

# FINANCIAL TOXICITY OF CANCER TREATMENT AND ITS IMPACT ON QUALITY OF LIFE IN TERTIARY CARE PUBLIC SECTOR HOSPITAL

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## ABSTRACT

**Objective:** To study the financial burden of treatment and its consequences in patients suffering from cancer.

**Material and Methods:** An observational, cross sectional survey was performed, based on convenience sampling, to assess patient reported financial toxicity (FT) related to cancer treatment. FT related items were measured using 5-point Likert scale on 11-item questionnaire. Total score ranged from 0-44. Lower score indicated higher FT. Arbitrary cut-off points were selected to differentiate between stress levels due to FT: 0-10 catastrophic stress; 11-20 moderate stress; 21-30 mild stress; 31 and above no stress.

**Results:** This study was conducted on 102 patients, 75% were males and mean age of all patients was 40.5 years. Mean monthly income was Rs.15718. Nineteen (18.6%) patients were unemployed; 19 (18.6 %) were housewives while 09 (9%) were manual laborers. All patients (100 %) were not having enough savings to cover full treatment expenses. Seventy one percent patients were worried about financial problems while 84 % patients could not meet their monthly expenses due to treatment costs. Eighty five percent patients were worried about losing job. Only 10% reported to be in full control of their financial situation. Overall, catastrophic stress was reported by 53 (52 %); moderate stress by 35 (34%) ; mild stress by 10 (10 %) while no stress was reported by only 4% patients .

**Conclusions:** Majority of patients undergoing cancer treatment at this public sector teaching hospital were poor and under severe stress that badly affected their quality of life.

**Key Words:** financial toxicity, cancer, economic burden.

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## INTRODUCTION

Cost of cancer management is growing faster than other sectors in health. Financial stress and cost concerns are common among cancer patients and their families. Cancer treatment has made remarkable progress yielding improvement in patient outcome. These improvements have come at an increasing cost<sup>1</sup>. Financial stress has been reported in developed countries among cancer patients and their families

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who are uninsured, under insured or have opted for higher co-payments<sup>2</sup>. This stress has been termed as financial toxicity (FT) which refers to unintended financial consequences of patient's expensive treatment. This term was introduced in 2013<sup>3</sup>. The study showed that financial burden had impact on the outcome of disease. Out of pocket payments for cancer treatment affected both treatment compliance as well as its outcome. In developed countries a large part of financial burden is shared by the state. A study from Canada showed that patients and their families experienced significant financial burden<sup>4</sup>. Individuals diagnosed with cancer face potential financial distress on three fronts: (i) out of pocket expenditure for medical care and related non-medical expenses as well as cost of transportation; (ii) loss of earning for the affected individual and (iii) potential loss of household income of other family members since cancer patients have to be accompanied by family members due to toxicity of

treatment. Financial toxicity results in non-compliance with treatment, medication orders or outright refusal to undergo treatment. There is limited data in developing countries on financial toxicity in cancer patients where most of treatment is out of pocket expense. A study conducted in Karachi, Pakistan, among cancer patients who presented to a private hospital where mostly upper middle and upper class patients have access<sup>5</sup>. Yet 72 percent patients said that costs were much more than what they had anticipated while 55.5% said that they were not aware of the cost of treatment to be incurred at the outset. In this study, the relatively affluent section of developing country had difficulty accepting the cost of cancer treatment. In Pakistan, 40% of population is living below the poverty line and according to human development index, average Pakistani income per day is 2 US dollars or less<sup>6</sup>. In Pakistan, families still rely overwhelmingly on single earning member. In such a scenario the diagnosis of cancer is devastating for any individual and his/her family. The physical and emotional burden of cancer diagnosis can be overshadowed by financial burden incurred by the family. Studies from developed world have shown the financial burden can be substantial even among patients with health insurance.<sup>7</sup> A study from Australia showed that lost income, health service expenditure and lost unpaid work were greatest sources of economic burden.<sup>8</sup>

We therefore conducted a study, using a validated questionnaire, to assess the impact of cancer treatment on the financial well-being of cancer patients presenting to a public sector teaching hospital. The stressful effects on cancer patients in a developing country are described here.

**MATERIAL AND METHODS**

We performed an observational, cross sectional survey at Medical Oncology unit in a public sector tertiary care teaching hospital, Hayatabad Medical Complex, Peshawar, Pakistan from March 2015 to July 2015. It was based on convenience sampling to assess patient reported financial toxicity (FT) related to cancer treatment. Inclusion criteria were: patients who were receiving active treatment for at least one month; patients who gave consent to be included in the study and patients who were above 16 years of age. Exclusion criteria were: patients who were newly diagnosed, terminal patients, patients who did not consent for study participation and minors were excluded from the study. FT related to cancer treatment was measured using a 5-point Likert scale (0-4) on an 11 – item COST Measure questionnaire<sup>9</sup>. This questionnaire for measuring financial toxicity has already been validated<sup>9</sup>. Arbitrary cut-off points were

selected to differentiate between stress levels due to FT. Total score on the questionnaire ranged from 0-44. Lower score indicated higher FT while high score indicated lower FT. Toxicity and stress levels were divided as: score 0-10 = catastrophic stress; 11-20 = moderate stress; 21-30 = mild stress; 31 or above no stress. Ethical approval for the study was obtained from Institutional Research and Ethics Board (IREB) of Postgraduate Medical Institute (PGMI), Peshawar.

**RESULTS**

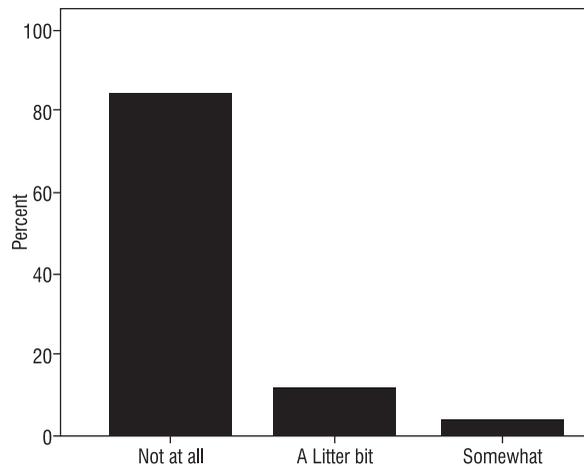
Total of 102 patients with various cancers were enrolled. Mean age was 40.5 years (range 16-82 years). Seventy-five percent were males. Mean monthly income was Rs. 15718 +/- (US \$ 153) (range Rs. 6000 to Rs. 65000) that was slightly above the minimum monthly wage (Rs 13000/- or US \$ 126) in 2015. Among the main occupation groups of study participants, 19 (18.6%)

**Financial Toxicity Scores: Item wise**

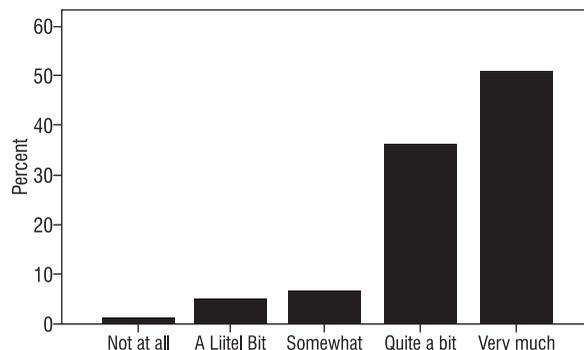
Item 1 = I have enough money in savings, retirement or assets.

Item 2 = My out of pocket expenses are more than I expected.

Ft1



Ft2

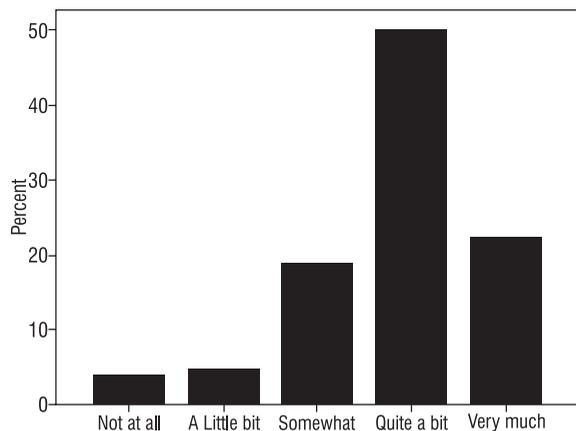
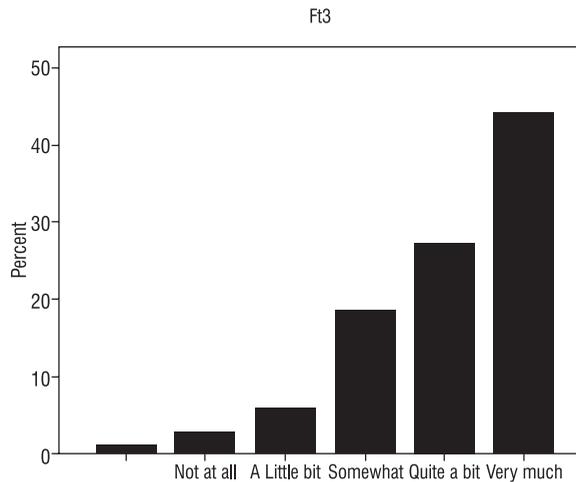


## Financial toxicity of cancer treatment and its impact on quality of life: results from.....

Financial Toxicity Scores: Item wise

Item 3 = I worry about my future financial problems due to my illness

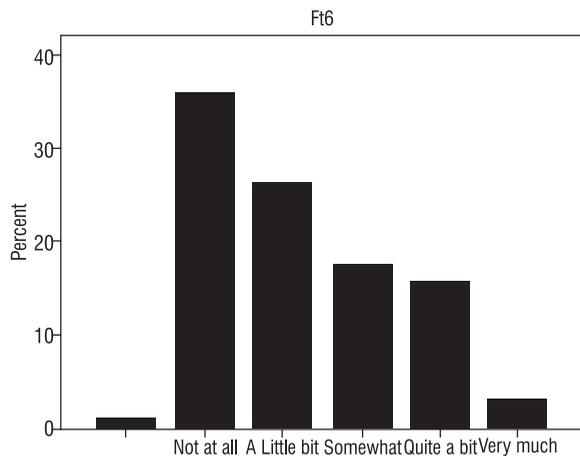
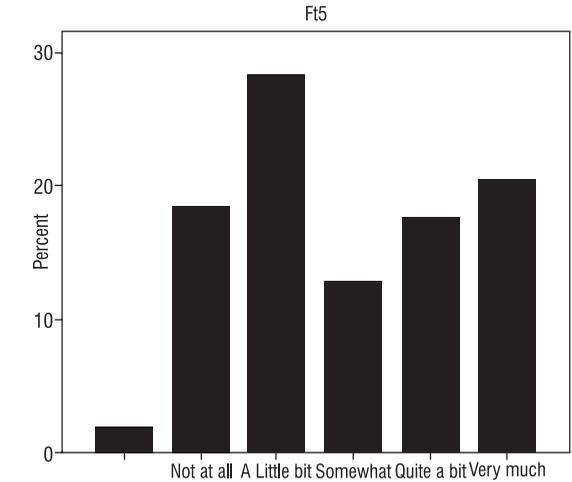
Item 4 = I have no control over treatment expenses.



Financial Toxicity Scores: Item wise

Item 5 = I am frustrated I can not work or contribute as usual.

Item 6 = I am satisfied with my current financial situation



patients were unemployed; 19 (18.6%) were housewives (dependent) while 09 (9%) were manual laborers. All patients (100%) reported not having enough savings or assets to cover their full treatment expenses. Seventy one percent patients said that they were worried about financial problems; 84% could not meet their monthly expenses due to treatment costs related to their treatment while 85% reported to be worried about losing their job. Only 10% patients reported to be in full control of their financial situation. Overall, catastrophic stress (score 0-10) was reported by 53 (52%) patients, moderate stress (11-20) was reported by 35 (34%), mild stress (21-30) by 10 (10%), while no stress (> 31) was reported by only 4 (4%) patients. The responses given by study participants to the 11 items on the questionnaire are shown in Figure 1-11.

## DISCUSSION

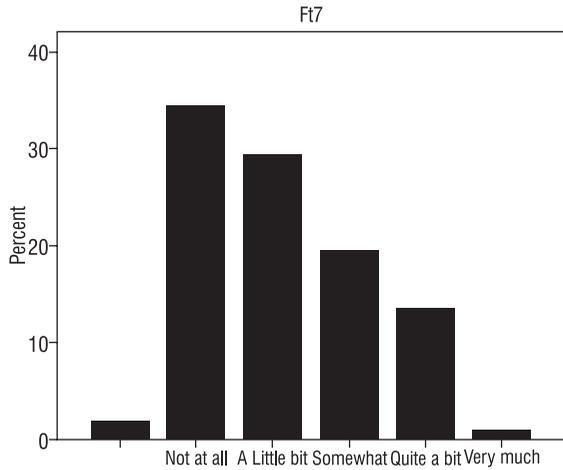
The financial aspect of cancer treatment is particularly sensitive subject in countries like Pakistan because there is very little or no support from state or health insurance policies. Unintended consequences of financial toxicity of cancer treatment range from reduced spending on other house-hold expenses to medical debt leading to bankruptcy. Studies that surveyed cancer patients about financial matters found that up to 40% patients experience severe financial distress<sup>10</sup>. Financial considerations related to the rising cost of cancer care also have direct impact on patient's choice of treatment and adherence to therapy plans<sup>11</sup>. Numerous studies have demonstrated that as out-of-pocket costs increase fewer patients initiate treatment and those who do are more likely to discontinue early<sup>12</sup>.

**Financial toxicity of cancer treatment and its impact on quality of life: results from.....**

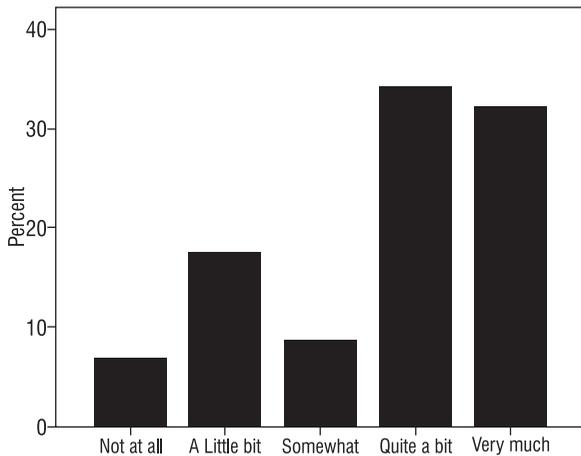
Financial Toxicity Scores: Item wise

Item 7 = I am able to meet my monly expenses.

Item 8 = I feel financially stressed.



Ft8

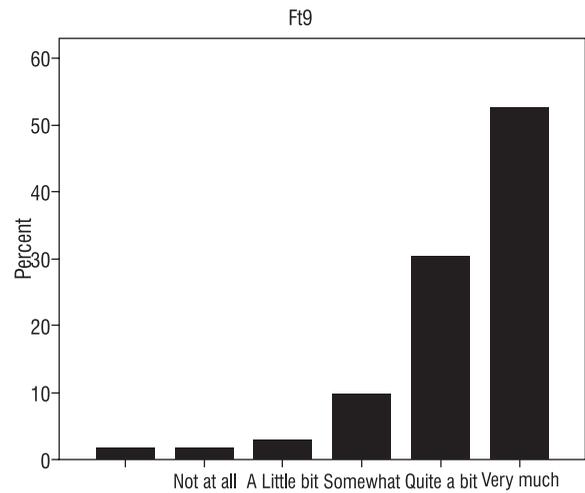


Cancer patients often have to take time away from work to attend medical appointments and recover from treatment. Forty to 85% cancer patients stop working at some point during treatment.<sup>13</sup> In an another study conducted on 105 patients with breast cancer, findings suggest that breast cancer exacts an economic toll from long-term survivors. Survivors experienced significantly larger reductions in annual earnings over five year study period compared to control subjects<sup>14</sup>. Study conducted by Li et al, retrospectively estimated economic burden among family caregivers of patients diagnosed with localized prostate cancer within one year of diagnosis, caregivers had given up approximately 134 annual hours of paid employment and experienced increase in number of hours spent performing informal care giving and household chores<sup>15</sup>. In another study, there was a substantial increase in bankruptcy filings among cancer patients studied between 1995-2009, as compared to

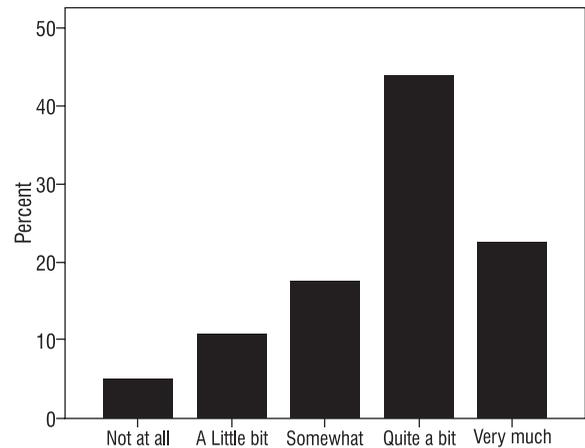
Financial Toxicity Scores: Item wise

Item 9 = I am worried about keeping my job and income.

Item 10 = Treatment has reduced my satisfaction with my financial situation.



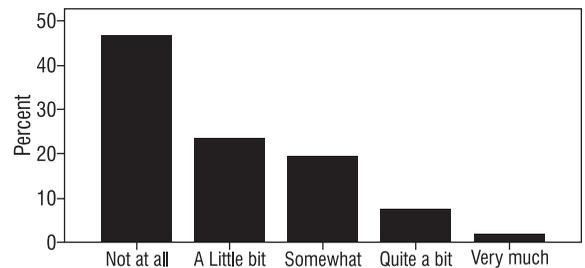
Ft10



Financial Toxicity Scores: Item wise

Item 11 = I feel in control of my financial situation.

Ft11



non-cancer patients<sup>16</sup>.

Majority of patients undergoing cancer treatment

in our study showed severe financial stress due to inability to pay for their treatment. One third of patients were unemployed or dependent on others. Low income of patients lead to failure to comply with treatment protocols, not taking medicines as prescribed or refusal of treatment. Such issues adversely affect quality of life and overall survival. Financial toxicity in our study revealed how badly vast majority of cancer patients are affected in under resourced countries due to lack of access to expensive treatment. The financial toxicity is a sensitive issue in Pakistan where cost of treatment is borne by patient or his family with little or no support from state or health insurance polices. Hence the diagnosis of cancer is devastating news for family and patients not only because of emotional stress but also of because of continuous financial drain posed by cost of treatment. There is limited data on this topic in Pakistan and other developing countries. Our study revealed that majority of cancer patients in our country can't afford cancer treatment and they are financially burdened by disease. Patients had to sell their property or take loans or get aid from charity in order to complete cancer treatment. Majority of Pakistanis with cancer would remain untreated, without support from Government or charity. Financial burden, which is now termed financial toxicity, causes great misery in our patients, as the emotional trauma of cancer plus the low income has great impact on outcome of disease in developing countries. A study conducted by Shankaran V et al concluded that significant number of patients (38%) reported financial hardships as a result of treatment despite having health insurance coverage. Younger age, lower income and unemployment or disability were mostly associated with treatment nonadherence<sup>17</sup>. Cancer affected households experience a greater number of hospital admissions and Outpatient visits compared to match controls. Given the low population coverage of health insurance and poorly run public sector, there is large burden of out-of-pocket spending on households affected by cancer<sup>18</sup>. Addressing the financial sequelae of cancer diagnosis appears to have positive social and psychological consequences that could significantly enhance the clinical management of cancer and quality of life for cancer patients.

### CONCLUSION

Our findings provides much better understanding of economic burden of cancer patients. Major policy implication of our findings is the need for protection against financial risks from cancer treatment in Pakistani households. This is not surprising given the heavy reliance on out of pocket spending in financing healthcare in Pakistan. Our results show that cancer patients face a large economic risk from cancer and risk is particularly

serious for low-income patients who rely on borrowing and selling of assets to finance their healthcare. Either because of insufficient training or lack of time, many Physicians don't include the cost of care in the decision making process. Firstly, is cussing out of pocket costs enables patients to choose lower cost treatment when there are viable alternatives. Patients experience unnecessary financial distress when physician don't inform them about alternative treatment that are less expensive and equally or nearly as effective. Second, discussing out of pocket cost could benefit patients by enabling them to seek financial assistance early enough in their care to avoid financial stress. Our study indicated that financial burden was substantial and mostly borne by the patient or family. Most of the time, the monthly average cost of the treatment far exceeded the monthly household and significant number of patients perceived financial burden as overwhelming. There should be financial support programs on the part of government and other organizations to cover up for treatment costs of treatment and help these patients in managing the already difficult and challenging situation.

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### **AUTHOR'S CONTRIBUTION**

Following authors have made substantial contributions to the manuscript as under:

- Chiragh S:** Concept, main contributor  
**Rehman A:** Literature review  
**Ahmad S:** Graphics  
**Jameel A:** Overall guidance and review of article.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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