

Original Article

PRESCRIPTION PATTERN AND COST OF ILLNESS (COI) OF INFLAMMATORY BOWEL DISEASE (IBD) IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: Treatment of Inflammatory Bowel disease (IBD) centers on agents used to relieve inflammatory process. None of the drugs used for IBD are curative; at best they serve to control the disease process. The potentially high costs of care associated with inflammatory bowel disease (IBD) are recognised. The Objective of the present study was to find the Prescription pattern and cost of illness (COI) of IBD in a Tertiary care Hospital.

Methods: 20 IBD patients, in the order they approached the gastroenterology department, were enrolled in the study. Data regarding medication, hospitalisation, physician office visit, diagnostic costs, travel cost, the cost incurred by caregivers, work and non-work days lost were obtained. The cost of medications and other healthcare services was determined. The study was approved by the Institutional ethics committee.

Results: The average cost (direct and indirect) per patient for six months was 26,394Rs. Drugs and medical supplies costs (65%) ranked first in the direct costs category followed by Diagnostic costs (18%), hospitalisation costs (15%) and lastly physician office visit costs (2%). On the other hand, Cost incurred by caregivers accounted for 45% of the total indirect costs followed by work and nonworking days lost (43%) and finally Travel costs (2%). Commonly prescribed drugs were corticosteroids and aminosalicylates followed by mucosal protectants, antibiotics and antiemetics. The most preferred route of drug administration was intravenous followed by oral.

Conclusion: The average COI (direct and indirect) of IBD per patient for six months was 26,394Rs. Drugs and medical supplies accounted for largest contributions to the overall economic impact of IBD on the Healthcare system. Commonly prescribed drugs were corticosteroids and aminosalicylates followed by mucosal protectants, antibiotics and antiemetics. This study represents one of the very few studies conducted on COI of IBD. Large scale studies on economic research are required to further ascertain the impact of Rival therapies and management strategies for IBD.

Keywords: IBD, COI, Prescription Pattern, Pharmacoeconomics

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INTRODUCTION

Inflammatory Bowel disease (IBD) comprises of Ulcerative Colitis, Crohn's Disease and Indeterminate colitis. It is the chronic, idiopathic, immune mediated, relapsing, inflammatory condition of the gastrointestinal tract [1, 2]. Standard medical therapy includes corticosteroid in the acute phase, mesalazine or immunomodulators to maintain remission and biological agents for refractory and/or severe cases [3]. Lack of curative treatment makes lifelong treatment and Surgery the only options available for IBD. Ultimately, Hospitalization and surgery contribute to more than half of the economic burden of IBD to the society [4-7]. The quality of life of the patient is severely compensated with continuing symptoms, reduction in the ability to work, social stigma, bathroom access issues, difficulty with physical intimacy and restriction in career choices [8].

Initially, IBD was considered to be the disorder of developed countries, but recent epidemiological data suggest a shift towards developing nations including Asian countries [9, 10]. The financial burden of IBD can be divided into direct and indirect costs. Direct medical costs include expenses for hospitalisations, physician services, prescription drugs, over-the-counter drugs, skilled nursing care, diagnostic procedures, and other healthcare services. Indirect costs are the value of lost earnings or productivity, the value of leisure time lost, the cost incurred by caregivers and travel costs [11]. Indian Data on Cost of Illness of IBD is scarce. Moreover, given the rising prevalence of IBD worldwide, it is urgently necessary to understand its economic burden and to provide more robust evaluations of health care interventions designed to reduce its incidence and impact. Thus the present study was aimed at finding the cost of illness and prescribing pattern of IBD.

MATERIALS AND METHODS

Methods

This prospective, observational study was performed on inpatients and outpatients of Gastroenterology Department of a tertiary care Hospital in Hyderabad. Due to time constraints, only 20 IBD patients were included. Patients with confirmed IBD, those willing to give written or verbal informed consent and above 15 y of age were only included in the study. Pregnant women and children were excluded from the study.

Ethical approval

The study was approved by the Institutional Ethics Committee of the Hospital.

Data collection

This observational, prospective study collected demographic, clinical, and economic data of IBD patients. The data was collected from patient's treatment chart/case sheets, lab reports and from patient's attendees. All subjects gave informed consent to participate in the study and allowed the use of their personal data for research purposes. Patients were enrolled consecutively, according to the order in which they presented to the gastroenterologist for consultation.

Data analysis and statistical methods

Costs are presented to the nearest Indian rupee. Mean patient costs were taken into consideration for the calculation of total costs. Descriptive statistics were used to characterise the study population. Continuous variables were presented as means whereas categorical variables were presented as numbers and percentages.

Results

Sociodemographic and clinical characteristics

Among 20 patients, 8 patients were male, and 12 patients were female. The most common age group of IBD patients was 16-25 years. 30% of the population had income in the range of 20,000Rs to 30,000Rs. 25% of the patients were unskilled (table 1). On the basis of the diagnosis, total patients were categorised into two groups-Ulcerative Colitis and Crohn's Disease with percentage population of 95 and 5 respectively. Major presenting complaints in Ulcerative Colitis were abdominal pain, frequent bowel movement and vomiting while in Crohn's Disease, it was blood per rectum (table 2). 65% of the patients had Diabetes Mellitus as co-morbid condition (table 3).

Medications

In the present study, the majority of the patients (84.2%) with ulcerative colitis were treated with corticosteroid (dexamethasone) in combination with 5-aminosalicylic acid (mesalamine). We also observed the growing interest in probiotics approaches for IBD. 80% of patients were prescribed with probiotics (lactobacillus). Antibiotics especially, metronidazole was prescribed in 85% of total patients. Other antibiotics which were prescribed were imipenem and ticarcillin+clavulanic acid. Mucosal defence agent (sucralfate) was prescribed in 95% of total patients (table 4). Most common route of administration was intravenous followed by oral (table 5).

Cost of Illness (COI)

The average cost of IBD treatment was between Rs.11000-30,000. About 75% of the total patients had an expense between these ranges. Direct Cost was notably higher than indirect costs. Among the direct costs, drugs and medical supplies had the major

contribution of 65%, followed by diagnostic costs (18%), hospitalisation costs (15%) and physician office visit costs (2%). On the other side, cost incurred by caregivers had the major contribution of 45% to the indirect costs followed by work and non-work days lost (43%) and lastly, travel costs (2%). The total direct and Indirect cost per patient for 6 mo was found to be 26,394Rs (table 6).

Table 1: Sociodemographic characteristics of the patients

Characteristic	IBD(n=20)
Male/female	8/12
Age(years)	
16-25	8
26-35	4
36-45	5
46-55	1
56-65	3
Income(Rupees)	
<10,000	25
10,000-19,999	15
20,000-29,999	30
30,000-39,999	20
>40,000	10
Occupation	
Unskilled	25
Semiskilled	15
Skilled	15
Clerical	5
Administrators	5
Managers	15
Executives	15
Homemakers	5

Table 2: Distribution of patients based on presenting complaints

S. No.	Complaints	Sex	No. of patients
1.	Abdominal pain	M	0
		F	2
2.	Blood per rectum	M	2
		F	1
3.	Frequent bowel movement with blood in stools	M	0
		F	2
4.	Vomiting with loose stools	M	2
		F	1
5.	Abdominal pain with vomiting	M	0
		F	2
6.	Abdominal pain and frequent bowel movement with blood in stools	M	2
		F	2
7.	Frequent bowel movement with blood and mucous in stool	M	1
		F	1
8.	Abdominal pain and frequent bowel movement	M	1
		F	1

Table 3: Distribution of patients based on co-morbidities

S. No.	Co-morbidities	Sex	No. of patients
1.	Diabetes mellitus	M	2
		F	2
2.	Hypertension	M	0
		F	1
3.	Acid peptic disease	M	1
		F	1
5.	Arthritis	M	0
		F	1
6.	Internal hemorrhoids	M	1
		F	2
7.	Constipation	M	0
		F	1

Table 4: Drugs majorly used in inflammatory bowel disease

S. No.	Generic name	Number of patients	
		Ulcerative colitis	Crohn's disease
1.	Dexamethasone	16	1
2.	Dextrabeprozole	9	1
3.	Imipenem	6	0
4.	Lactobacillus	15	1
5.	Loperamide	4	0
6.	Magaldrate	7	1
7.	Mesalamine	14	1
8.	Metronidazole	16	1
9.	Ondansetron	12	1
10.	Rabeprazole	10	1
11.	Sucralfate	18	1
12.	Ticarcillin-clavulanate	11	0

Table 5: Distribution of drugs based on route of administration

S. No.	Route of administration	Ulcerative colitis	Crohn's disease
1.	Nebulization	1	0
2.	Oral (tablets)	40	2
3.	Oral (syrups)	33	2
4.	Parentrals	100	5
5.	Rectals	10	0

Table 6: Total cost involved in inflammatory bowel disease (IBD)

Direct costs	Total cost (%)	Cost per patient (Rs.)
Diagnostic costs	81033 (18)	4051
Drugs and medical supplies	299404 (65)	14970
Physician office visits	9890(2)	495
Hospitalization	71950(15)	3598
Indirect costs		
Travel costs	7636(12)	382
Work and nonwork days lost	28350 (43)	1418
Cost incurred by caregivers	29600(45)	1480
Total (direct and Indirect) cost per patient for 6 mo		26394
Expected total direct cost per patient for 1 y		52788

DISCUSSION

Since the incidence and prevalence of IBD is rising worldwide, there will be a subsequent increase in the economic impact on the healthcare system and the economy as a whole. The present study provides a cross-sectional view of resource utilisation of IBD patients in a tertiary care Hospital. Although single centre studies with less number of patients lack external validity, this study is one of the very few studies conducted on cost burden of IBD treatment. Practice patterns may vary among hospitals resulting into differences in the costs of IBD treatment. Another factor that leads to variation in the costs is the severity of IBD. A small group of severely ill patients constitutes a major proportion of costs of a large group of patients [14, 15].

Till 2000, Hospitalization and surgery were the major cost drivers in IBD, but in our study, medication use represented the major source of Healthcare costs. In a study conducted by Bassi *Et al.*, medical and surgical hospitalization contributed to over half of total costs, but only 18% of healthcare costs in CD and 24% in UC was due to direct medication expenditure[5]. This contrasts with data from our study, in which medication costs accounted for up to 65% of the healthcare costs for IBD. Similar trends can be seen in study conducted by Odes *et al.*, who reported that more than half of the costs were due to hospitalization and surgery, while only 30% of the cost were due to medication use [7].

No patient in our cohort received infliximab and our data, therefore, provide vital baseline information about the costs associated with established therapies for IBD. The potential impact of novel immunomodulation drugs (e. g. anti-tumour necrosis factor therapy) on the profile of costs for IBD remains to be determined.

Indirect costs often remain unrecognised but in fact sometimes even exceed direct costs. We evaluated indirect costs by means of a cross-sectional survey. Indirect costs included Costs incurred by caregivers (45%), work and nonwork day's productivity losses (43%) and lastly travel costs (12%). We report that productivity losses due to work and non-work days lost and cost incurred by caregivers accounted for approximately 90% of the total indirect costs. On similar lines, A German study reported that 49% of the total costs were due to work disability in CD and 32% in UC, respectively [12]. Similarly, a Swedish study reported that 36% of the total costs of IBD were due to work disability [13].

In conclusion, the present study is the first to show treatment reality of IBD in Hyderabad, Telangana. The average COI (direct and indirect) of IBD per patient for six months was 26,394Rs. Drugs and medical supplies accounted for largest contributions to the overall economic impact of IBD on the Healthcare system. Commonly prescribed drugs were corticosteroids and aminosalicylates followed by mucosal protectants, antibiotics and antiemetics. Large scale studies on economic research are required to further ascertain the impact of Rival therapies and management strategies for IBD.

CONFLICT OF INTERESTS

Declared none

REFERENCES

1. J Satsangi, MS Silverberg, S Vermeire, JF Colombel. The montreal classification of Inflammatory bowel disease: controversies, consensus, and implications. Gut 2006;55:749-53.
2. C Abraham, JH Cho. Inflammatory bowel disease: N Engl J Med; 2009. p. 2066-78.

3. Mario Guslandi. A natural approach to the treatment of inflammatory bowel disease. *Br J Clin Pharmacol* 2008;65:468–9.
4. Cosnes J, Cattan S, Blain A, Beaugerie L, Carbonnel F, Parc R, *et al.* Long-term evolution of disease behaviour of Crohn's disease. *Inflamm Bowel Dis* 2002;8:244–50.
5. Bassi A, Dodd S, Williamson P, Bodger K. Cost of illness of inflammatory bowel disease in the UK: a single centre retrospective study. *Gut* 2004;53:1471–8.
6. Juan J, Estiarte R, Colomé E, Artés M, Jiménez FJ, Alonso J. Burden of illness of crohn's disease in spain. *Dig Liver Dis* 2003;35:853–61.
7. Odes S, Vardi H, Friger M, Wolters F, Russel MG, Riis L, *et al.* Cost analysis and cost determinants in a European inflammatory bowel disease inception cohort with 10 y of follow-up evaluation. *Gastroenterol* 2006;131:719–28.
8. Rocchi A, Benchimol EI, Bernstein CN, Bitton A, Feagan B, Panaccione R, *et al.* Inflammatory bowel disease: a canadian burden of illness review. *Can J Gastroenterol* 2012;26:811-8.
9. BD Lovasz, PA Golovics, Z Vegh, PL Lakatos. New trends in inflammatory bowel disease epidemiology and disease course in Eastern Europe. *Dig Liver Dis* 2013;45:269–76.
10. Molodecky NA, Soon IS, Rabi DM, Ghali WA, Ferris M, Chernoff G, *et al.* Increasing incidence and prevalence of the inflammatory bowel diseases with time, based on systematic review. *Gastroenterology* 2012;142:46–54.
11. www.ccfa.org. Crohn's and Colitis foundation of America. [Last accessed on 3 May 2016]
12. Stark R, Konig HH, Leidl R. Costs of inflammatory bowel disease in Germany. *Pharmacoeconomics* 2006;24:797–814.
13. Blomqvist P, Ekbohm A. Inflammatory bowel diseases: health care and costs in Sweden in 1994. *Scand J Gastroenterol* 1997;32:1134–9.
14. Paweł W Petryszyn, Izabela Witczak. Costs in inflammatory bowel diseases. *Prz Gastroenterol* 2016;11:6–13.
15. Feagan BG, Vreeland MG, Larson LR, Bala MV. The annual cost of care for Crohn's disease: a payor perspective. *Am J Gastroenterol* 2000;95:1955–60.

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