



## Out of Pocket Cost of Cancer Treatment: A Study from a Tertiary Care Teaching Hospital of North India

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Received: November 17, 2020

Published: December 10, 2020

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### Abstract

Cancer is the second leading cause of death and disability around the world. More number of people now die of cancer than from all cases of AIDS, tuberculosis and malaria put together. Households with a cancer patient experienced significantly higher Out of pocket (OOP) expenditure per capita as compared with households having a non-cancer patient. The likelihood of experiencing catastrophic health expenditure (CHE) in case of cancer was 160% more than for any other disease in India. In our study of Cancer patients, average annual out of pocket expenditure per patient was Rs.144264.26. It was observed that the direct medical costs including chemotherapy charges, investigations charges, surgery charges, hospitalization charges and radiotherapy charges accounted for 78% of the total direct costs. The average annual cost of chemotherapy per patient was 55% of the total average annual expenditure per patient in rupees. The direct non-medical costs including transportation charges, lodging charges and miscellaneous charges accounted for a significant portion of expenditure in our study, 21.93% of the total direct cost.

**Keywords:** Cancer; Expenditure; Health Finances; Cost

### Introduction

Cancer is the second leading cause of death and disability around the world. More number of people now die of cancer than from all cases of AIDS, tuberculosis and malaria put together. According to World Cancer Report, there is high incidence rate of cancer throughout the world and it may reach about 20 million by 2030. More than half of new cancer patients and two-thirds of cancer related deaths now occur in developing countries. Cancer has become one of the major causes of death in India. Every year, about 0.4 million deaths occur in India due to cancer [1,2].

Households with a cancer patient experienced significantly higher Out of pocket (OOP) expenditure per capita as compared with households having a noncancer patient. The likelihood of experiencing catastrophic health expenditure (CHE) in case of cancer was 160% more than for any other disease in India. In case of rural households affected with the cancer, the incidence of borrowing, fi-

nancial gifts from relatives/friends, and selling of assets are higher as compared to urban households. Lower income group face distress financing even seeking treatment in public sector [3,4].

With this background, the present study was undertaken with the idea to study out of pocket expenditure in cancer patients.

### Aim and Objective

To Study out of pocket expenditure incurred during their treatment while attending SKIMS regional Cancer centre.

### Materials and Methods

#### Study design and duration

A retrospective study of 2 years was conducted among the Cancer patients registered with Regional Cancer Center (RCC), SKIMS between 1<sup>st</sup> October 2015 and 30<sup>st</sup> September 2017.

### Sampling

Using simple random sampling, 20% of the patients registered with Regional Cancer Center (RCC) were studied.

### Study tool

After obtaining the list of patients registered with Regional Cancer Centre (RCC), the patients were contacted, consent taken from them after explaining the scope and purpose of study and were subjected to a questionnaire which was pretested by conducting a pilot study. The various direct medical and indirect costs were calculated.

### Exclusion criteria

Those patients who refuse to participate in the study were excluded from the study.

### Statistical analysis

Data was analyzed with the help of SPSS software (version 23.0). All the categorical data was shown in the form of frequency and percentages and continuous data was shown in the form of averages and standard deviations.

### Results and Observations

The pretested questionnaire was given to 625 Cancer patients registered with Regional Cancer Centre (RCC) SKIMS between 1<sup>st</sup> October 2015 and 30<sup>th</sup> September 2017. The response rate was 80.00%. A sample size of 500 Cancer patients was obtained for retrospective study.

In our retrospective study of 500 Cancer patients, both direct medical charges and direct nonmedical charges were calculated in form of average annual expenditure per patient in rupees and average monthly expenditure per patient in rupees. The average annual expenditure per patient was highest for chemotherapy charges (Rs.79150). The average annual investigation charges per patient were Rs.22680.56. The average annual transportation and lodging charges per patient were Rs.16140.26 and Rs.10985.37 respectively. Radiotherapy charges were the lowest at Rs.100 (n = 335) because most of the radiotherapy at SKIMS is free to Cancer patients. Patients have to give only one time Rs. 100 as registration fee for radiotherapy.

Charges	Average annual expenditure per patient in rupees	Average monthly expenditure per patient in rupees
Surgery charges	6787.50 ± 1209.40 (n = 350)	565.62
Chemotherapy charges	79150.00 ± 13569.87 (n = 500)	6595.83
Hospitalization charges	3865.00 ± 609.70 (n = 500)	322.08
Investigation charges	22680.56 ± 5905.80 (n = 500)	1890.04
Radiotherapy charges	100 ± 8.50 (n = 335)	8.33
Transportation charges	16140.26 ± 1427.55(n = 500)	1345.02
Lodging charges	10985.30 ± 308.44 (n = 370)	915.44
Miscellaneous charges	4515.37 ± 549.20(n = 500)	367.70
Total	144264.26 ± 21265.84(n = 500)	12022.02

**Table 1:** Showing average annual/monthly expenditure per patient in rupees.

### Discussion

Health care delivery in India is going through a process of transition, more so the tertiary specialty care of chronic diseases like diabetes, hypertension, cardiac diseases, kidney or liver failure, mental illness and cancer [5]. Patients, more commonly those from the lower economic strata, have difficulty in availing the health care services because of the costs involved in diagnostic and curative procedures. Even in public hospitals where the cost of care is low, patient had to bear several direct and indirect costs, commonly re-

ferred to as out-of-pocket expenditure (OOPE), which impoverish them further. As a result, patients with life threatening diseases requiring tertiary care often go untreated even if they are aware of the availability of high quality services. It can also lead to delay in diagnostic and curative procedures and even causing deaths of several thousands of poor patients. This issue has been a concern for nation’s health policy, which should address the cost, quality and accessibility of health care [5].

In our retrospective study of Cancer patients, average annual out of pocket expenditure per patient was Rs.144264.26. The study by Farooq A Jan., *et al.* found average out of pocket expenditure on treatment of Cancer patients was Rs.126000 [6]. However, Bidhu Kalyan Mohanti., *et al.* in their study found that an average Cancer patient had to bear an economic burden of Rs. 36812 during radiotherapy course at AIIMS [5].

The direct medical costs including chemotherapy charges, investigations charges, surgery charges, hospitalization charges and radiotherapy charges accounted for 78% of the total direct costs in our study. The average annual cost of chemotherapy per patient was 55% of the total average annual expenditure per patient in rupees. Also Farooq A Jan., *et al.* observed that 88.88% patients incurred maximum expenditure on drugs [6]. Investigation costs were second highest in our study, 15.72% of the total direct costs which were similar to findings of Kesavan Sreekantan Nair., *et al* [7]. The direct non-medical costs including transportation charges, lodging charges and miscellaneous charges accounted for a significant portion of expenditure in our study, 21.93% of the total direct cost because majority of our patients were from rural areas. They had to travel long distances to reach hospital and had to stay overnight after chemotherapy and routine investigations. The results are similar to findings of Kesavan Sreekantan Nair., *et al.* [7] and Bidhu Kalyan Mohanti., *et al* [5].

### Summary

Cancer is the second leading cause of death and disability around the world. Households with a cancer patient experienced significantly higher Out of pocket (OOP) expenditure per capita as compared with households having a non cancer patient. In our study of Cancer patients, average annual out of pocket expenditure per patient was Rs.144264.26. It was observed that the direct medical costs including chemotherapy charges, investigations charges, surgery charges, hospitalization charges and radiotherapy charges accounted for 78% of the total direct costs. The average annual cost of chemotherapy per patient was 55% of the total average annual expenditure per patient in rupees. The direct non-medical costs including transportation charges, lodging charges and miscellaneous charges accounted for a significant portion of expenditure in our study, 21.93% of the total direct cost.

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