifestyle changes and regular follow up visit to prevent readmission and lead a successful life.

**Keywords:** Adherence, Cardiac patients compliance, Follow up care, Noncompliance, Side effects of medication

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**INTRODUCTION**

Cardiovascular diseases (CVDs) are disorders of the heart and blood vessels and include coronary heart disease, cerebrovascular disease, cardiac failure, inflammatory heart disease, valvular heart diseases and other conditions. Four out of five CVD deaths are due to heart attacks and strokes. Individuals at risk of CVD may demonstrate raised blood pressure, glucose, and lipids as well as overweight and obesity. Around 17.9 million people die each year from cardiovascular diseases. It is an estimated that 31% of all deaths worldwide of these more than 75% of CVD deaths occur in low-income and middle-income countries and 85% of all CVD deaths are due to heart attacks and strokes [1]. Approximately 1.13 billion people who have hypertension, fewer than 1 in 5 have it under control [2]. The main contributors to the rise in cardiovascular diseases are unhealthy diets, physical inactivity and the consumption of alcohol and tobacco [1]. Compliance in following a healthy diet, physical activity schedule, cessation of smoking and alcohol, medication adherence and regular follow up is very essential component in the management of patients with cardiovascular disease to prevent reoccurrence and reduce mortality.

Compliance means the following or obeying rule of order. Therapeutic compliance not only includes patient compliance with medication but also with diet, exercise, or lifestyle changes. Hence, compliance in the field of health care is often associated with individual's ability in maintaining behaviours in association with treatment plan which includes complete use of drugs, on time and making necessary changes in health [3]. It is a part of individual behaviour concordant with care instruction and suggestions [4]. Otherwise is called as noncompliance or no compliance by which the patient does not follow the instruction given by the therapist. Noncompliance lead to treatment inefficacy and increase in risk of recurrence, pain and unwanted suffering and increase of cost [5]. Noncompliance in cardiovascular patients contributes to worsening the condition and may lead to hospitalization. Optimal adherence to cardiovascular medicines confers a significant improvement in patient's outcomes [6].

Various forms of noncompliance such as medical, diet and lifestyle, etc and its prevalence in patients with heart disease has been noted and studied. Medication adherence patterns of cardiovascular diseases are reported from urban areas of different countries, but little is known from rural settings of India [7-9]. Beliefs about the causes and meaning of illness, and motivation to follow the therapy were strongly related to their compliance with healthcare [10] and patients who smoked or drank alcohol were more likely to be non-compliant [11]. Poor communication with healthcare providers was also likely to cause a negative effect on patient's compliance [12, 13]. Non-compliant hypertension patients felt the doctors were lacking concern for their problems [14] and multiple physicians or healthcare providers prescribing medications might decrease patients' confidence in the prescribed treatment [15]. So, good communication is also very important to help patients understand their condition and therapy [16]. Forgetfulness is a widely reported factor that causes non-compliance with medication or clinic appointments [17-22]. Cost is a crucial issue in patient's compliance especially for patients with chronic disease as the treatment period could be life-long [23, 24]. Patient's health literacy level to read, understand, remember medication instructions also very important role in noncompliance [15] In another study found the determinants related to the noncompliance such as social and economic factors, condition-related, therapy-related, and patients-related factors of the multidimensional adherence model all had inconsistent evidence [25]. However, the ultimate aim of the management of cardiac patients is adherence to the follow up care to bring the desired healthy outcome by identifying the factors contributing to the non-adherence. With this significance and background the present study was conducted to explore the factors contributing to noncompliance of treatment regimen among post cardiac patients.

**MATERIALS AND METHODS**

Non-experimental-cross sectional research design was chosen to assess the factors contributing to the noncompliance of follow up

care. The study was conducted after obtaining formal permission from the hospital authority with 50 samples who matched with inclusion criteria. Cardiac patients who treated either with medically or surgically or both and admitted with recurrence of cardiac disease were considered as a sample for the study and were selected by convenience sampling technique from cardiac ward and intensive care unit. Patients who were critically ill were excluded from the study. After selection of samples, the participants were explained in detail about the purpose of study and assured confidentiality. Formal informed consent was obtained for the willingness to participate in the study. The tool used for the data collection was demographic variables and checklist. Checklist consists of 20 items related to the factors contributing to the noncompliance like physical factors, psychological factors, economical factors, social factors and spiritual factors and each item has two options such as Yes or No. This tool was prepared after reviewing the related literature and obtained experts' opinion in the cardiology, medicine

and medical surgical nursing. Data was collected by interview method on one to one basis by using the checklist. Confidentiality was maintained throughout the procedure. Collected data were analysed by descriptive statistics using SPSS package.

## RESULTS

The present study findings revealed that out of 50 samples, majority of them were in the age group of 51-60 y and 32(64%) were male. Most of them 18(36%) were had no formal education, 20(40%) were unemployed and 17(34%) of their monthly income is less than Rs.5000/-Regarding the diagnosis the percentage of the cardiac, vascular and cardiovascular conditions were 12%, 20% and 68% respectively and majority of them were receiving both medical and surgical treatment. More than 50% of them were taking treatment for more than one year and 46(92%) were obtained from health information through health care professional as depicted in table 1.

**Table 1: Frequency and percentage distribution of the demographic variables among post-cardiac patients n=50**

S. No.	Demographic variable	Frequency (N)	Percentage (%)
1.	<b>Age in Years</b>		
	A. 40-45	7	14
	B. 46-50	8	16
	C. 51-60	23	46
	D. above 60	12	24
2.	<b>Gender</b>		
	A. Male	32	64
	B. Female	18	36
3.	<b>Education</b>		
	A. No formal education	18	36
	B. Primary education	11	22
	C. Secondary education	10	20
	D. Any diploma or degree	11	22
4.	<b>Occupation</b>		
	A. Unemployed	20	40
	B. Government job	3	6
	C. Private	14	28
	D. Cooley	13	26
5.	<b>Monthly Income (in Rupees)</b>		
	A.<5000	17	34
	B. 5000-8000	11	22
	C. 8000-12000	15	30
	D.>12000	7	14
6.	<b>Diagnosis</b>		
	A. Cardiac condition	6	12
	B. Vascular condition	10	20
	C. Cardio vascular condition	34	68
7.	<b>Method of Treatment</b>		
	A. Medical treatment	9	18
	B. Surgical treatment	7	14
	C. Both	34	68
8.	<b>Duration of treatment</b>		
	A. Less than 6 Mo	15	30
	B. 7 mo-1 Y	9	18
	C. More than 1 Y	26	52
9.	<b>Health information obtained from</b>		
	A. Health care professional	46	92
	B. Family and friends	1	2
	C. Mass media	3	6

### Physical factors

Fig. 1 Shows that out of 50 samples, 35 (70%) were non adhered to medication due to side effect of medication, 23(46%) had reported the sleep disturbance due to medication, 26(52%) had the recurrent complaints, 17(34%) were suffered by unresolved sufferings, 15(30%) were felt the treatment complexity and 24(48%) were given drug holiday and 16(32%) of patients were influenced by white coat compliance.

### Psychological factors

Table 2 depicts that out of 50 samples, 26(52%) were felt hopelessness, 28(56%) were depressed, 13(26%) of patients were

forgot to follow the instruction and had lack of empathy from prescriber, 36(72%) had low health literacy.

### Economical factors

40(80%) were faced the problem of lack of accessibility and financial support, 15(30%) were influenced by inability to take time off work and 30(60%) were thought that health care workers acts too business like as shown in table 2.

### Social factors

19(38%) were felt stigmatized that are not as normal as their friends and relatives and 17(34%) had poor communication with the health care provider as described in table 2.

**Table 2: Frequency and percentage distribution of factors contributing to non-compliance of follow-up care among post cardiac patients n=50**

S. No.	Factors contributing to non-compliance	Frequency (n)	Percentage (%)
1.	<b>Physical Factors</b>		
	1. Side effects of medication	35	70
	2. Sleep disturbance due to medication	23	46
	3. Recurrent compliant	26	52
	4. Unresolved suffering	17	34
	5. Treatment complexity	15	30
	6. Drug holidays	24	48
	7. Whitecoat compliance	16	32
2.	<b>Psychological Factors</b>		
	8. Hopelessness	26	52
	9. Depression	28	56
	10. Forgetfulness	13	26
	11. Lack of empathy from the prescriber	13	26
	12. Low health literacy	36	72
3.	<b>Economical Factors</b>		
	13. Lack of accessibility	40	80
	14. Lack of financial support	40	80
	15. Inability to take time off work	15	30
	16. Health care workers acts too business-like	30	60
4.	<b>Social Factors</b>		
	17. Feel stigmatized that are not as normal as their friends and relatives	19	38
	18. Poor communication with health care providers	17	34
5.	<b>Spiritual Factors</b>		
	19. Disease is god's will and uncontrollable	16	32
	20. Superstitious belief	14	28

The present study findings revealed the factors contributing in noncompliance as listed in table 2.

#### Spiritual factors

16(32%) were thought that disease is god's will and uncontrollable and 14(28%) of them were influenced by superstitious belief.

#### DISCUSSION

Non-compliance occurs when an individual's health-seeking behavior lacks in ability and willingness to abide the prescribed therapeutic regimen by a healthcare provider. DiMatteo, 1995, estimated the compliance rate of long-term medication therapy, short-term therapy and compliance with lifestyle changes was between 40% and 50%, 70% and 80%, and 20%–30% respectively [26]. Furthermore, the rates of non-compliance with different types of treatment also differ greatly by Sabate, 2003 [27]. The present study also intensively analysed the factors contributing the noncompliance among 50 cardiac patients who readmitted with recurrence. The findings of the current study revealed that all physical, psychological, economical, social and spiritual factors were highly influenced the noncompliance. Of these, the highest percentage was seen in side effects of medication, lack of accessibility and financial support as well low health literacy. The present study finding was consistent with other similar study findings. Jing Jin *et al.* who revealed that patient-centered factors, therapy-related factors, social and economic factor, healthcare system factors, has an impact on compliance in treatment regimen [28]. According to the results of study by Abbas Heydari *et al.*, the awareness of the disease and adherence to physical activity was low in the majority of the patients [29]. Gouranga Santra *et al.* reported in the study on assessment of adherence to cardiovascular medicine in rural population that overall adherence to medication for hypertension, congestive cardiac failure and ischemic heart disease was 20.83%, 28.7% and 32% respectively and also found that carelessness and forgetfulness was the most common cause of noncompliance of cardiovascular medicine [30]. In the current study also 26% were reported forgetfulness as on the factor of noncompliance. Similarly Atkinson RC *et al.* have shown that patients who are confronted with various obstacles, such as lack of social support, less follow their care programs [31]. Likewise, Brooke Aggarwal *et al.* who found that 60% of patients reported sometimes forgetting to take their medication and the most common factors associated with non-compliance included forgetfulness, having other medication to take, being symptom-free [32]. Van Der Wal *et al.* who acknowledged after

studying 954 patients suffering from congestive heart failure that depressive symptom and patients with depressive signs and low awareness face more barriers for compliance from therapeutic recommendations in congestive heart failure [33]. This findings is matched with present study finding that 28% were reported both depression and hopelessness towards the treatment. However, current study assess the cardiac patients altogether and it is not specifically analysing each conditions pertaining to cardiovascular. Furthermore treatment complexity also one of the factors for noncompliance which found in the present study and also reported by Iihara *et al.* [34]. On the other hand, participants may felt like health care workers acts too business-like because of repeatedly referring to several physicians, changing of drug and its dosage, and not making patient ready for self-care after discharge and these factors greatly confused them and reported as the causes of noncompliance. This factor was reported by 60% participants in the present study. Hope C, *et al.* stated that patients who do not have adequate knowledge about their medication regimen were more likely to be non-adherent [5]. Jing Jin reported in review articles that several studies found that patients with higher educational level might have higher compliance [28]. This finding is contrast with the findings of Senior *et al.*, patients with lower education level have better compliance because they might have more trust in physicians' advice [36]. Whereas in another study non-adherence was not associated with demographic, socioeconomic and clinical characteristics, satisfaction about medication information and medication concerns among Rheumatoid arthritis patients [37]. This current study is recommended to maintain therapeutic relationship, strengthen the educational programme and explore the strategies to improve therapeutic compliance. The current study is limited to assess the impact of noncompliance by measuring biochemical and biophysical parameters related to noncompliance of follow up care.

#### CONCLUSION

The study findings concluded that noncompliance about follow-up care still persist among cardiac patients due to various reasons. Hence, health care providers need to be focussed on interventional strategies especially health education in discharge plan to ensure that these patients adhere to follow up including medication adherence, following physical activity plan, dietary modification, lifestyle changes and regular follow up visit to prevent readmission and lead a successful life. Initiatives to be taken to strengthen the

education programme, easy accesses to non-communicable disease clinic and reminder alert for hospital visit, frequent call for follow up at home.

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#### AUTHORS CONTRIBUTIONS

All the author have contributed equally

#### CONFLICT OF INTERESTS

The authors declare that no conflict of interest

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