

An Observational Analysis of impact of Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana on financial toxicity inflicted on patients and their family in Cancer Treatment: A study from the Kumaon region of India

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Abstract

Background: Cancer treatment requires multi-modality and multi-specialty care. The expenditure of cancer treatment degrades quality of life (QOL) of cancer patients as well as their family. The Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) of Government of India bears the major part of the expenses of treatment of eligible patients. **Objective:** We planned this cross sectional study to measure the impact of this government aid in QOL of cancer patients and their family. **Subjects and Methods:** All patients diagnosed and treated for cancer with radical intension from 1st April 2019 to 31st March 2022; visiting in outdoor patients department of State Cancer Institute, Haldwani, India were asked to read and fill questionnaire, inquiring the details of their expenditure on specialist consultation, cancer investigations, surgery, procuring drugs and undergoing procedures. Of the 276 patients eligible for this study visited in outdoor patient department during 1st Oct 2022 to 31st December 2022; 264 patients were analyzed. **Results:** Of the 264 patients analyzed in the study, 227 (86%) patients were eligible for AB-PMJAY. The median monthly income was ₹5700 (\$68.5). Grade I, II, III and IV financial toxicities experienced by AB-PMJAY beneficiary patients were 73%, %, 21%, 3% and 3% respectively and that majorly due to undergoing expensive radical surgery or procedures in private hospitals. Grade I, II, III and IV financial toxicities experienced by AB-PMJAY non-beneficiary patients were 31%, 28%, 32% and 11% respectively. Financial distress was severe in patients undergoing radical treatment e.g. Surgery or Radiotherapy in private/ corporate hospitals. Patients undergoing all treatment in AB-PMJAY accredited hospitals experienced only grade I toxicity and the mean expenses on treatment under AB-PMJAY was ₹2606. **Conclusion:** Financial toxicities inflicted on AB-PMJAY beneficiary patients were significantly low. Financially weak patients should be encouraged to undergo complete cancer treatment in AB-PMJAY accredited hospitals.

Keywords: Financial toxicity, Ayushmaan Bharat- Pradhan Mantri Jan Arogya Yojana, cancer treatment, poverty.

Introduction

In India about 42% (46% in rural areas, 35% in urban areas) of population availed treatment in Government run hospitals¹ in 2017- 2018. These public hospitals are usually overburdened so patients seek expeditious treatment in private hospitals which are usually expensive. The expenditure on cancer treatment degrades quality of life of cancer patients as well as their families.² About one fifth of cancer patients have to sell their valuable belongings and one fourth of patients were unable to pay their monthly expenses during cancer treatment.³ However, currently, there is a paucity of data on the financial toxicities experienced by these patients.

The Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) of Government of India is world's largest Government sponsored healthcare program; implemented in the state of Uttarakhand on 23.09.2018.³ The AB-PMJAY is a poverty alleviation programme; provides free secondary health care for that needing specialist treatment and tertiary health care for those requiring hospitalization.

State Cancer Institute, Haldwani (SCI HDW) which runs as apart of Government Medical College, Haldwani,(GMC HDW) Nainital and caters health services to hilly region of Kumaon, Uttarakhand and northern Uttar Pradesh state of India. We planned to measure the impact of AB-PMJAY on quality of life of cancer patients and their families as well as to enumerate the obstacles in undergoing cancer treatment.

Subject and Methods

This research project was approved by institute ethical committee, GMC HDW. This is an observational cross-sectional study. The patients visiting in outdoor patient department of SCI HDW during 1st Oct 2022 to 31st December 2022 who have received any treatment with radical intension in SCI HDW from 1st April 2019 to 31st March 2022 were eligible for the study. After completely explaining about the type, procedure and purpose of study and duo informed and written consent; participants were asked to read and fill questionnaire which was available in English and Hindi and focused on participant's medical details, socioeconomic status and details of their expenditure on cancer treatment e.g. specialist consultation, investigations, procuring drugs and undergoing surgery and other procedures. The indirect loss of money in cancer treatment, e.g. conveyance, stay in hospital, loss of employment of patient and attendants; although significant but not included in study due to excessive subjective variance. In case of less educated, impaired vision, elderly and illiterate patient a resident doctor/ medical staff assisted patient and attendants to read, understand and fill the questionnaire. All those participants refusing consent or later withdrawal of consent giving self-conflicting or ambiguous history were excluded from the study. Patient's identity was concealed.

Socio-demographic information include name, age, gender, marital status, address, level of education, occupation, family size and monthly income. Clinical information includes height, weight, co-morbidity, type of malignancy or diagnosis and clinical stage. For grading financial toxicity we adopted the institute developed Lalit -Aradhana's financial toxicity grading system². An average annual income of family from all sources was calculated, the total expenditure on specialist consultation, investigations, procuring drugs, undergoing surgery and other procedures was added and then compared with total annual income of the family.

Table 1: Lalit -Aradhana's financial toxicity grading system

Grade of Toxicity	Total expenditure on radical treatment
I	Less than annual income; no change in leisure activities.
II	Less than three times of annual income or borrowing money.
III	More than three times of annual income or deprivation of necessity e. g. inability to pay school fee of children, monthly water and electricity bills in time.
IV	Selling belongings, jewelry or assets or using retirement funds.

If patient falls in two grades of toxicities; the higher grade is considered valid. We kept the financial toxicity grading system least complicated for feasibility of applying and good compliance. Data was analyzed using Base SAS version 9.4. Statistical analyses included descriptive statistics. We calculated frequencies for categorical data and mean for continuous data.

Results

Of the 276 patients participated in the study; seven patients excluded for consent withdrawal and five patients were due to ambiguous or self-contradictory history. Of the 264 patients analyzed; 179 (68%) were male and 85 (32%) were female. Mean age of presentation was 58 years (SD 12.6). About two third of patients were from rural (171, 65%) and one third were from urban (91, 35%) regions of adjoining areas.

Assessment of level of education showed that 29 patients (11%) could not read and write, 96 patients (36%) went to school up to class VIII, 77 patients (29%) were educated up to intermediate, 36 patients (14%) were graduate and 26 patients (10%) were post graduate. All 264 except 5 patients were married and commonly accompanied by their spouse, offspring's and siblings. AB-PMJAY has revolutionized the health insurance of patients as 227 (86%) patients were AB-PMJAY beneficiaries; 14 patients (5%) were eligible for reimbursement of treatment expenditure from government or had health insurance policy and 23 patients (9%) had no insurance policy.

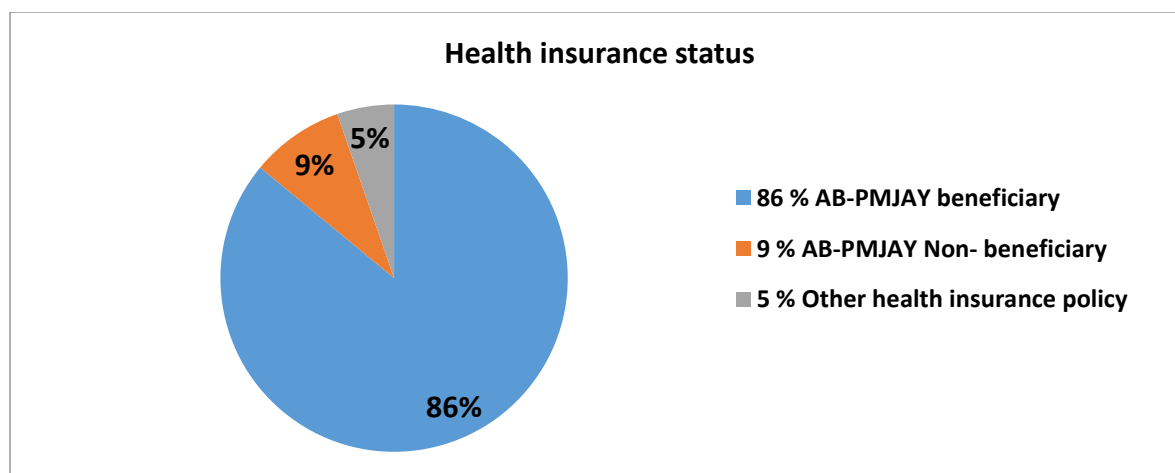


Figure I: Health insurance status

Median family size was 5, ranging from 2 to 9. Mean monthly income of family was ₹5700 and per capita income was ₹805. As per the ration cards allotted to the patients by Government 42 patients (16%) were BPL Card Holder (as well as AB-PMJAY beneficiary) although if we consider the government assigned annual income of ₹9000⁴ and the annual income of their family stated by patient in our study; about one third of patients (93, 35%) were living below poverty line.

The most common occupation of analyzed patients were agricultural (41%) followed by private job, daily wages worker, small business or shop, retired government employee, government employee and 14 patients were unemployed. Most of the female patients were homemakers and 3 were teacher in private school.

Grade I, II, III and IV financial toxicities experienced AB-PMJAY beneficiary patients were 73%, %, 21%, 3% and 3% respectively and that majorly due to undergoing expensive surgery or procedures in private hospitals.

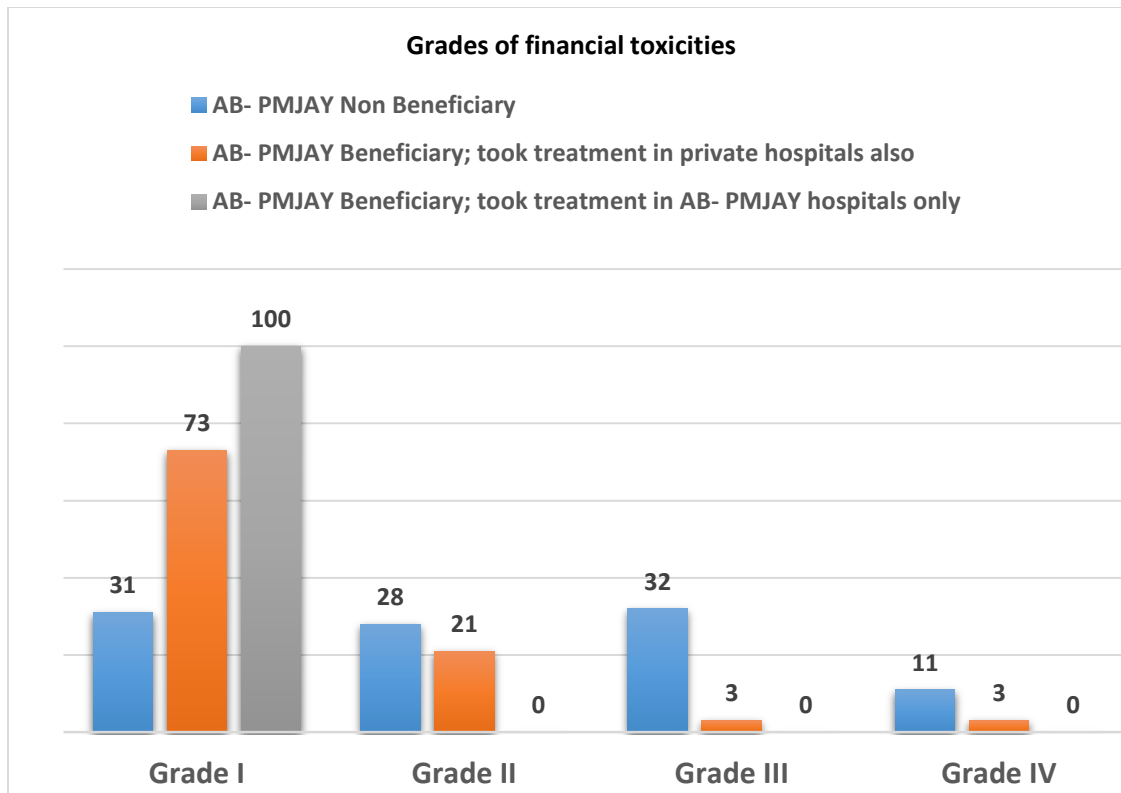


Figure II: Grade of financial toxicities experiences by patients

Grade I,II, III and IV financial toxicities experienced by AB-PMJAY non-beneficiary patients were 31%, 28%, 32% and 11% respectively. Patients undergoing all treatment in AB-PMJAY accredited hospital experienced only grade I toxicity and the mean expenses on treatment under AB-PMJAY was ₹2606. The mean expenses on cancer treatment was ₹71526 for

Conclusion

Financial toxicities inflicted on AB-PMJAY beneficiary patients were significantly low. Financially weak patients should be encouraged to undergo complete cancer treatment especially surgery and radiation therapy in AB-PMJAY accredited hospitals. Patients with no health insurance are more prone to experience higher financial distress.

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