

A PROSPECTIVE STUDY ON IMPACT OF CLINICAL PHARMACIST EDUCATION ON MEDICATION ADHERENCE IN PATIENTS WITH CORONARY ARTERY DISEASE.

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ABSTRACT

Coronary artery disease is currently the leading cause of death in both urban and rural India. CAD is defined as acute or chronic form of cardiac disability arising from imbalance between the myocardial supply and demand for oxygenated blood. Narrowing of obstruction of the coronaryarterial system is the most common cause of myocardial anoxia. Medication Adherence (MA) can be defined as the extent to which a patient's behaviour, with respect to taking medication, corresponds with agreed recommendations from healthcare providers. It determines the success of every drug therapy.Objective of this study is to evaluate the effect of patient counseling on medication adherence

of patients with coronary artery disease. A prospective study was carried out at cardiovascular department of a tertiary care hospital including 130 patients over a period of 6 months. A structured interview with patient was conducted by using Brief Medication Questionnaires (BMQ) to elicit information about medication adherence and counseling was provided to patients.The status of medication adherence among patients was studied. The overall medication adherence was increased by clinical pharmacist provided patient counselling.

KEYWORDS: Coronary artery disease, Medicationadherence, Brief Medication Questionnaire.

INTRODUCTION

Coronary artery disease remains an important cause of morbidity and mortality throughout the world.^[1] In recent years, advances in cardiovascular pharmacology and interventional cardiology have contributed to improved survival after myocardial infarction, leading to an increase in nonfatal events.^[2] Thus, although coronary artery disease incidence may be falling in many countries, the overall burden of the disease remains high, particularly in economic terms.^[3,4]

Despite the increase in prescriptions of cardiovascular medications in the last 2 decades, a large proportion of patients with coronary artery disease are still not meeting therapeutic targets, as demonstrated in the EUROASPIRE III survey (European Action on Secondary and Primary Prevention by Intervention to Reduce Events III)^[5] This situation has led to a renewed focus on whether patients continue to take medications, although such terms as *compliance* and *concordance* are increasingly avoided.^[6] Adherence has been defined as the “active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result.” This definition implies that the patient has a choice and that both patients and providers mutually establish treatment goals and the medical regimen.^[7]

Many methods have been suggested for measuring patient’s medication adherence.^[8] Drug assays of blood or urine, use of drug markers with target medication and direct observation of the patient receiving the medication are direct measures of adherence. The indirect measures include various forms of self reporting by the patient, pill count, use of electronic monitoring devices and review of prescription records and claims.^[9] Each method has its own advantages and disadvantages. Self-reports using questionnaire are simple, fast, inexpensive and able to detect medication adherence barriers. Brief Medication Questionnaire (BMQ) is a high sensitivity and specificity self report tool for screening non adherent patients and useful in exploring adherence problems.^[10]

METHODOLOGY

Study design

- Prospective-observational study.

Study setting

- The study was conducted at the cardiology department of 550 bedded multispecialty hospital, Cosmopolitan hospitals (pvt ltd.), Thiruvananthapuram.

Study duration

- The study was conducted for a period of 6 months from October 2014 to March 2015.

Sample size

$$N = \frac{Z\alpha^2 PQ}{D^2}$$

$$Z\alpha = 1.96$$

P = Anticipated percentage of CAD patients admitted or visited in cardiology department.

$$Q = 100 - P$$

D = Precision factor, it is 20% of P

Here, P value was found to be 93.23

$$Q = 6.77$$

$$D = 18.65$$

$$N = \frac{1.96 * 1.196 * 93.23 * 6.77}{18.65 * 18.65}$$

$$N = 130$$

Enrollment**Inclusion criteria**

- Patients above 18yrs of age presenting with coronary artery disease and dyslipidemia.
- Patients require to have Total cholesterol >200mg/dl, LDL > 130mg/dl, HDL < 40 and Triglyceride >150mg/dl.
- Patients willing to participate in the study

Exclusion criteria

- Patients aged below 18 years.
- Pregnant women.
- History of sensitivity to statins.
- Presence of serious or unstable medical or psychological conditions.
- Renal impairment (CrCl < 30ml/min).
- Acute liver disease (AST or ALT > 100IU/L) or unexplained persistent elevations of serum transaminases.
- Patients not willing to participate in study.

STUDY PROCEDURE

A prospective observational study was carried out at cardiovascular department of a tertiary care hospital. A written informed consent was taken in prescribed format from patients with CAD attended cardiology department. Patients who met the inclusion criteria were enrolled in the study. All information relevant to study was collected from case records and direct interview of the patients with the help of physician. The demographic characters, comorbid conditions, cardiology investigation results, drug dose frequency etc. were documented in the proforma. A structured interview with patient was conducted by using brief medication questionnaires (BMQ) to elicit information about medication adherence and counseling was provided to patients. The patients were counseled regarding disease in order to improve general awareness, counseling aids such as leaflets were used. The information about adherence was collected during next follow up to assess the impact of clinical pharmacist provided education on medication adherence. Medication adherence was assessed by BMQ scoring.

RESULTS AND DISCUSSION

In this study, we analysed the data of 130 patients visited/admitted in the cardiology department of a tertiary care hospital in south Kerala over a period of 6 months. This study had provided a picture of medication adherence among patients.

Effect of patient counselling on medication adherence of patients with coronary artery disease

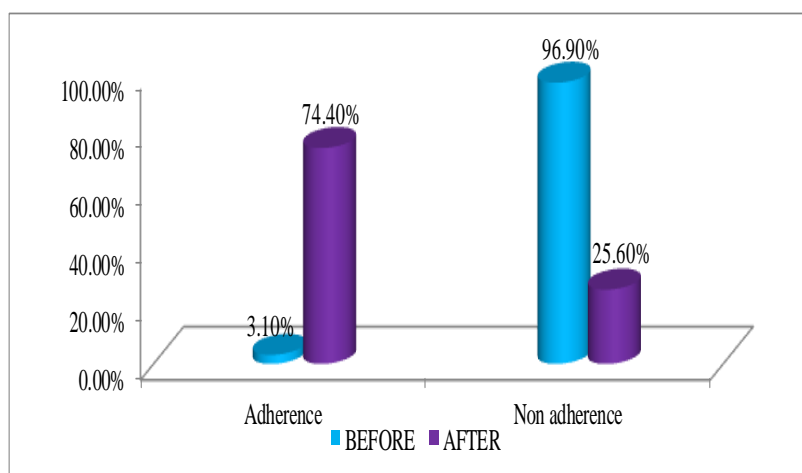


Fig.1 Effectiveness of Regimen screen (N=130)

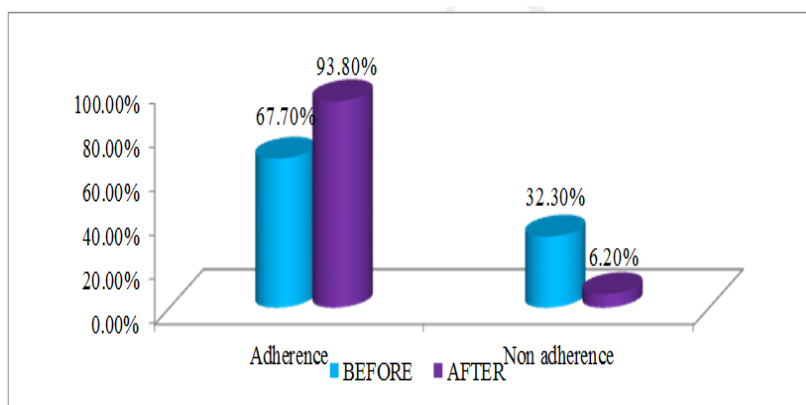
Table. 1 Effectiveness of Regimen screen (N=130)

Regimen screen	BT		AT		Z#	P
	count	percent	count	percent		
Adherence	4	3.1	96	74.4	9.29**	0.000
Non adherence	126	96.9	33	25.6		

Wilcoxon Signed Rank Test

**:- Significant at 0.01 level

In the study adherence was found to be 3.1% and non-adherence was found to be 96.9% before counseling and adherence was found to be 74.4% and non-adherence was found to be 25.6% after counseling (fig1). The number of patients with no regimen screen was increased from 4 to 96 and the effect of pharmacist provided education on regimen screen was statistically significant at 0.01 level. This study is in concordance with Khan et al.^[11], for regimen screen adherence was found to be 35.4% and non-adherence found to be 64.6%. This study is in accordance with study by Sridhar et al.^[14]

**Fig. 2 Effectiveness of Belief screen (N=130)****Table. 2 Effectiveness of belief screen (N=130)**

Belief screen	BT		AT		Z#	P
	count	percent	count	percent		
Adherence	88	67.7	121	93.8	5.35**	0.000
Non adherence	42	32.3	8	6.2		

Wilcoxon Signed Rank Test

**:- Significant at 0.01 level

In the study adherence for belief screen was found to be 67.7% before counseling and 93.8% after counseling and non-adherence was found to be 32.3% and 6.2% after counseling. The number of patients with no belief barrier was increased from 88 to 121 and the effect of pharmacist provided education on belief screen was statistically significant at 0.01 level. This study is in concordance with Khan et al.^[11], for belief screen adherence was

found to be 57% and non –adherence found to be 22%. This study is in accordance with study by Sridhar et al.^[14]

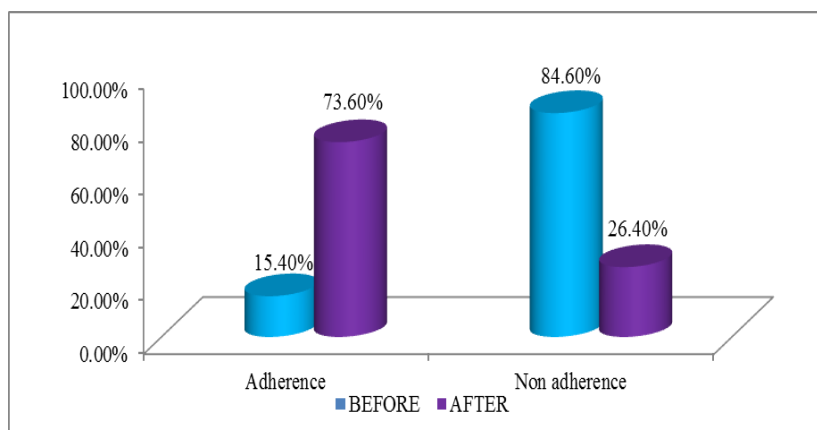


Fig.3 Effectiveness of Recall screen (N=130)

Table.3 Effectiveness of recall screen (N=130)

Recall screen	BT		AT		Z#	P
	count	percent	count	percent		
Adherence	20	15.4	95	73.6	8.66**	0.000
Non adherence	110	84.6	34	26.4		

Wilcoxon Signed Rank Test

**:- Significant at 0.01 level

In the study adherence for recall screen was found to be 15.4% before counseling and 73.6% after counseling and non –adherence was found to be 84.6% before counselling and 26.4% after counseling.^[3] The number of patients with no recall barrier was increased from 20 to 95 and the effect of pharmacist provided education on recall screen was statistically significant at 0.01 level. This study is in concordance with Khan et al.^[11], for recall screen adherence was found to be 41% and non –adherence found to be 38%. This study is in accordance with study by Sridhar et al.^[14]

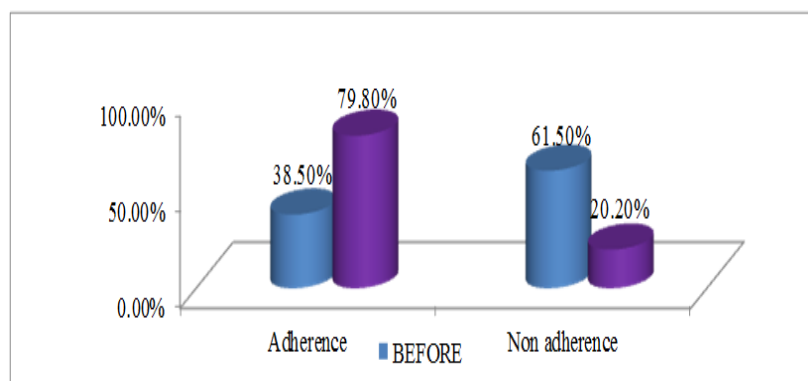


Fig.4 Effectiveness of Accessbarrierscreen(N=130)

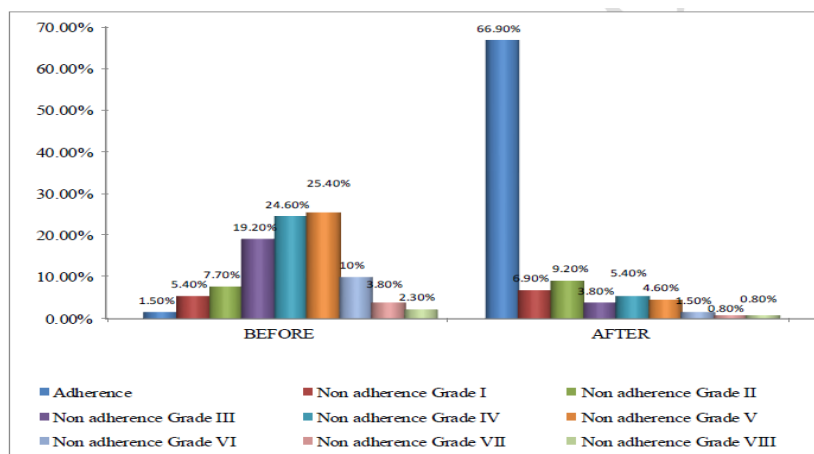
Table.4 Effectiveness of Access barrier screen (N=130)

Access barrier screen	BT		AT		Z#	P
	count	percent	count	percent		
Adherence	50	38.5	103	79.9	7.24**	0.000
Non adherence	80	61.5	26	20.2		

Wilcoxon Signed Rank Test

**:- Significant at 0.01 level

In the study adherence for access barrier screen was found to be 38.5% before counseling and 79.8% after counseling and non –adherence was found to be 61.5% before counselling and 20.2% after counseling(fig:4). The number of patients with no access barrier was increased from 50 to 103 and the effect of pharmacist provided education on access screen was statistically significant at 0.01 level. This study is in concordance with Khan et al.^[11], for access barrier screen adherence was found to be 39% and non –adherence found to be 27.8%. This study is in accordance with study by Sridhar et al.^[14]

**Figure: 5 Effectiveness of overall adherence (N=130)****Table.5 Effectiveness of overall adherence (N=130)**

Access barrier screen	BT		AT		Z#	P
	count	Percent	count	Percent		
Adherence	2	1.5	87	66.9	9.39**	0.000
Non-adherence grade1	7	5.4	9	6.9		
Non-adherence grade11	10	7.7	12	9.2		
Non-adherence grade111	25	19.2	5	3.8		
Non-adherence grade1V	32	24.6	7	5.4		
Non-adherence gradeV	33	25.4	6	4.6		
Non-adherence gradeV1	13	10.0	2	1.5		
Non-adherence grade V11	5	3.8	1	0.8		
Non-adherence grade V111	3	2.3	1	0.8		

Wilcoxon Signed Rank Test

**:- Significant at 0.01 level

The overall adherence was found to be improved significantly after clinical pharmacist provided counselling. This was supported by the study done by Khan *et al.*^[11] This study was also supported by Osterberg *et al.*^[12] This study uses Brief medication Questionnaire to assess adherence which is in concordance to the study done by K.V. Mini *et al.*^[13] which identifies the impact of clinical pharmacist education on medication adherence of HIV patients. This study is in accordance with study by Sridhar *et al.*^[14]

CONCLUSION

Effect of Clinical Pharmacist provided education on medication adherence

This study provides information about the status of medication adherence among the CAD patients. Poor medication adherence was observed, which could be improved by the special attention of clinical pharmacist. Regimen screen, Belief screen, Recall screen, Access barrier screen were significantly reduced after pharmacist provided education. Total screen for adherence was also reduced significantly. This study also point out the need of clinical pharmacist along with other healthcare professional for better patient care. This study provides information about the status of medication adherence among the CAD patients.

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