Assessment and barriers to medication adherence for secondary prevention of cardiovascular disease among patients with coronary artery disease in Chandigarh, India

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ABSTRACT

Context: Medication adherence is critical for the secondary prevention of cardiovascular disease (CVD). Nonadherence to prescribed treatment is associated with adverse health outcomes and higher costs of care.

Aims: The present study aimed to assess medication adherence among patients diagnosed with coronary artery disease (CAD) in Chandigarh, India.

Settings and Design: This cross-sectional study was conducted in five different hospitals or health centers of Chandigarh.

Materials and Methods: The standardized Morisky Medication Adherence Scale-8 item was used to assess medication adherence among adult patients with CAD seen during a visit to major tertiary hospitals, secondary and primary health-care center in Union Territory, Chandigarh. In a separate qualitative study, barriers and facilitators to adherence were assessed through twenty in-depth interviews (ten males and ten females) and one focus group discussion. Statistical analysis was completed using SPSS 16.0 software and simple frequencies and proportions were computed.

Results: A total of 260 patients were included in the cross-sectional survey, of which 70.4% were males with a mean age of 58.61 years. More than half (52.7%) of the respondents were from the age group of 41 to 60 years. Low to medium adherence to treatment was observed in about half (47.3%) of the respondents with low adherence among females. Adherence was better in a tertiary hospital as compared to the primary or secondary facility. Provider barriers and access to drugs due to cost barriers were found to be major barriers to treatment adherence in the in-depth interviews.

Conclusions: Medication adherence to the secondary prevention of CVD among the CAD patients surveyed in Chandigarh, India, is poor and increased access to essential drugs and improved provider–patient communication is required.

Key Words: Barriers, cardiovascular disease, coronary artery disease, medication adherence, noncommunicable diseases, secondary prevention

Introduction

Globally, the leading cause of death is due to a cardiovascular disease (CVD).¹ Approximately, 35 million people have an acute coronary or cerebrovascular event annually and almost half of these events occur in those with preexisting CVD.² The number of people with CVD worldwide is likely to exceed to 100 million. With 1,531,534 ischemic heart disease deaths in 2002, the highest in the world, India bears
60% of the global heart disease burden.[3-5] In addition, the average age of CVD patients in India is about a decade lower than in the Western world, with a greater proportion experiencing myocardial infarction and poor outcomes.[6]

Recommended for the management of patients with CVD or their risk factors is medications such as beta blockers, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers (ARBs), statins, and antiplatelet drugs, each reduces death, reinfarction, or stroke.[7-10] In addition, lifestyle changes in the form of increased physical activity, dietary modification/weight loss, and smoking cessation are of proven benefit and may improve outcomes in as quickly as 6 months.[11,12] Despite the significant reductions in CVD morbidity and mortality with the secondary prevention therapies, use of and adherence to these interventions remains relatively low, with reasons being multifactorial (e.g., availability, access, cost, side-effects, and awareness and understanding, among others). In a report of over one thousand patients enrolled in a registry at Durham after an acute coronary syndrome event, 28% had discontinued one or more of the following recommended therapies at 3 months: Aspirin, clopidogrel, ARBs, or statin therapy. Most discontinuations (68%) were patient-initiated, while the rest were with the input of providers.[13] Independent predictors of discontinuation included not using reminder tools.

Critical in the secondary prevention of CVD is adherence to prescribed medicines and lifestyle recommendations.[14] There is mounting evidence that nonadherence to prescribed treatment is associated with adverse health outcomes and higher costs of care.[15] As reported by the World Health Organization, medication adherence in patients with chronic diseases averages around 50% in developed countries and the situation is much worse in developing countries like India due to poor access to medications and health-care services and illiteracy.[16]

The present study aimed to assess the magnitude of medication adherence among patients with coronary artery disease (CAD) in major tertiary, secondary hospitals, and primary health-care centers of Chandigarh. An attempt was also made to understand the barriers of medication adherence among the study subjects through in-depth interviews and focus group discussion (FGD).

Materials and Methods

This cross-sectional pilot study was conducted among a systematic random sample of 260 adult CAD patients visiting the outpatient departments (OPDs) of participating hospitals and health-care centers in Chandigarh from August 1 to September 30, 2012.

In an effort to include different levels and types of public health facilities and to ensure a more representation of current adherence practices, the tertiary, secondary, and primary health-care centers were included. The tertiary teaching institutes included were Postgraduate Institute of Medical Education and Research (PGIMER), Government Medical College and Hospital, Sector-32, and Government Multispecialty Hospital, Sector-16, Chandigarh; a secondary Community Health Centre, Sector-22, Chandigarh; and a primary Urban Health Training Centre, Indira Colony by purposive sampling.

Study participants were those patients with confirmed CAD status and some of the patients with postpercutaneous transluminal coronary angioplasty or coronary artery bypass graft receiving follow-up care at one of the participating facilities. A standardized Morisky Medication Adherence Scale-8 item (MMAS-8) was used after obtaining informed consent from every fourth consecutive patient (referred after postdoctor consultation) by trained field investigators. The MMAS-8 scale, an 8-item close-ended scale in which the respondent can respond in either “yes” or “no” was developed by Morisky et al. in 2008 to measure the medication adherence level of an individual.[17] The scale has the alpha reliability of 0.83 (n = 1367) among patients diagnosed with essential hypertension attending an outpatient clinic of a large teaching hospital.[17] In-depth interviews (ten males and ten females) were done to study the barriers affecting medication adherence with confirmed CAD patients at cardiology OPD of PGIMER, Chandigarh. The pharmacy barriers included the cost of medicines. The provider barriers included inaccessibility of medicines at nearby chemist shops, poor counseling services, and patient barriers included forgetfulness, aging, busy work schedule frequent dosing, and sense of feeling better. One community-based FGD was carried out in the study area. The participants for in-depth interviews and FGD were enrolled using purposive sampling and were not the same interviewed for MMAS-8 scale. Interview schedule and FGD guidelines were prepared and used for data collection. Thematic analysis was done to explore the factors affecting medication adherence.

The analysis was done using SPSS software (version 16.4, SPSS Inc.) IBM Corporation, New York, USA. The responses were coded and analyzed. Simple frequencies and percentages were calculated.
Results

A total of 260 respondents with 220 from tertiary health-care centers and forty from the secondary and primary health-care center were interviewed within the stipulated time period. The proportion of patients reporting to tertiary hospitals was higher since most of the patients with CAD preferred them as compared to the secondary and primary health-care centers because of advanced diagnostic and treatment facilities. Majority of the respondents (70.4%) were males with age ranging from 32 to 87 years and with a mean age of 58.61 ± 10.95 years. More than half (52.7%) of the respondents were from the age group of 41–60 years. Majority (75%) of the respondents were enrolled in a tertiary hospital of PGIMER, Chandigarh, for their treatment of CVDs.

Age- and gender-wise adherence level of the respondents is presented in Table 1. About half (47.3%) of the respondents were found to be having low to medium adherence to treatment of CVDs. The association between gender and adherence was found to be statistically significant with more adherences among males (70%) than females (29%) (P < 0.05). Tertiary care facilities have reported higher adherence (58%) as compared to secondary/primary (30.7%) health-care facilities.

On the in-depth interview, pharmacy barriers and patient barriers were reported by 50% of the males and females, respectively [Table 2]. The respondents were interviewed about the possible ways that can ensure adherence to the advised treatment. Majority (77.7%) suggested that medicines should be made available at all public health institutions at subsidized rates, followed by provision of counseling on medication adherence by doctor, nurse, or health worker and promotion of lifestyle measures such as exercise or yoga for early recovery.

Discussion

In the present study, about one-half (47.3%) of the respondents were found to have low to medium level of medication adherence for the secondary prevention of CVDs. In a study conducted by Dennis et al. in Bengaluru, self-reported adherence for the management of hypertension was reported in 50.3% of patients. A study conducted in Malaysia measured medication adherence among hypertensive patients by using revised medication adherence Likert scale. About 53.4% of the respondents were found to be adherent which is comparable to the present study.[18] No significant association was found between age of the respondents and their adherence to the prescribed medication regimen in our study. There are few studies which show medication adherence is poor among elderly patients and also which show adherence level poor among young patients. Age-compliance behavior relationship is a complex phenomenon that may involve various factors which are not fully understood.[20,21]

More males were found to adhere to their medication regime as compared to their female counterparts. A study in the Netherlands found that men were more compliant with their medication regimens than women. Another cross-sectional study involving Chinese immigrants was conducted between 2002 and 2003 in the USA, which revealed that women were slightly more compliant than men with their medication regimens (75% vs. 69% P = 0.42). Patients attending primary and secondary health-care facilities have poor adherence (69%) although a sample was small as few patients of CAD prefer such facilities.
The factors such as the cost of medicines, inaccessibility of medicines, poor counseling, forgetfulness, frequent dosing, and feeling better were found to affect medication adherence of respondents in the present study. Noncommunicable disease treatment has substantial economic impact on household incomes. Out of the pocket expenditure and catastrophic expenditure are high which is leading many patients to poverty in India.[26] A recent study by Okoro and Ngong revealed that discontinuing medications when feeling better was the most common cause of medication nonadherence. Other factors included cost of the medications, forgetfulness, busy work schedules, dislike for medications, too much medications, and side effects of medications.[27] Other studies also reveal similar factors affecting medication adherence of patients.[9,27-29] Limitations of the present study are smaller sample size and unequal representation of subjects from the secondary and primary institutions as few patients reported for treatment in these health-care facilities. Larger studies with representative sample size are required to assess adherence to medication in the primary and secondary health settings. However, this study is an important advancement in knowledge as very few studies are available on the topic from India, which highlights poor adherence and barriers to medication for better patient outcomes.

Conclusions

The present study has reported high nonadherence to treatment for secondary prevention of CVDs, and the main reasons are access to medicines and poor counseling services for promoting adherence and lifestyle modification. Provision of essential drugs, improving provider–patient communication, and innovative tools like m-health can improve adherence to treatment in CVD patients.

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Conflicts of interest
There are no conflicts of interest.

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