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Analyzing Burden of Cost of Therapy in Patients Affected with Acute Coronary Syndrome in Tertiary Care Hospital

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Abstract

Background: The present research deals with pharmacoepidemiology and pharmacoeconomic study of Acute Coronary Syndrome (ACS) and its impact on patient's therapeutic outcome and cost of therapy. According to a recent World Health Origination (WHO) report around 100 million people died every year due to poverty associated with illness. Contributing to the growing literature on the economic burden of illness, this article examines the indirect and direct costs of illness that occurs on household level, describes its influence on treatment seeking behavior and assesses its impact on household welfare.

Methods: The contemporary research was performed in Coronary Care Unit (CCU) and medicine ward department of medicine, RMMC and Hospital over 65 patients to illustrate the expenditure in harmony with achieved desired therapeutic outcomes by analyzing therapy cost of Acute Coronary Syndrome (ACS) supplemented via therapeutic outcomes using Minnesota Living with Heart Failure and Condition Questionnaire (MLHFCQ).

Results: The values were observed and recorded using appropriate data collection forms and MLHFC questionnaire. The total cost (TC) spent was recorded as 7,096.2 USD with most patients (n=16; 35.61%) paying in cost range of (110.1 to 141.5 USD). The total direct therapy cost was 6,278.6 USD accounting 88.47% of total cost and indirect cost 817.6 USD (11.52 % of TC). Significant improvement observed in overall mean MLHFC score of 62.93 compared to the baseline score of 37.94 rated moderate.

Conclusion: The study was designed, planned and executed to estimate cost of the given therapy and direct effect on patient therapeutic outcome.

Keywords: Pharmacoepidemiology; Pharmacoeconomic; Therapeutic outcome; Acute coronary syndrome

Abbreviations: ACS: Acute Coronary Syndrome; WHO: World Health Origination; CVD: Cardio Vascular Disease; CHD: Coronary Heart Disease; CCU: Coronary Care Unit; DASH Diet: Dietary Approaches to Stop Hypertension Diet; MLHFCQ: Minnesota Living with Heart Failure & Condition Questionnaire

Introduction

Acute Coronary Syndrome (ACS) is the leading cause of death in economically developed countries and is rapidly assuming serious dimensions in developing countries. It is expected to be the single most important cause of death in India by the year 2015 A.D [1]. According to the WHO, an estimated 17 million people died from Cardiovascular Disease (CVD) in 2005 comprising 30% of all global deaths and of these nearly 80% of deaths took place in low and middle income countries like India [2]. According to the World Heart Federation, 35% of all CVD deaths in India occur in those aged 35-64 years [3]. Coronary Heart Disease (CHD) is the commonest CVD accounting for 90-95% of all cases and deaths.

Cost of therapy is defined as value of the resources that are expended or forgone as a result of a health problem. Cost of therapy is useful for both health care policy and burden of the disease (pharmacoepidemiological studies), is also useful for pharmacoeconomic studies to analyze the cost for a particular disease spent by a patient [4]. Cost of illness can be calculated in terms of direct cost (medical cost, admission cost etc.) and indirect cost (productivity cost like number of days lost and income lost during the time of therapy).

The research was conducted to analyze cost of therapy in both health care policy and burden of the disease (pharmacoepidemiological studies) and pharmacoeconomic study was done to analyze the cost for a particular disease spent by a patient and its impact in terms of patients' therapeutic outcomes [4].

Methods

Study site

The study was conducted in Coronary Care Unit (CCU) and Medicine Wards of Rajah Muttaih Medical College and Hospital (RMMCH), 1400 bedded Multi- Specialty Tertiary Care Teaching Hospital, Annamalai University.

Sampling size

The sampling size includes 65 patients in the study.

Subject recruitment procedure

Patients who came to RMMCH affected with Acute Coronary Syndrome, admitted in inpatient medicine department and CCU of either gender during the period "December 2013 -May 2014", those who are not having any other co-morbidities and willing to co-operate were being recruited in our study. These patients were explained about the study and their consent was obtained along with signature and recorded (Tamil and English translations were provided).

Selection criteria

Inclusion criteria: Patients who were above 18 years of age, newly diagnosed with ACS, already being treated for ACS were included in the study. These patients were explained about the study and their consent was obtained along with signature and recorded (Tamil and English translations were provided).

Exclusion criteria: Patients with other co-morbidities with cardiovascular disorders, not willing to cooperate, vulnerable group (pregnant women, mentally retarded etc.) along with patients coming for general check-up (Out patients) were excluded from the study.

Study design

This study was a single blinded interventional research. This study was conducted over a group of 65 patients to evaluate the Pharmacoeconomic and pharmacoepidemiology of patients affected with acute coronary syndrome, therapeutic outcomes using Minnesota Living with Heart Failure & Condition Questionnaire (MLHFCQ). Cost of therapy forms were designed with an objective to find economic burden of the ACS on each patient and is calculated in terms of direct cost (medical cost, admission cost etc.) and indirect cost (productivity cost like number of days lost and income lost during the time of therapy).

Patient were regularly followed once at the time of admission and while they were about to discharge. First Intervention includes collecting data to analyze cost of therapy and second Intervention was therapeutic outcomes using Minnesota Living with Heart Failure & Condition Questionnaire (MLHFCQ), patient counselling about life style modification like low salt intake and dietary approaches to stop hypertension (DASH) diet. The interventions were designed by researchers along with the consultant physician.

Cost of therapy data collection forms were formulated which procured information regarding patients direct cost, indirect cost, total treatment cost, number of days spent in hospital and average cost per day. Other information like patient's lifestyle, socio-economic status also were recorded.

Results

Patient demographic data

A total number of 70 patients were enrolled in our study. Out of all the patients enrolled, 65 of them completed the study and remaining 5 were dropouts. The upcoming results were taken from the patients who successfully completed the study. The study population was consisting of 43 males (66%) and 22 (34%) females (Table 1). Majority of patients (n=27) i.e., 41.5% were belonging to 36-50 age group.19 patients(29.3%) were belonging to the age group of 66-80, 10 patients(15.3%) were between 51-65 age group, the age group was between 18-35 for 5 patients(7.7%) and 4 were >80years of age (Table 2).

Cost of therapy

The overall cumulative therapy cost for 65 patients was accounted as 7,096.2 USD of which 35.61% of total cost was paid by 16 patients (110.1-141.5 USD), 33.22% of total cost was spent by 24 patients (78.6-110.1 USD), 17.92% was spent by 7 patients (>141.5 USD), 9.02% and 4.23% of total cost was spent by 10 and 8 patients respectively (47.2-78.6 and 15.7-47.2 USD) to improve their therapeutic outcome (Table 3). The average cost per illness spent by patient was 109.2 USD (Table 4) to improve his/her quality of life (nearly 28.06) from the time of admission (baseline score) to the time of discharge (outcome score).

Therapeutic outcomes

The therapeutic outcomes in patients with acute coronary syndrome were assessed by Minnesota Living with Heart Failure & Condition Questionnaire (MLHFQ). At the time of admission, mean therapeutic outcomes of MLHFQ was 37.94%. At the time of Discharge, overall mean therapeutic outcome of MLHFQ was 62.93%. Significant improvement observed in overall mean therapeutic outcomes of MLHFQ observed (Table 5).

Discussion

As the prevalence of cardiovascular disorders is increasing worldwide, the study was targeted to assess the pharmacoeconomic

S. No	Gender Wise Distribution of Patient	Male	Female
1.	No. of Patients	43	22
2.	Percentage	66.2%	33.8%

Table 1: Gender Wise Distribution of Patient

S. No	Age Group (in Years)	18-35	36-50	51-65	66-80	>80
1.	No. of Patients	5	27	10	19	4
2.	Percentage	7.7%	41.5%	15.3%	29.3%	6.2%
	Average	54.7 Years				

Table 2: Age Wise Distribution of Patients

S. No	Cost of Therapy (in USD)	15.7-47.2	47.2-78.6	78.6-110.1	110.1-141.5	>141.5
1.	No. Of Patients	8	10	24	16	7
2.	Percentage	12.3%	15.4%	36.9%	24.6%	10.8%
3.	Total Amount (in USD)	300.8	640.1	2,356.3	2,527.5	1,271.5
	Average Therapy Cost (in USD)	109.2				

Table 3: Patient's Distribution Based on Therapy Cost

Direct Cost (Cost in USD)	Per patient/per day(cost in USD)	Total cost (in USD)
Bed charges	1.6	11.0
Admission Charges	4.7	4.7
Medical Charges	5.3	36.8
Lab Data	-	29.9
Travelling Expenses	3.2	3.1
Miscellaneous	1.6	11.0
Indirect Cost	-	12.6
Total Cost(in USD)	-	109.2

Table 4: Cost of Therapy for average 7 days of Hospitalization

S. No	Scoring Range	21 - 42	43 - 63	64 - 83	84 - 105
1.	No of Patients	Poor	Moderate	Good	Very Good
2.	Admission	23	42	-	-
3.	Discharge	2	18	29	16

Table 5: Comparison of Therapeutic Outcomes at Beginning and Discharge

and pharmacoepidemiology status of cardiovascular disorders in accordance to the improvement of the disease condition and quality of life. The study showed that an acute episode of ACS occurred at age group of 36-50 yrs., which required hospitalization of about 7(6.39) days.

The total cost spent by total number of patients (n=65) in the study was estimated/calculated to be 7,096.2 USD with most patients (24; 36.9%) paying in cost range of (78.6 to 110.1 USD). On an average each patient spent 109.2 USD of which the total direct cost spent by these patients was 6,278.6 USD and total indirect cost was 817.6 USD. The average direct cost per patient for 7days was 96.6 USD and average indirect cost per patient for 7 days was 12.6 USD.

The number of patients that is 7 patients (10.8%) paid therapy cost more than 141.5 USD and 8 patients (12.3%) paid in between 15.7 to 47.2 USD as cost of therapy. The socioeconomic data showed that a significant number of patients (i.e., 38; 58.5%) belonging to Below Poverty Line (BPL) with the monthly income of less than 15.7 USD and 27 patients (41.5%) were above this poverty line [5]. Out of 38 patients below the poverty line all of them accepted that the health care cost they were paying was a major burden on them.

In the study conducted, the therapeutic outcomes regarding cardiovascular disorders were measured by the Minnesota Living with Heart Failure (condition) Questionnaire (MLHFCQ). MLHFCQ score was compared between baseline data obtained during the admission and final data during the discharge of patients. The therapeutic outcomes were monitored during the hospitalization days of patient by subsequent follow-ups. The baseline mean MLHFCQ score was found

to be 37.94 categorized as Poor score with 35% patients showing poor MLHFC score and 65% patients showing moderate score.

Conclusion

The study was designed, planned and executed to estimate cost of the therapy and direct effect on patient quality of health. The study shows a good result and relation between paid cost and improved therapeutic outcome. The study demonstrated that treatment provided by the hospital was good but the affordability by the patient was a matter of concern as they mostly belong to Below Poverty Line (BPL). The results at the time of discharge are satisfactory and patient has more knowledge about disease state and the do's and don't in this physical state.

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