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Research Article

Medication Adherence among Post-percutaneous Transluminal Coronary Angioplasty Patients in Cardiology Outpatient Department of a Selected Hospital in Kolkata

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Abstract

Background: The number of coronary artery disease is increasing day by day and the number of percutaneous transluminal coronary angioplasty (PTCA) is also increasing every year. PTCA patients have to receive multiple drug therapies in an attempt to prevent the recurrence of cardiac events. Lifelong medication adherence is very important to prevent major adverse effects after PTCA. **Aim:** The aim of the study was to assess the medication adherence among post-PTCA patients of a selected hospital, Kolkata. **Methods:** A quantitative survey research was conducted and a total of 100 post-PTCA patients attending cardiology outpatient department of a tertiary care hospital, Kolkata, were surveyed using the purposive sampling technique. Data were collected using the demographic pro forma and Manipal Scale for Cardiac Drug Compliance for medication adherence. All the tools were tested for validity and reliability. **Results:** The findings revealed that most of the patients (92%) were high adherent and the rest of the patients (8%) were medium adherent to medication. Medication adherence was significantly associated with occupation only and others sociodemographic characteristics are not associated with medication adherence. **Conclusion:** Hence, early detection of medication adherence and motivational education programs to improve adherence is very important to improve the quality of life (QOL) of post-PTCA patients.

Key words: Cardiology outpatient department, Medication adherence, Post-percutaneous transluminal coronary angioplasty

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Introduction

The prevalence of coronary artery disease (CAD) is increasing in India and the need for interventional procedures is also increased. The number of percutaneous transluminal coronary angioplasty (PTCA) is increasing by 3.7% every year approximately.[1] A total of 387,416 percutaneous coronary intervention (PCI) procedures were performed in 705 centers in 2017. According to age-wise analysis, it is revealed that 12.24% of procedures were performed in patients younger than 40 years and nearly 17% of procedures were performed in patients' older than 70 years. Among all, 70% of patients were male and the number of female patients also increased from the previous year.[2]

Non-adherence to long-term medication in chronic disease is a problem throughout the world. It has been estimated that 40–50% of chronic disease patients are non-adherent to their prescribed medications. Non-adherence to medication is a major problem in the management of chronic diseases such as hypertension.[3] Medication adherence is important for the patient with CAD who has undergone PTCA. Adherence to a medication regimen in post-myocardial infarction patients is one of the most significant challenges of secondary prevention in cardiovascular medicine.[4,5] Cardiovascular risk reduction to decrease recurrent cardiovascular events is challenging to patients

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with established cardiovascular disease and their health-care provider. Nearly 104 million persons in India are 60 years of age and older, representing over 8.6% of the total population according to population census, 2011.[6] Due to the high prevalence of comorbidities, and the multifactorial nature of cardiovascular diseases, the majority of patients often require combination therapy.[7] Non-adherence to drug regimens and treatment plans impedes managing the health of this population resulting in an estimated 8% of hospital admission. The most common reason for non-adherence includes cost, inadequate instructions, and switching over to non-conventional treatment.[8] Low socioeconomic status (SES) is also associated with lower adherence to medication and higher mortality after the percutaneous intervention. Strict counseling regarding adherence to medication and rigid follow-up after PCI as well as addressing their economic concern improves long-term outcomes in patients with low SES.[9] As the number of cardiovascular diseases is increasing day by day, the number of PTCA is increasing in private hospitals as well as government hospitals. However, in India, there is a very limited study for assessing the patients' adherence with the medication which is most important. Hence, this study was chosen. The present study sought to explore medication non-adherence in post-PTCA patients in an urban Indian setting.

Objectives

The objectives of the study were as follows:

1. To assess the medication adherence among post-PTCA patients
2. To find out association between medication adherence with selected demographic variable.

Patients and Methods

Descriptive survey research approach was selected for the study. Data were collected during January 2, 2021–January 31, 2021. The study was conducted at cardiology outpatient department of a selected tertiary care center and physical distancing maintained and mask used during data collection. Considering 10% non-response rate calculated, sample size was 98. After taking institutional ethics committee approval, a total of 100 patients who have undergone PTCA more than 1 month, aged >18 to <70 years, and who were willing to participate in this study with written consent were selected for the study. Informed consent was taken and purposive sampling technique was used to select subjects, excluding patients for 1st follow visit, post-PTCA patients with unfavorable short-term prognosis such as cancer patients or patients with chronic kidney disease and cardiomyopathy, patients with diagnosed psychiatric disorder.

In the present study, medication adherence is defined as the extent to which a patient takes prescribed medication according to dosage and frequency recommended by the physician. Manipal Scale for Cardiac Drug Compliance was adopted for assessment of drug adherence. This is a standard tool and was developed by Prasad Narayana Shetty, Ganesh Paramasivam, Tom Devasia, Hashir Kareem, Ajit Singh, Department of Cardiology, Kasturba Medical College and Hospital, Manipal University. Permission has been taken from to use the tool Manipal Scale for Cardiac Drug Compliance. This tool consists of 10 items regarding the medication-taking practice of cardiac patients. Each item will carry either a yes or no answer. For items 1, 2, 3, 4, 6, and 10, yes answer will reflect the negative behavior of the participants; no answer will reflect the positive behavior of the patients. Item no 7, 8, and 9 yes answer will reflect positive behavior and no answer will reflect negative behavior. Scoring: Yes = 0.5, no = 0, for question 7, 8, and 9: Yes = –0.5 and no = 0. Score <1 = high adherence, 1–3 = medium adherence.

Sociodemographic variable includes age, gender, marital status, religion, type of family, type of habitat, educational status, occupation, monthly per capita income per month, dietary pattern, presence of comorbidity, family history of CAD, and duration since PTCA. Validity and reliability of the tool was calculated by validation of its construction and content by two cardiologist, one statistician and five nurses from medical surgical nursing field. Manipal Scale for Drug Compliance is a standard tool and criterion validity of this tool was computed comparing with the Medication Adherence Rating scale at 1 month, 6 months, and 12 months follow-up among 200 post-PCI patients. The criterion validity index was 0.881, 0.934, and 0.939, respectively. Before applying the tool, validity and reliability were done to check the applicability of the tool in our clinical setting. Content validity index was 0.88 for medication adherence scale and 0.94 for sociodemographic variable. The reliability of the Manipal Scale was 0.86, so the tool was considered reliable and for sociodemographic variable, it was 1. The original English version of interview schedule was translated into Bengali and back translated into English by two independent language experts and there was no significant difference found. Time taken for data collection for each participant was 15–20 min. Data were planned to be analyzed using both descriptive and inferential statistics. Frequency and percentage distribution are computed for describing the sociodemographic characteristics and graphical presentation was done for medication adherence. Chi-square test is computed to find out the association between medication adherence and selected demographic variables. Statistical descriptions and test above were performed using Statistical Package for the Social Sciences version 20 and $P < 0.05$ was considered statistically significant.

Results

Regarding sociodemographic characteristics of the participants, the maximum of post-PTCA patients (44%) were under the age group of 51–60 years, 25% were within 61–70 years. Most (86%) of patients were male and 89% of the patients were also married. A majority

(75%) of patients were belong to the Hindu religion, 22% Muslim, and 3% Christian by religion. Majority (67%) of the patients were from nuclear family and maximum (57%) of patients live in rural areas. Fifty-four percent subjects were educated up to secondary level, 22% were up to primary level, and 19% were illiterate. Maximum patients (38%) were self-employed, 23% laborer, and only 15% were doing service. Maximum (49%) patients' per capita income per month was <Rs. 2000, 34% per capita income per month was Rs. 2000–3999, and 6% had per capita income Rs. 4000–5999 and 10% had Rs.6000< per capita income per month. Among all the patients, majority (66%) patients were hypertensive and 2% of patients had comorbidity such as hypothyroidism and Parkinson's disease. It was found that the maximum (41%) number of patients were within 1–3 years of intervention, 22% of patients were 3–5 years of intervention and 19% of patients were >5 years of post PTCA status. Data in Figure 1 describe that most (92%) of patients have high adherence to medicine and only 8% of patients have medium adherence to medication and no one has low medication adherence. Table 1 is depicting that out of 100 patients, 57% of patients sometimes forget to take medicine. Among all 32 patients, 32% stopped medication because they could not afford it. Out of all 13% of patients stopped their regular medicine anytime because he/she felt that the disease is under control, 5% of patients stopped their regular medicine due to temporary illness and 5% of patients stopped due to anxiety of side effect. Only 2% of patients stopped their regular medicine due to bleeding and were advised by a local caregiver (e.g., Quack doctor). Table 2 depicts that there is a significant association between medication adherence and occupation of the patients at the 5% level of significance as the calculated Chi-square value is more than the table value. However, there is no significant association between medication adherence and others selected demographic variables as the calculated Chi-square value is less than the table value at the 5% level of significance.

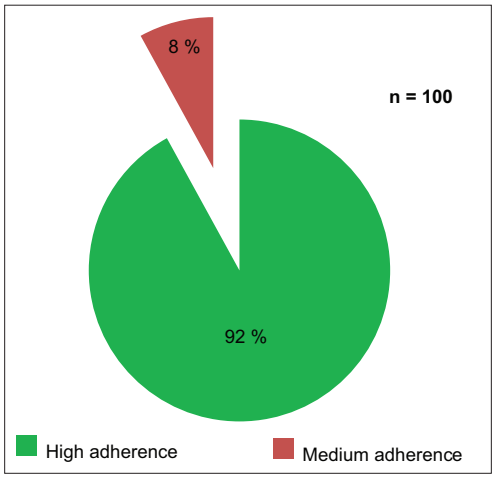

Figure 1: Pie diagram showing the level of medication adherence among post-percutaneous transluminal coronary angioplasty patients

Discussion

It is observed from the findings of the present study, 92% of patients have high adherence to medication, 8% have medium adherence to medication, and no one has low adherence to medication. This finding is consistent with the study which was conducted by Kareem *et al.*[9] that 83.8% of post-PCI patients were high adherent to medication among high socioeconomic status and 77.7% of patients were high adherent among low socioeconomic status. Medium adherents were 10.1% and 9.8% among post-PTCA patients of high and low socioeconomic status, respectively. Kareem *et al.*[9] study used the same Manipal Scale for Cardiac Drug Compliance so findings are comparable. Reuter *et al.*[10] study from Germany also supports our study findings where they reported that the adherence level was estimated at 90.8% for American Society of Anesthesiologists and at 79.2% for angiotensin-converting enzyme inhibitor or angiotensin receptor blocker. The present study revealed that most of the patients are high adherent to medication may be due to the free supply of maximum medicine by government hospitals.

The present study reveals that 57% of patients sometimes forget to take medicine, 5% stopped medication because they were worried about side effects, and 13% stopped medication because they felt that the disease is under control. These findings supported by the study of Sheilini *et al.*[8] that 31.1% expressed that sometimes they forget to take medicine, 2.1% expressed that they stopped their medication without telling their doctor, and 0.5% of participants stopped taking blood pressure (BP) medications they felt that the BP is under control. The present study reveals that 38% stopped their medication due to unaffordability. This finding is not consistent with the study which was conducted by Sheilini *et al.*[8] that revealed 61.4% of hypertensive patients were adherent to antihypertensive medication, 22.8% were medium

Table 1: Frequency and percentage distribution of reasons for reduced optimum adherence to medication as per Manipal Drug Adherence Scale, *n*=100

S. No.	Reasons for reduced optimum adherence to medication	Frequency	Percentage
1	Forgetfulness	57	57
2.	Unaffordability	32	32
3	Feelings of disease is under control	13	13
4	Temporary other illness	5	5
5	Worried about side effects	5	5
6	Actual side effects of medicine like bleeding related disorders	2	2
7	Advised by local caregiver/ practitioner to stop the medicine	2	2

N.B: Data are mutually exhaustive but not mutually exclusive

Table 2: Association between medication adherences with selected demographic variables, *n*=100

Demographic variables	Medication adherence median score (–0.5)		χ^2	df	*P*-value
	≤Median	>Median			
Age (years)			0.558	3	0.9
31–40	9	4			
41–50	12	6			
51–60	30	14			
61–70	15	10			
Gender			0.569	1	0.45
Male	58	28			
Female	8	6			
Marital status			0.249	1	0.61
Married	58	31			
Others	8	3			
Religion			0.559	1	0.80
Hindu	49	26			
Muslim and Christian	17	08			
Type of family			0.3	1	0.58
Nuclear	43	24			
Joint	23	10			
Type of habitat			1.248	1	0.26
Urban	31	12			
Rural	35	22			
Educational status			1.902	3	0.59
Illiterate	11	08			
Primary	08	04			
Secondary	35	19			
H.S. and above	12	03			
Occupation			11.565	3	0.009*
Service	13	02			
Self-employed	18	20			
Labor	19	04			
Other	16	8			
Monthly per capita income (in Rs)			1.112	2	0.57
<2000	32	17			
2000–3999	21	13			
≥4000	13	04			

adherent, and 15.9% of patients were low adherence to medication and the study which was conducted by Ali *et al*.[11] among coronary artery bypass surgery patients that revealed that 26% of patients were non-compliant with medication. This disparity of study findings may be due to a different setting, different demographic characteristics of subjects, and different assessment tool to assess adherence.

In this study, it is found that medication adherence significantly associated with occupation. Decker *et al*.[12] study showed that a lower education level, immigrant status, and poor transitions in care were all documented as common barriers to clopidogrel adherence.

This study has limitations too like it was conducted in only one government hospital which may reduce the generalizability of the findings and due to time constraints only once data have been collected but it would be better if a longitudinal study can be done.

Conclusion

We believe that this study has updated the issue of adherence in PTCA patients. Post-PTCA patients are highly adherent to medication, and forgetfulness and unaffordability are the main reasons which reduce their optimum level of medication adherence. Hence, counseling

regarding medication adherence strategies is very much important during each follow-up visit to prevent post-PTCA complications and relevant stakeholders can be planned adherence improvement strategies on the basis of these findings.

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Conflicts of Interest

There are no conflicts of interest.

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