

Cost borne by Households of Patients Seeking Care at Cardio Thoracic Unit, Teaching Hospital-Karapitiya, Galle-Sri Lanka

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Abstract

Background: In Sri Lanka today 108 patients die every day due to heart diseases. Their lives can be saved if the number of bypass surgeries carried out on a daily basis is increased by 30 percent. The chronic nature of Coronary Heart Disease (CHD) and high out of pocket health spending add a substantial cost burden to the economy of the households. The study assesses the direct and indirect costs incurred by Coronary Artery Bypass Grafting-(CABG) patients, associated factors that increased the household cost and coping mechanisms to meet CABG related health costs.

Method: This was a descriptive cross sectional hospital based study. The study was carried out at The Cardio-Thoracic Unit of teaching hospital Karapitiya. Data were collected from patients admitted to undergo the CABG surgery. Data were collected using a pretested interviewer administered questionnaire. Direct and indirect components of household costs incurred in connection with the CABG process were estimated.

Results: The total mean household cost borne by CABG care patients and their households, during the six weeks study period, was estimated at Rs.63,539.64 with (standard deviation Rs.30,995.60 per household), with direct and indirect costs making up 75.05% and 24.95% respectively. According to the study the bulk of the direct cost component consisted of non-medical costs (78.83%) with only 21.17% being direct medical costs. The major part of non-medical cost was on renting a room for relatives while the patient was in the ward. The mean total direct cost was Rs. 47,730.63 and mean total indirect cost was Rs.15, 863.01. A significant positive correlation was found between mean total cost and number of hospital days, distances from home to hospital, hiring a bystander to look after the patient during the hospital stay and travelling cost borne by the household members.

Discussion: Direct cost was the major contributor to the household cost of CABG patients, despite the fact that free healthcare ensured that most medical costs were covered by the state. There were only 6% under a health insurance system so the majority (94%) had to bear the entire cost on their own. This created a financial disturbance to households as the majority had family income levels below the mean total household cost.

Conclusion: The economic burden imposed by the admission to household was mainly due to direct costs incurred for rent out a room, drug cost and total cost for meals. Direct treatment costs and the indirect costs related to wage loss impose severe financial burden on some households.

Keywords: Household cost; Direct cost; Indirect cost; Health insurance

Introduction

Globally, non-communicable diseases (NCDs) are the leading causes of death (WHO 2011). Of the 57 million global deaths in the year 2008, 36 million were due to NCDs and out of these nearly half (17.3 million) were due to cardiovascular disease (CVD)s [1]. Within the developing countries, the South-Asian region, particularly, the Indian subcontinent carries a high burden of CVD, predominantly CHD [2]. The proportion of the Sri Lankan population over 60 years has increased from 5.3 in 1953 to 10.8 in 2003 and it will be the one quarter of Sri Lankan population by 2030. This will directly increase the IHD burden [3]. The chronic and prolonged nature of the disease contributes significantly to the associated cost burden. In absence of any security measures (e.g. health insurance, social security etc.), out-of-pocket (OOP) health spending can consume a substantial share of budget of a household, irrespective of the type of facility approached by the patient [4]. Sri Lanka is a country known to the world for providing cost effective health care free of direct cost to the patient. The Sri Lankan healthcare system is a combination of public health – the main driver enabling universal access which is financed by general revenue sources – and the private sector which is financed through fees levied for service arrangement. But the emerging trend is the rising Out of

Pocket (OOP) expenditure on health. Household OOP expenditure on health in Sri Lanka rose from just Rs.5.2 billion in 1990 to 76.1 billion in 2009. The share of OOP expenditure in Total Health Expenditure was 46% while the share of OOP expenditure in Private Health Expenditure was 89% [5]. The mortality data reveals a high burden from cardiovascular disease, which is mostly Ischemic Heart Disease (IHD). This is confirmed by other available data on hospital admissions [6]. Today 108 patients die every day due to heart diseases in Sri Lanka. Their lives can be saved if the number of by-pass surgeries carried out on a daily basis is increased by 30 percent. Unfortunately only four to five surgeries are done per day in Sri Lanka. The main reason for this is the expenditure and the cost of the surgery [7]. The growing burden of

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heart ailments has social and economic implication at both. At micro level heart ailments impose significant cost burden on households and increased cost burden. In absence of any security measures out of pocket health spending can consume a substantial share of budget of a household. [2]

Objectives

The paper estimates the direct and indirect costs incurred by the coronary artery bypass grafted (CABG) patients. And also looking to coping strategies adopted by households.

Methodology

This is a descriptive cross sectional hospital based study describing the household cost of Coronary Artery Bypass Grafting (CABG). The study was carried out at cardiothoracic unit, Teaching Hospital Karapitiya, Galle Sri Lanka. The study was carried out from 01st of April to 15th of May. The study population consisted of all the patients of the cardiothoracic unit who underwent the surgery during the study period. Both male and female patients included. Sample size was 146 eligible patients with 5% added to minimize the possible drop outs. For p as 0.1 (10%), assuming that the 10% of the total household costs are the indirect costs. It is decided to estimate the sample size within 5% level precision and 95% confidence limits. Patients were selected from each male and female ward consecutively after informed consent to make total number 146 participants. Patients with Co-morbidities that require regular treatment or hospitalization (diabetes, hypertension and its related complications like stroke/peripheral vascular disease. and Other associated complicated heart surgeries and reoperation patients were excluded.

Data collection

Data were collected using a pre tested interviewer administrated questionnaire by medically qualified investigators after being obtaining written informed consents. Information was collected from CABG patients or from their caretakers.

Data analysis

Data were coded and entered into Epidata 2.1 and analysed using

SPSS version 18. Measured of central tendency and variations were used to describe the data. Since most of the household cost data were continuous numerical data quantitative analysis was applied after screening for possible errors. Two types of analysis were used.

1. Descriptive analysis (Mean, Median, Average, percentage).
2. Correlation analysis (r and s values)-For continuous variables.

Total costs include direct and indirect cost associated with CABG surgery calculated (Figure 1-5).

Ethical clearance

Ethical clearance was obtained from the Ethical Review Committee Faculty of Medicine Karapitiya, Galle.

Results

The response rate for the household survey was 100% with 146 study population. The majority of the patients were adult males (69.9%) and 30.1% were females. Median age was 52.67 for males and 51.59 for females. The large proportion in the 50-59 age group (61%) and forty two per cent were between 40-49 years. Mean age of the samples was 52.34. The median family size was four (inter quartile range 3-5) and 34.4% of patients had one dependent at home another 27.4% of patients had two dependents, and 20.5% patients had 3 dependents. It is important to note that 67.8% of the patients were the main breadwinners of the family. Twenty point five percent of the spouses played a key role in managing the family to which the patients belonged. Only 8.2% of the patients family were looked after by their children. There were 28.8% patients were getting monthly income between R As some families of the patients they were living with unmarried children, so unmarried children also help to patients. The significant amount of families getting total family income level of Rs.20000-349999 is (37.7%). Some family's getting total family income level less than Rs.10000. That is 25.2%. There were 18.8% getting less than Rs.5000s. 10000-199000 and 37.7% of patients getting monthly income of between Rs.20000-34999. (1 US dollar = Sri Lankan 132 Rupees). According to the study 21.2% patients are coming from a 50-99 km distance and another 21.2% are coming from a 100-140Km distance. Post operatively there were 44.5%

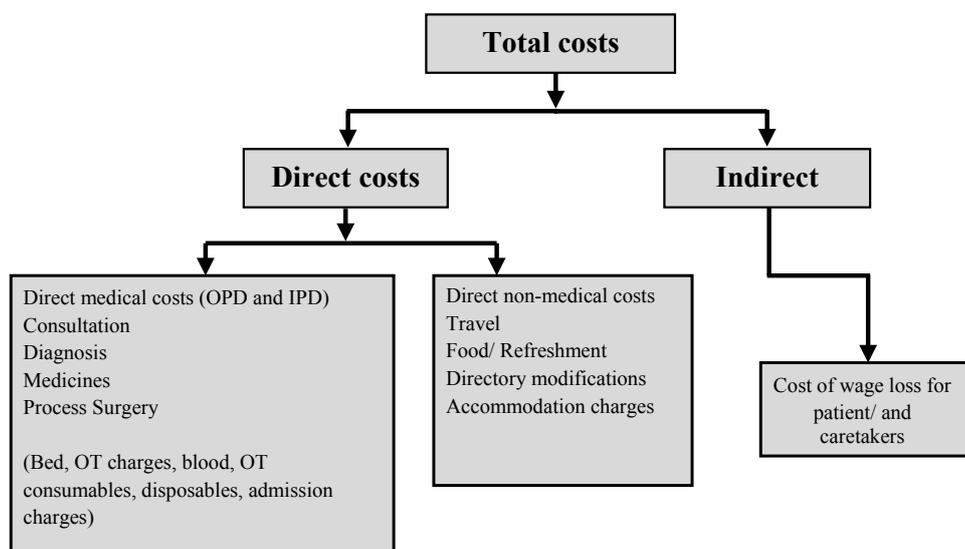


Figure 1: Components of total cost.



Figure 2: Correlation between distance to the hospital from the patients home town and total cost.

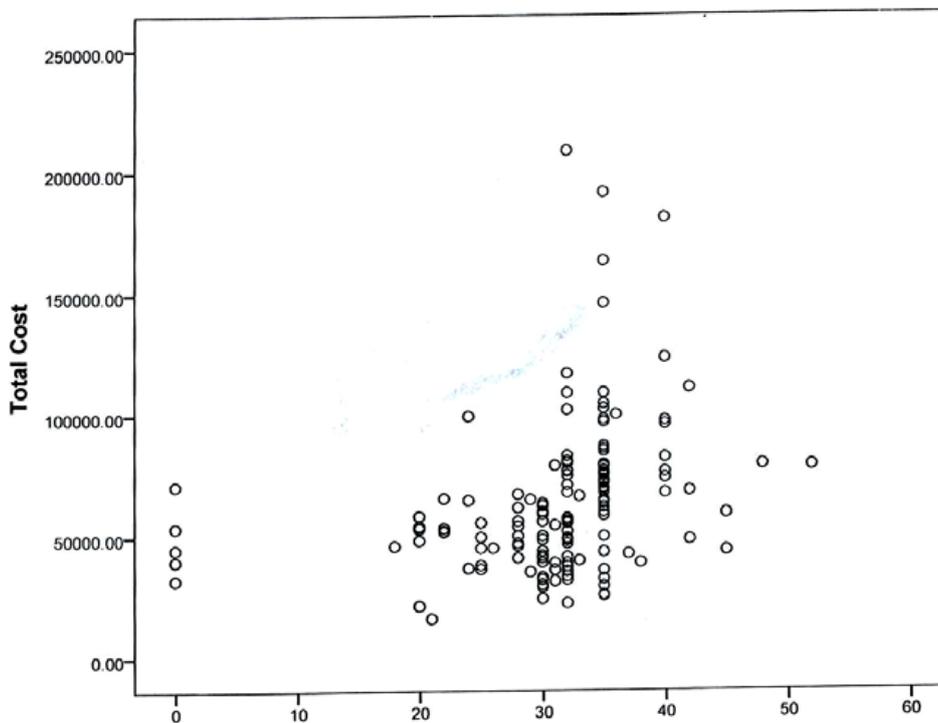


Figure 3: Correlation between duration of hospitals stay days & total cost.

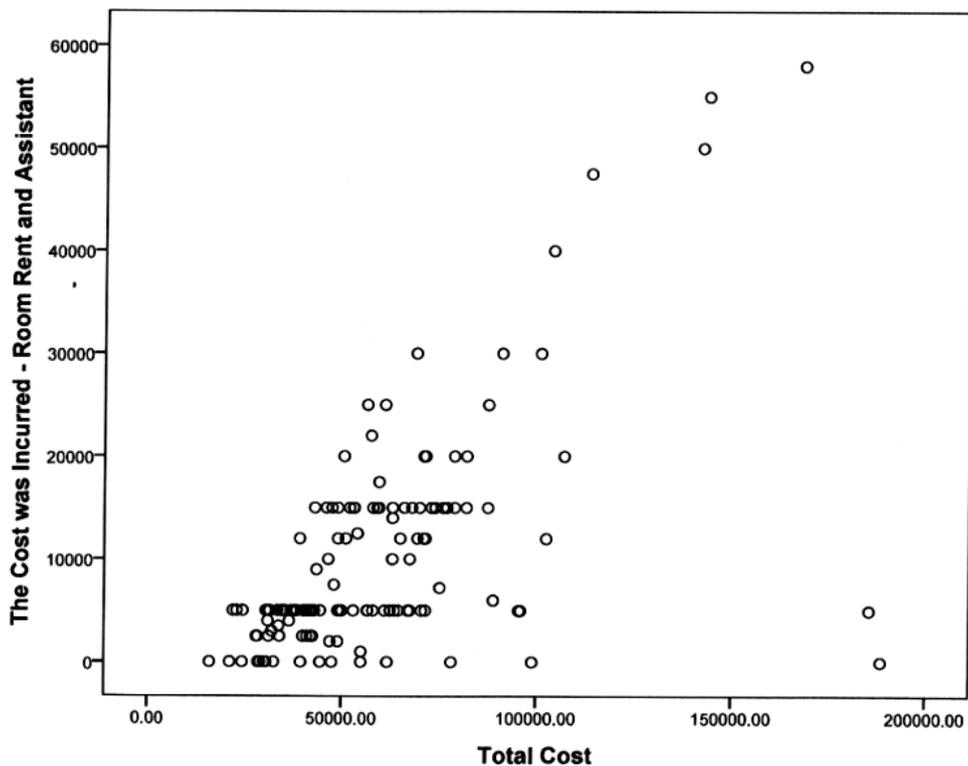


Figure 4: Correlation between cost due to rent a room and total cost.

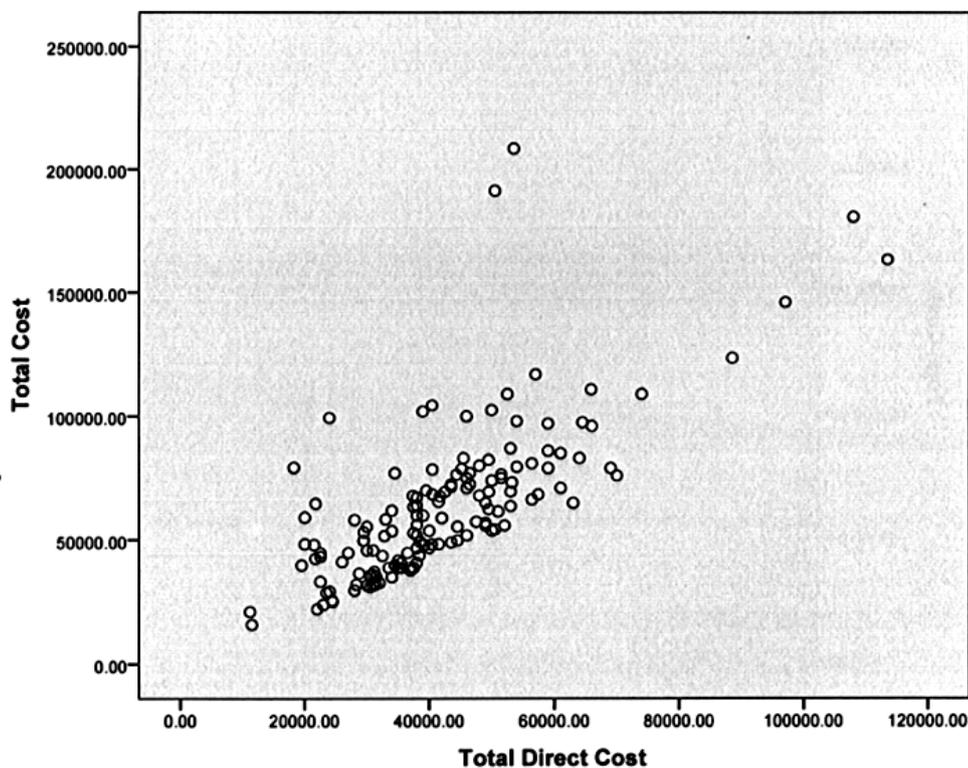


Figure 5: Correlation between total direct cost and total household cost.

used hired automobile (car /van) as the mode as transport. Majority of the study sample (42.5%) spent Rs. 1000-2999 for travelling cost for reaching the hospital. But 9.6% patients cost Rs. 5000 – 5999 and another 4.8% spent above Rs.6000. The cost of travelling after the surgery was increased with 46.6% had cost more than Rs.5000. This was very significant different (Table 1).

It was found that mean cost for food & beverage for patients was Rs. 6565.07 with standard deviation of Rs.2727.07 (Table 4.14).it's 13.75% of the total direct cost (Table 1). Mean cost incurred for food and beverage for bystander or accompanying patients was Rs.4318.99 with standard deviation of Rs. 2178. 96 (Table 1). It was 9.04% of the total direct cost.

Majority of the patients rent a room for their relatives to stay during hospitalization period. The total mean cost for rent a room during hospital stay period was Rs.9669.18 with SD of 10 348.18.This was very significant as it consisted of 20.25% total direct cost. This was highest amount of total direct cost percentage (Table 1). The mean total cost for hire a person to looked after the patient was rs.6263.70 with SD of 1095.19. it was 13.12%.of total direct cost (Table 1).

The mean cost of drugs perched outside was Rs.6769.86 with standard deviation of Rs2325.20. Mean cost for surgical accessories was Rs.1705.48 with standard deviation of Rs.290.19. Most of the investigations were pre-operative screening investigations. (HIV screening, Hepatitis screening, PT/INR etc.) The mean cost for laboratory investigation done outside was Rs.1633.22 with SD of Rs. 443.90 (Table 2). Mean total direct cost is Rs.47, 730.63 with standard deviation of 16123.85.Total direct medical cost incurred by patient's accounts for 21.17% of total direct cost. So total non-medical direct cost was 78.83%. This is very significant amount. The highest amount of total non-medical cost account for cost meals and rent a room. The 66.97% of direct total medical cost was incurred for the purchasing drugs from outside. Outside lab investigation cost for 16.16% of total direct medical cost. It was 4.2% of the direct cost (Table 3). All the patients had come to ward Witham accompanied a person (100%). According to the respondent 32.2% had to occupied another person to look after their industry or employments station, and also 10.3% of the patients had to no pay leaves due to hospitalization and follow up. Not only patients but also 43.8% of patients bystanders had to devoid of their work. So they also had to occupied a person to look after their working station.

Cost	Count	Mean	Standard Deviation	Median	Percentage of Total direct cost %
Total Cost Incurred for meals on patient	146	6,565.07	2727.42	6000.00	13.75
The cost was incurred Food and Beverages of accompanied person.	146	4,318.49	2178.96	5000.00	9.04
Total travelling cost	146	5986.64	5694.75	3500.00	12.58
Cost for rent a room	146	9669.18	10 348.12	5000.00	20.25
Cost for hiring a bystander	146	6263.70	1095.19	7000	13.12

Table 1: Total non medical cost.

	Count	Mean	Standard Deviation	Median	Percentage of Total direct cost
The cost was incurred medications (Drugs)	146	6769.86	2325.20	6500.00	14.18
The cost was incurred Surgical Consumables	146	1705.48	290.19	1500.00	3.57
The Cost was incurred Laboratory investigations	146	1,633.22	443.90	1500.00	3.42
Total Direct Medical Cost	146	10,108.56	2585.26	9850.00	21.17

Table 2: Direct medical cost.

Total direct non medical cost	146	37 622.07	15 289.62	29750.00	78.83
Total direct medical cost	146	10108.56	2585.26	9850.00	21.17
Total direct cost	146	47 730.63	16 123.85	39 350.00	100.00

Table 3: Total direct cost.

Days	Frequency	Percent
<20	6	4.1
20-25 day	18	12.3
26-31	32	21.9
32-37	74	50.7
38-43	12	8.2
>43 day	4	2.7
Total	146	100

Table 4: Number of hospital stay days.

	Count	Mean	Standard Deviation	Median
Total Income lost by due to hospital stay	146	10,205.48	15781.66	2500.00
Total Amount paid to the Person to cover up the patients Work	146	2,465.75	4464.67	.00
Total income lost due to no-pay leave (Rs.) – Household member	146	3,150.68	4271.95	.00
Cost of replacing family member's work in self/family based employment with paid labor	146	41.10	495.56	.00
Total indirect cost	146	15,863.01	20802.81	10000.00

Table 5: Total indirect cost.

As there are limited physical & human resources as hospital most patient had to stay in the ward. The majority hospital stay days were 32.37 days (50.7%) and another 21.9% had stay between 26.31 days (Table 4). The mean hospital stay days were 31 days with SD of 8 days. Number of hospital staydays was very important as it would determine most of the indirect cost components (Table 4).

Mean total income lost due to hospital stay Rs.10205 with SD of 15781.66. Mean total amount paid to the person look after the patient's working station or paddy field / industry (Paddy field, home garden, Chena, Hiring a vehicle) is Rs.2465.78 with SD Rs.4464.67 (Table 5).

Mean total income lost by a accompanied person is Rs.3150.68 with SD of 4271.95. They had to accompanied and another person to look after their industry. The mean cost for hired a person by a bystander is Rs.41.10 with SD of Rs.496.16. The mean total indirect cost was Rs.15863.01 with SD of Rs.20802.81 (Table 5).

According to study mean total house hold cost incurred by person during the hospital stay was Rs.63 593.64 with SD of Rs.30955.60. Its inter quartile ranged (IQR) between Rs.43000 - 76400. Majority of the patients (37.67%) had to spend mean cost of Rs.57 884.54 and another 28.76% spent mean total cost of Rs.62 897.62. There were 12 patients who spent mean total cost of Rs.68 708.33 and another 5 patient had spent mean cost of Rs.89 280.00.

Majority of the patient used more than one method to get financial support (43.8%) to cover the house hold cost (Table 4) only 19.6% used their own income and 9% of the patient pawned their jewellerys. Ten percent of the patient had to mortgage or rent or sell their property. The important fact is only 4% of the sample had used either government or private insurance methods.

Discussion

The health burden of heart disease in low middle income countries is acquiring increasing significance.⁸ The majority of the patients participated for our study were amongst age group 50.59 years (41.8%) and 28.8% were amongst age group as 40.49. Among the participant of the study 69.9% were male & 30.1% were female patients. So they lost earning due to hospitalization for long period. This increased the socio economic burden to the family. These findings were compatible with Kasturirattne et al. It mentioned that prevalence of NCD increasing with advancing age. The 66% in the 15-59 years age group are economically active and cause, a large economically burden as indirect cost due to earning loss.

Our study revealed that 67.8% of the patients were the income generator of the family and 28.8% patients' income level between Rs.10000 - 19999 and 37.7% of patients income level between Rs. 20000 - 34999. But still 19.9% of patients are below the Rs.5000 monthly income level. The majority of the patients (59.6%) didn't have permanent income generating method. This also increased the house hold income burden due to illness.

There were 17 farmers and fishermen and 26 manual laborers and self-employees. Most of them were getting daily income and no permanent monthly income. This directly affected to their bearing capacity of household cost during hospital stay. Travelling cost was increased with distance to the hospital. Teaching hospital Karapitiya is the only major tertiary care hospital in down south with short time waiting list for the CABG surgeries. So peoples from north to south came and admitted there. When considering travelling distance 23.3% of patients had to travel more than 200 Km to come to the ward. There were 6.2% had

come passing more the 400 Kms. This directly affected to patients household cost.

Majority of the patients used public transport to come to the ward (50.68%) and 44.5% used hired Vehicle for go back home after surgery. This contributed significant amount to travelling cost. Majority (24%) had to spend more than Rs.6000 for go back home. Total mean travelling cost of this study was Rs.5986.18 and it is 12.58% of Total direct cost. Travelling cost is directly related to the mode of transport and distance between hospital and house. But Kasthurirathne et al. and Attanayake found that over 50% of direct house hold cost consists of travelling cost to and from hospital. The mean total cost for food and beverages for both patients and accompanied patients was Rs 10883.56. It is 22.79 % of total direct cost. This cost also beared by the patients. It's the highest percentage of the total direct cost. The mean length of hospital stay was 31 days, so most of time both patients and bystanders had to take their meals from outside for three times a day with tea and snacks. As majority of the patients were away from 100 Km distances (57.7%), it was difficult to relations to looked after the patients, supplying day to day necessities, and also up and down travelling cost increasing with time wasting. So relatives tend to stay at near the Karapitiya hospital premises. Average room rent fee per day was Rs.500. But it varied from Rs. 500 to 1500 range. The mean cost for rent a room during hospital stay period was Rs. 9669.18, with standard deviation of Rs.10 348.12. It was 20.25% of total direct cost. This was an additional burden to most households. It seconded only for the total cost for meals provided outside. Most of the Sri Lankan and international cost studies hadn't found this aspect of the household cost. So this was very significant cost component in our study. The total mean cost for hiring a bystander to looked after the patients was 6263.70 with SD of Rs 1095.19. This amount also added significant percentage to total direct cost (13.12 %). Some patients didn't have any close relations or elderly children. In that context they had to hire a person from outside. Even they have relatives they were not staying with patients through out the hospital stay period. So alternatively they had to hire a person to take care of the patients. The average hiring price of a nursing service person was Rs.1000 per day. All together total non-medical direct cost accounted for 78.83% of total direct cost. This raised a question that although free health service was here, household had to bare significant amount of their monthly income on seeking the care and reaching the care. Most of the cardiac drugs are not available inside the hospitals during study period and also post operatively patients were prescribed antibiotics for surgical site wound healing. Most of the time ordered 3rd generation antibiotics (IV Cefuroxime, IV Ceftriaxone) which were not available inside the hospital.

The average cost incurred for the buying drugs outside was Rs. 6769.86 for the hospital stay period. This contributed 14.18% of total direct cost. It's the highest percentage of total direct medical cost. Most of the time pre-operative screening test had to be done at outside laboratories. The mean cost is Rs 1633.22 and it was 3.42% of total direct cost. Patients had to buy the post-operative thoracic lumbar supportive cassette. Mean cost for these instruments were Rs. 1705.48. All the patients had to buy this instrument to post operatively support for their wound side. In our study that direct cost component accounted for majority of the household cost. Loss of productivity represents small costs component for our target communities, indicating that households were able to secure household income when confronted with ill-health, at least in the short term. Other thing was that there were government and private permanent servants. So they were not losing their monthly salary just because they stayed hospital for 4-6 weeks period under medical leaves [8-10]. When considering the indirect

cost 24.95% of total house hold cost due to indirect cost because of the heart disease condition and post-operative up to some extent they had to be devoid of day to day working. In this study population 10.3% had to take no pay leaves. Self-employee or those who were working in a private sector lost their daily income. Sometimes they have to occupy another person to cover up their duties. So they had to pay for him or her. Sometime patient's relatives or children visited or stayed with patient. Then these relatives or children had to occupy another person (labour substitution) to cover up their job. This was also an indirect cost. According to table 4.15 total indirect cost was Rs. 15853.01 and with SD of 20802.81. Average hospital stay days of our study were 31 days this directly increase the house hold cost. This had significant effect on household. Majority of the patients (50.7%) had stay days between 32-37 days. Another 12 patients had to stay between 38-43 days. Main reason for prolong stay was that unit itself asked to get admitted the patients early to ward and they plan the date of surgery while in the ward according to the availability and severity of the cardiac condition. Some patients had stayed more than one month to get the surgery done. When the total cost incurred by the patients, many variables were found to have significant correlation with the mean total household cost. The length of hospital stay, distance from hospital, and total direct cost had highly significant correlation with total household cost. All above factors have direct association between total house hold costs. Chao et.al., found that duration of hospital stay, house hold income level and employing a bystander have significant correlation with household cost. The mean Sri Lankan household income per month is Rs. 46 207. And mean household monthly expenditure is Rs 40 887. From this expenses mean total expenses for food and drink is Rs. 15 358. An average monthly household expense on personal care and health expenses is Rs.2228.00. It's 8% of total non-health expenditures (Department of Census and Statistics 2013). In this study, patient's household monthly cost exceeds the average income and expense level of Sri Lankan family. Only 6% percent of the patients are having insurance cover to recover their cost. It was also not a full insurance system as mentioned earlier. This increases the household burden. Households use a variety of strategies to cope with health-related expenditures, especially in the case of hospitalizations. The most important coping strategies are using savings, selling assets and borrowing, all of which involve important long-term consequences for households' welfare. Selling productive assets is one of the most harmful coping strategies in developing countries, as it compromises the ability to generate income in the future. Moneylenders can offer attractive long-term financing with frequent payment of interest, leaving the borrowers unable to repay the principal amount borrowed. Furthermore, the loan is often combined with mortgage on land or other properties this study also reported a high prevalence of using savings and borrowing money (especially for coping with hospitalization costs) as coping strategies. Majority of the patient used (43.5%) more than one method to recover their cost. According to the study 9% used pawning the jewellery also since the heart deceases were a very vital health conditions and the patients choose to undergo the surgery incurring a high cost even damaging their economic state seriously.

Conclusions

The household cost the patients have to bear at Cardio-thoracic

unit, Teaching Hospital Karapitiya is too high. Even though compliance is good due to patients being alert on heart diseases, they were facing great difficulties finding coping strategies. This has negative effect on family activities and affected their children education. There was a significant correlation between total household cost with the number of days in hospital., distance to the hospital, monthly family income, hiring a person or rent a room, mode of travelling and travelling cost. The total mean household cost increased with the total direct cost, cost for outside purchase of drugs, and investigation conducted outside.

Limitation of the research

One of the major limitations of the research was the difficulty in obtaining accurate information and therefore the uncertainty of some of the data. Especially, patients were reluctant to disclose financial information. Also information payments made to get special privileges were not included due difficulty in quantifying such expenses and also the reluctance to disclose.

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