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Original Research Paper

Hematology

THE COSTS OF TREATING PATIENTS WITH HEMATOLOGICAL DISEASES - AN INDIAN PERSPECTIVE

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ABSTRACT

BACKGROUND: Treatment costs factor majorly in health care decision making in developing economies. India which has a significant out of pocket expenditure for health care is representative of such an economy. The treatment progress hailed in recent years can be attributed to improved therapeutic agents and supportive care. There is a price for this progress. If appropriately informed about treatment costs; resource allocation and treatment decisions can be planned suitably by both patient and the caregiver. **OBJECTIVE:** The objective of this study was to estimate the average costs incurred by patients on hospitalization for common haematological disorders. **METHODS:** Patients admitted under the services of clinical haematology were included for the assessment. The inpatient bills for patients admitted for a one year period beginning 1st October 2012 till 30th September 2013 was analysed .Subsequently averages were calculated by disease categories for the analysis. **RESULTS:** The costs of standard of care therapeutic interventions excluding transplants are presented .There are considerable costs and hospital stay involved in the treatment of these diseases. Acute leukemia induction therapies involve the most hospitalization. **CONCLUSIONS:** The costs of treatment are lesser in comparison to other countries. However it still is an economic burden for the Indian patient. Limitations related to the data and analyses estimation are noted.

KEYWORDS : Cost, India, Hematology, Leukemia, Hemophilia, Lymphoma, Aplastic Anaemia

INTRODUCTION

Health care costs have risen over recent decades. It is estimated to be approaching $2 trillion annually with the costs of cancer care contributing to 10% or roughly $200 billion(1) .The coming years are also predicted to see an increase in various health disorders ,geometrically increasing healthcare costs (2). Treatment outcomes have improved across specialties of modern medicine with Clinical hematology ,an example(3).As a sub speciality of modern medicine, it provides services for the management of malignant and non-malignant disorders of the blood and bone marrow. These include leukemia's, lymphomas, multiple myeloma, red cell disorders, bleeding and thrombotic disorder among others.

The improvement in outcomes though, is not universal(4, 5). The reasons for this have been debated earlier (6, 7). In India, financial support and an inadequate health care system are considered important factors(8).

To elaborate

- Only 1.2 % of the GDP is India's public spending on health(9).
- Out of pocket expenditure for healthcare remains close to 80 % of all spending(10, 11).
- Only 11% of the Indian population have health insurance coverage and health schemes implemented by the government fail to reach the deserving(12-14).
- An estimated 20 million people fall below the poverty line each year due to indebtedness triggered by healthcare needs (14).

It is clear then that; ours is not a society where the costs of treatment recommended can be ignored. Here health care expenses factor in the clinical decision making process and a clearer picture of costs and outcomes will enable caregivers and the informed patients to channelize available resource.
It is with this aim that we undertook an assessment of the costs involved in the treatment of common haematological diseases.

METHODS

Patients admitted under the services of clinical haematology at our tertiary care centre were included for the assessment. Patients undergoing additional surgery (except in hemophilia) or stem cell transplant were excluded from the analysis. The inpatient bills for patients admitted for a period beginning 30th of September 2012 till 1st of October 2013 was analysed.This data was generated with help from the computerized hospital inpatient services . Subsequently bills were divided according to disease category and averages calculated by these categories.

For the hemophilia cost analyses, all admissions for management of complications (surgical and non-surgical) were included. In the analysis of leukemia's and lymphomas, each hospital admission for various complications was consolidated with the chemotherapy phase. The ATG (Anti-Thymocyte Globulin) analyses in aplastic anaemia included subsequent admissions of the same patients for complication management. The costs for complication management in aplastic anaemia were calculated excluding the above admissions for ATG administration.

All costs were converted to INR ₹ for ease of comparison. International currency rates for comparisons were converted to INR ₹ based on the conversion rates on 05.01.2014.

RESULTS

Table 1 represents the average costs with duration of hospital stay for various haematological disorders. The acute leukemia inductiontherapies and complications of aplastic anaemia are associated with the most duration of hospital stay (AML-32 days; ALL-38days; aplastic anaemia-35days). Costs of therapies are also analysed. Unit cycle cost of induction therapy in AML (₹ 698,280) is the most expensive therapeutic option.

Unit admission expenses for managing hemophilia related complications were₹36,100/- while those for Rituximab based approach in Non-Hodgkin Lymphoma were ₹ 67,650/-.

Fig3 is a depiction of an estimate of the economic burden of healthcare in India on the basis of public support and private contribution.

Table1. Costs and Hospital stay for therapy (Hematological diseases)

Disease	Chemotherapy phase	N	Average days	Average cost₹
AML	Remission induction	33	32	698,280
	Consolidation	43	08	120,790

	Paediatric	64	19	267,310
	Relapse	29	24	442,690
ALL	Private	31	38	398,805
	General	33	20	84,062
Hemophilia	Complications/ surgery	57	8	36,100
Aplastic anaemia	Complications	124	35	132507
	ATG	23	9	597,000
NHL	Rituximab therapy	30	08	67,650

Table 2 and Fig 1 depict the comparison of costs in AML therapy with an estimate of the economic burden for the caretaker and patient.

Table 2.AML economic comparison (Rates rounded off and adjusted to `(15, 16)

Treatment phase	UK	USA	India*
Induction(1 cycle) (₹)	673,687	3,531,380	698,280
Consolidation(1 cycle) (₹)	652,045	3,518,075	120,790
Relapse(1 cycle) (₹)	652,044	3,518,075	442,690
Total health expenditure Per capita PPP (₹)	214,187	495,908	7,725

*Analysis based on this paper

Table 3 and fig 2 is a similar depiction to estimate the burden of therapy in terms of using rituximab based options R-CHOP/CVP)

Table 3.NHL treatment(unit cost) based on Rituximab based therapy (17, 18)

	Rituximab therapy cost(₹)	Per Capita Income (₹)	Therapy: Income ratio#
UK	133,235	1764,336	0.64
USA	213,754	2359,301	0.43
India*	067,650	75,943	8.75

*Analysis based on this paper

Therapy Income ratio = Cost of therapy/Per capita income

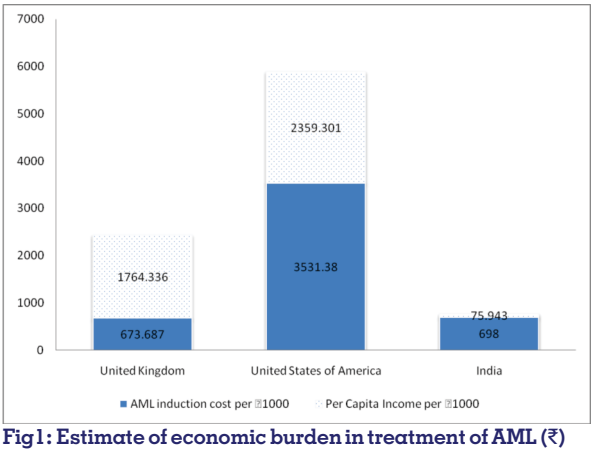

Fig1: Estimate of economic burden in treatment of AML (₹)

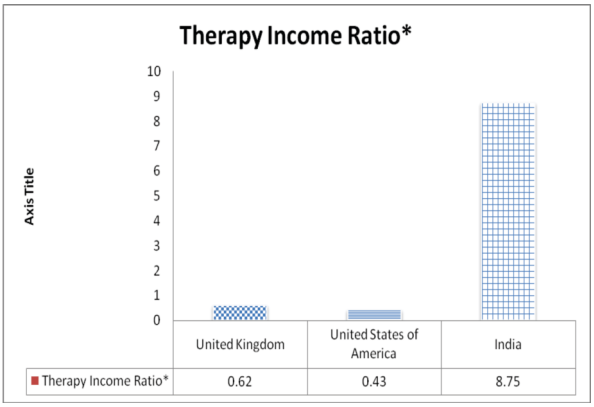

Fig2: Economic estimate of Therapy in NHL (₹)

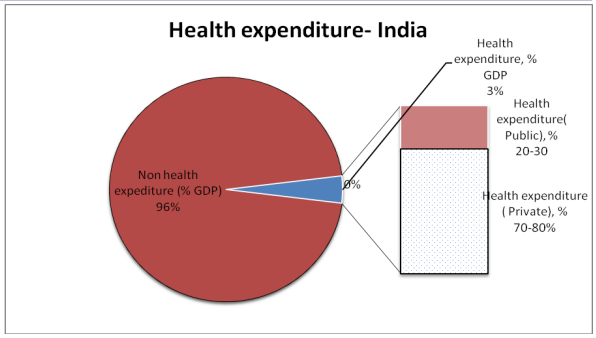

Fig3.Pattern of health expenditure- India modified from (15)

DISCUSSION

India represents a society; diverse, multicultural, overpopulated and undergoing rapid but unequal economic growth(19). In a cost sensitive economy like ours, the service providers need to effectively discuss treatment costs with the patient and relative. This is unlike other countries where federal support might support patient care atleast till the primary care level(20, 21) (Fig1).In many countries pharmaco-economic evaluations are frequently done in order to justify additional federal funding(22).In India such evaluations are limited . There are efforts to channelize and encourage such evaluations(23, 24).

This is an economic themed analysis on haematological disorders from India. The average costs and duration of hospital stay is as depicted in table 1.The costs for AML treatment in India(₹698,260 for induction) when compared across countries is much lesser than compared to that of the UK or the US(Fig1)(16). However these costs in terms of per capita income compounded by the poor public health contribution(30%) presents an economic burden on the patient(Fig1&3). A similar picture is also seen in terms of costs while comparing Rituximab (₹67,650 per cycle) based regimen(17, 18).The lower costs however do not signify a compromise in levels of standard and quality. In view of policy and protocol differences a comparison with treatment costs for aplastic anaemia and hemophilia could not be charted.

Our results confirm the burden of therapeutics on the Indian patient (Fig1, 2&3). This should alert the policy makers for a more encouraging resource allocation to improve the health of our population (Fig 3).

Though costs should never become the primary focus of caregiver-provider discussion or alter recommendations for standard treatments, patients need to understand the impact of their treatment choices on their personal and their family's finances.(25)

LIMITATIONS

- Practices and protocols vary among treatment centers.
- There are other non-medical costs also involved in the complete health care which differ across regions of care.

We acknowledge that as a single centre analysis restricted to only in hospital expenses; this might not be entirely representative. However considering that specialized haematology care in India is restricted to select similar centers, this could serve as a reference(26).

CONCLUSIONS

Therapeutic options in hematology are associated with significant economic burden and hospital stay in India. This analysis will enable a better finance based discussion between the care provider and seeker.

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