



ISSN NO. 2320-5407

Journal homepage: <http://www.journalijar.com>

INTERNATIONAL JOURNAL
OF ADVANCED RESEARCH

RESEARCH ARTICLE

Pharmacoeconomics Of Schizophrenia –A comparison of Allopathy and Alternate therapy

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Manuscript Info

Manuscript History:

Received: 15 June 2015

Final Accepted: 22 July 2015

Published Online: August 2015

Key words:

Pharmacoeconomics, schizophrenia, alternative treatment. Cost of illness

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Abstract

Pharmacoeconomics Of Schizophrenia –A comparison of Allopathy and Alternate therapy

Background: Schizophrenia is well known not only for morbidity but also for its economic burden. Patient has to remain on treatment lifelong. The prolonged treatment includes direct cost towards consultation, Allopathic medication, investigational charges; Indirect cost like traveling cost, work loss by both patients & care giver, the cost of alternative therapy like Ayurveda, Homeopathy & treatment from Faith Healers..

Aims and objectives---- To find out the average cost of therapy (Direct & Indirect) and compare among the different treatment modalities.

Method: A cross sectional, observational study was conducted from December 2012 to November 2013 in a tertiary teaching hospital in central India on 100 patients as per inclusion criteria. A structured questioner was filled for assessing direct and indirect cost. Data analysis was done using SPSS version 20.0.

Results: Direct cost included medication cost and was Rs 2370.1±1050.1 per patient for 6 month. Average Indirect cost include travelling cost Rs.601.1±375.0, work loss by patient Rs 15292.2±10308.0, work loss by care giver Rs14339.4±8218.1. Indirect cost for 6 month also include alternative treatment cost like on faith healer and was Rs.11080.41± 19983.48, Ayurveda was Rs. 12388.24±17718.28, Homeopathy was Rs. 8000. So the average direct cost was 7.27% (Rs 2730) of total cost Rs 32602.70. when on allopathic, combined treatment with Homeopathy, Faith Healer & Ayurveda increased cost by 19%, 25.36%, 27.5%, respectively.

Conclusion: This shows that the Direct cost was less than indirect cost. And cost of alternative treatment significantly add to Pharmacoeconomics burden in schizophrenia.

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INTRODUCTION

The aim of all civilization across the world is to provide substantial improvement in hunger, housing and health care with maximum budgetary allocation in these three sectors. India is the world largest democratic country, and according to Indian census 2011¹¹ more than 68% of the population lives in villages, and Hinchagri SS et al¹⁰

reported nearly 3.1 million household's lives below the poverty line. They work on farms or perform other menial jobs and are paid on a daily wages and depend on the government funded hospitals for procuring healthcare. In a developing country like India 85% of total health expenditure is financed by house-hold, out-of-pocket expenditure. Among the poor, illness can worsen poverty. Many poor patients frequently face a choice between buying medicines or buying food due to limited resources. We know that for society to progress, health care should be affordable and available to all without being a burden. With this view in mind, the importance of pharmacoeconomics is greater in our country.

Sanchez LA (2008)²⁴ defines - Pharmacoeconomics is the process of identifying, measuring, and comparing the costs, risks, and benefits of programs, services, or therapies and determining which alternative produces the best health outcome for the resource invested. Pharmacoeconomics gains more importance when treating chronic diseases like, mental disorders, which rank high in the list of world disease burden. With advancement in technology & decreased interpersonal relationship – psychiatric disease are on the rise. According to Pahuja S (2011)¹⁷ schizophrenia is one such onerous mental disorder. It ranks among the ten leading causes of disability. Sadock BJ et al (2007)²³ prevalence of schizophrenia in India is estimated to be about 1% and increases if schizophrenia spectrum disorders and taken into account as well. Among various other applications Pharmacoeconomics measures the cost of illness that is the evaluation of the load or burden of a disease; this information helps the health policy makers to ensure proper allocation of resources and also prioritize a disorder or group of disorder which needs to be addressed to.

Schizophrenia presents as hallucinations, delusions, disorganized communication, poor planning, reduced motivation, and blunted effect, and hence is rightly referred to as a group of brain disorders with heterogeneous etiologies. As they are not curable and are only symptomatically treatable, patient remains on treatment life long. Cost of Illness of Schizophrenia comprises of the cost of drugs and hospitalization, & cost of rehabilitation therapy which is an important part of treatment. In addition to the fore mentioned direct costs, a whole lot of indirect costs contribute to the burden of the illness. The Indirect costs are family costs of taking care of a sick member, monetary impact on the family income due to reduce productivity of the patient or the caregiver, expenditure on alternative therapy in some cases. This imposes huge and long lasting economic burden, to the patient and family. In both developed and developing countries this has become a major concern.

In search of best possible, appropriate and economic based, effective treatment,. Constant studies are going on in biological and social fields relevant to early treatment, cost effectiveness and best prognosis. Because of illiteracy, lack of access to health care sciences psychiatric services are accessed as a last resort after consultation from non psychiatric care provider like Faith Healer, Homeopathy, and Ayurvedic.

The costs incurred during the treatment can be studied under the following categories:—

Direct Costs –these includes the money spent on treatment like, consultations, medicines, investigational, psychotherapy, & hospitalization cost.

Indirect Costs –these include the wages loss that results from the low or no productivity of patient and care giver, travelling cost. & cost on alternative treatment

Intangible Costs –these refer to the loss that cannot be evaluated in monetary terms like social stigma, stress etc.

Timely pharmacotherapy in schizophrenia not only helps in improving the patient's condition by relieving symptoms but decrease relapse rate, co-morbidities, residual symptoms and improves the long term prognosis.

The present study focuses on the details of direct and indirect expenditures incurred in past 6 months covering all aspects which contributed to the cost of therapy.

MATERIALS & METHODS

1. The present study is cross sectional, observational study conducted from December 2012 to November 2013 in the department of psychiatry at Pt. J.N.M. Medical College and associated Dr. Bhimrao Ambedkar Memorial Hospital, Raipur Chhattisgarh. The study includes the patients attending OPD with diagnosis of schizophrenia according to DSM IV-TR criteria¹. The study had clearance from institutional ethical committee and was conducted in accordance to it. Written informed consent was obtained from patient /caregiver in the local language. Selection of patient was done on the following Inclusion criteria - Male/Female diagnosed cases of schizophrenia between 18-65 years with disease of 3 year duration on regular treatment for 6 month; *Exclusion* criteria - patients of other chronic medical and psychiatric illness. Before enrolling in the study, the patient was explained in detail about the study procedure. Structure proforma was designed (Annexure 1) having details of patients ,name, age, sex, address, marital status, duration of illness, duration of treatment, socioeconomic class, (educational status, occupation, per capita

income of the patient was obtained by using Kuppaswami Scale updated on June 2012³, details of drug prescribed with potency, frequency and duration. Data analysis was carried out using SPSS version 20.0

COST ANALYSIS

Economic analysis was carried out from the point of view of both subjects and caregivers.

- I. Direct treatment cost for preceding 6 months towards allopathy
 1. Consultation cost: As our study was conducted in Government Tertiary Care Hospital consultation charges are taken as 5 Rs one time registration fees.
 2. Medication cost: Money spent on medication during the past 6 months was calculated. From the prescriptions available with the patient/caregiver, a drug list was drawn, both generic and ethical that included all medications prescribed for the past 6 months along with their potency, dosage, duration and frequency. The local pharmacist was contacted for prices of tablets. All prices were taken at the rate of maximum retail price mentioned on the tablet foil. At the end, the average number of medications being taken by a patient and an average cost was calculated from the above list.
 3. Psychotherapy cost: free of cost in government hospital.
 4. Investigational Charges: Investigational charges were made free for the patient who was enrolled in the study by the hospital administration.
- II. Indirect treatment costs:
 1. Cost of alternative treatment: As schizophrenia is a chronic disease without cure and only symptomatic treatment is available and have high waxing and waning rate patients search for cure in alternative therapies which includes
 - 1) AYUSH (Ayurveda, Unani, Siddha, and Homeopathy)
 - 2) Faith healing, these faith healer are approached as many taboos and myths are attached with schizophrenia. Many patients switch from one practice to another when relief is inadequate
 - 2 *Income loss in informal care-giving*: The family of a mentally ill person has to not only look after the subject but also do his/her share of work (informal care giving). To calculate the cost (in Rupees) of total time spent in informal care-giving for caregivers who were housewives, students or unemployed with no clear income, national income was taken as Rs100 per day¹⁹. Hourly income was calculated keeping average work time of 8 hours per day, 6 days a week. Total time spent in care-giving in hours per month was then multiplied by hourly income to obtain monthly income loss.

Those who were employed or were businessman total income per month was calculated and financial loss analyzed.
 - 3 Financial loss of patient because of Work lost due to disease was calculated from their per month income.
 4. Travelling expenses to come to hospital per visit by the patient and caregiver was asked and then calculated accordingly

Result

The total no. of patient of schizophrenia included in the study n=100, of which males are 61% and female are 39%, majority of the patient. (Table 1) belong to age group 21-30 years (47%) followed by 31-40 years (23%). Family history was associated in 47% of patient. 61% were single and 39% were married. (Table 2) 62% patient belonged to upper lower class followed by 32% in the lower middle class. The duration of the illness of 3 years to 16 years and patient were under allopathic treatment from last 6 months to 7 years. 68% of patient required assistance for hospital visit and 32% came by themselves. 34% of caregiver were of service class whereas 22% were on daily wages, which accounted for average income loss per month of 4860.00 & 3417.00 respectively in both class. (Table 3), 35% of patient were on allopathic treatment whereas 47% (n=47) took allopathic and also went to faith healers, 17% (n=17) took ayurvedic treatment and only 1% (n=1) took homeopathy along with allopathic.

Average number of drug prescribed per patient per prescription was 2.43 ± 0.80 mean \pm s.d..

(Table 4) Direct cost included medication cost per patient for 6 month of allopathic treatment Rs 2370.1 \pm 1050.1
Average Indirect cost per patient for 6 month include

- a) Travelling cost Rs 601.1 \pm 375.0
- b) work loss by patient Rs 15292.2 \pm 10308.0
- c) work loss by care giver = Rs 14339.4 \pm 8218.14 which in total (a+b+c) was Rs 30232.7
- d) indirect cost also include alternative treatment cost
 - i. Average cost of treatment spent on faith healer for 6 month (47%) was Rs. 11080.41 \pm 19983.48

- ii. Average cost of treatment on Ayurveda for 6 month (17%) was Rs. 12388.24± -17718.28.
- iii. Average cost of treatment on homeopathy for 6 month (1%) was Rs. 8000.

(Graph 1 and Graph 2)So the direct cost remain same and is Rs2370, 7.27% of total cost 32602.7

And also the indirect cost remain the same if cost of other therapy was excluded i.e Rs 30232.7(92.7%)

When pt. took homeopathy along with allopathy cost of therapy increased to Rs 40602 which accounted for 19% (Rs 8000) increase in treatment cost.

When patient took faith healer treatment along with allopathy cost increased to Rs 43683.1 which accounted for 25.36% (Rs 11080.41) increases in treatment cost.

And when ayurvedic treatment with allopathic it increased to Rs 44990.94 which increases to 27.5 % 12388.24.

Table 1

Age wise distribution of disease

S. No.	Age in					Total no.patient
	years	Female		Male		
		No	%	No	%	
1	(11-20)	1	1	4	4	5 (5%)
2	(21-30)	19	19	28	28	47 (47%)
3	(31-40)	9	9	14	14	23 (23%)
4	(41-50)	7	7	8	8	15 (15%)
5	(51-60)	3	3	6	6	9 (9%)
6	(61-70)			1	1	1 (1%)
	Total	39	39	61	61	100

Table 2

Socioeconomic class distribution of patient

S. No.	Socio economic class	Schizophrenia (n=100)	
		No.	%
1	Lower <5	2	2
2	Upper Lower 5-10	62	62
3	Lower Middle 11-15	32	32
4	Upper Middle 16-25	4	4
5	26-30 Upper class	-	-
	Total	100	100

Table3 Patient taking different pathies and cost of therapy (Rs)

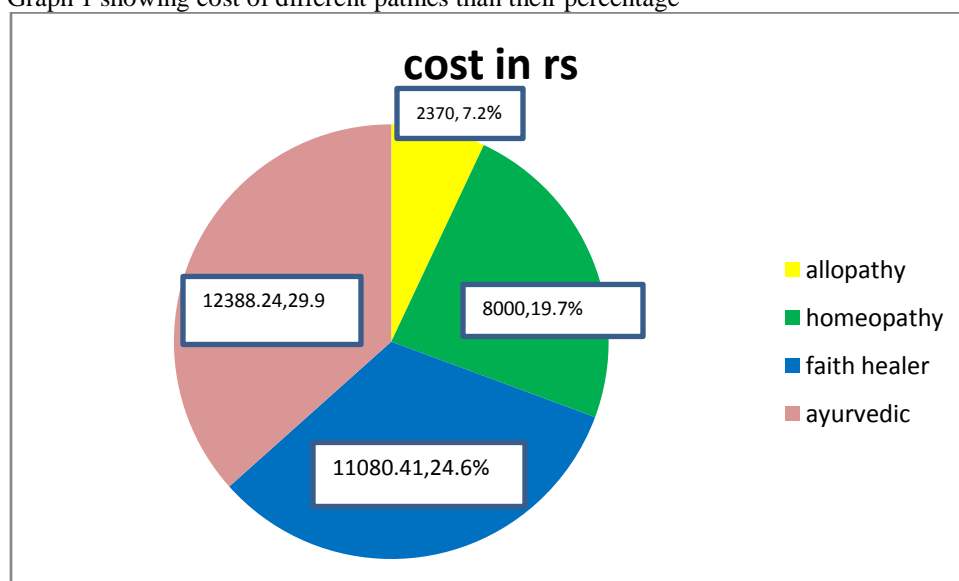
S. No.	Alternative treatment	Schizophrenia (n=100)		Total pt.
		No.	%	
1	Allopathy	35	35	35%
2	Homeopathy	1	1	} 65%
3	Faith healer	47	47	
4	Ayurvedic	17	17	
	Total	100	100	100

Table 4

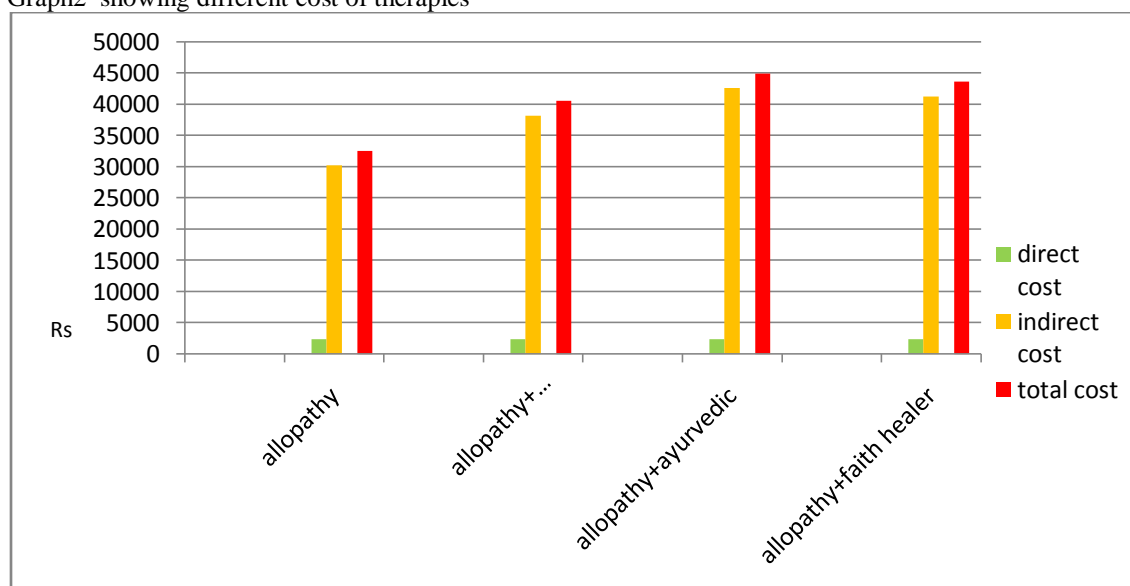
Showing cost of different pathies and their percentage

Pathy	direct cost	Average Cost of alternative therapy	indirect cost	Total cost
allopathy	2370(7.27%)		30232.7 (92.7%)	32602.7
allopathy+ homeopathy	2370	8000 (19.70%)	38232.7 (94.1%)	40602.7
allopathy+faith healer	2370	11080.41 (25.36%)	41313.11(94.5%)	43683.1
allopathy+ayurvedic	2370	12388.24 (27.53%)	42620.94(94.7%)	44990.94

Graph 1 showing cost of different pathies than their percentage



Graph2 showing different cost of therapies



(Annexure 1)PROFORMA**Patient's initials:** **Patient's OPD no.****Name:** **Age / Sex:** **Marital status:****Address:****Socioeconomic class of patient on the basis of Modified Kuppuswami scale (June 2012)**

Education	Wt	Occupation	Wt.	Per capita income (INR)	Wt
Professional degree, PG and above	7	Professional	10	=30375	12
BA or BSC	6	Semi professional	6	15188-30374	10
Intermediate or post high school diploma	5	Clerk, shop owner, farm owner, etc.	5	11362-15187	6
High school certificate	4	Skilled worker	4	7594-11361	4
Middle school completion	3	Semi Skilled worker	3	4556-7593	3
Primary school or literate	2	Unskilled worker	2	1521-4555	2
Illiterate	1	Unemployed	1	=1520	1
Total					

1. Upper class (26-29)
2. Upper middle (16-25)
3. Lower middle (11-15)
4. Upper lower (5-10)
5. Lower (<5)

EVALUATION OF PRESCRIPTION

Date of prescription/...../..... of illness:

Duration of treatment

Any hospitalization regarding the concerned disease within last 6 month – Yes / No

Prescription of patient

S. No.	Drug name	Dose form	Dose	frequency	Duration	No. of doses /day	No. of doses/months	Monthly price	
								Prescribed brand	Alternate brand
1									
2									
3									
4									

Total (Rs.)

Grand total (Rs.)

Direct cost

Amount paid by the pt. on medicine:

Consultation fees: Psychotherapy charges:

Investigational charges:

Indirect cost

1.Any alternative treatment taken - Y/N

If yes than what treatment taken:

& monetary expenditure done on it:

2.Financial loss because of Work lost by pt.:

3.Financial loss because of Work lost by care taker:

4.Travelling expenses to come to hospital:

Date:

Investigator's signature:

Discussion

In this study we described the direct and indirect cost of illness incurred by patients with schizophrenia and their families. We found that the indirect cost was higher than the direct cost of direct care. Direct cost included medication cost. And the average cost of allopathic treatment per patient for 6month was Rs 2370.1±1050.1 , and is 7.27% of total cost 32602.7. Indirect cost include - travelling cost which was average Rs. 601.1± 375.0 ,work loss by patient was average Rs 15292.2±10308.0, work loss by care giver= Rs14339.4±8218.14 this account for total Rs 30232.7. When pt. took homeopathy along with allopathy cost of therapy increased up to 19% When patient took faith healer treatment along with allopathy cost increased up to 25.36% And when ayurvedic treatment with allopathic it increased up to 27.5% i.e ayurvedic treatment was costliest of all. And if the other indirect cost was kept constant than it shows that alternative treatment adds to the burden to the cost of illness, rather than cost of medication

A study conducted by Wasylenki DA,(1994)²⁶ “calculated the cost of care for Schizophrenia to be \$129.3 billion, this cost in comprehensive of both direct and indirect costs. The study also stated that the large cost of illness of Schizophrenia is owing to its early age of onset, a need for lifelong medications, and high prevalence.

Multiple studies have results similar to our study. Wyatt RJ 1995²⁸ conducted a study & estimated the annual cost of Schizophrenia to be about \$ 65.1billion where the direct medical cost was \$ 18.6 billion and indirect cost was \$ 46.5 billion.

Girish et al (2005)⁶ also put forth the observation that the costs of antipsychotic drugs have a considerably less contribution to the total cost of illness and patient can afford antipsychotic drug treatment but other costs associated with the treatment add to the financial burden.

In a similar study by Grover et al in 2005⁷ stated that the estimated annual cost of treatment of Schizophrenia is Rs. 13,687.38, & cost of drugs being only Rs.4460.88 i.e Drugs accounted for less than 10% of the total cost. The caregiver has to bear a burden not only financially but also bear the burden of extra work and social stigma because of diseased patient.

The results of study by Sado M et al (year)²² showed that the total cost of schizophrenia was JPY 2.77 trillion (USD 23.7 billion) and the indirect costs constituted the greatest part of the total cost (72% of the total cost). Of note, previous studies also reported that the indirect costs accounted for a major part of the total costs in study by Wyatt RJ et al 1991²⁸ reported 71%; Wu EQ et al 2005²⁷ 52% , and. Mangalore R et al 2007¹⁶ reported 52% ..

Attitudes towards, and concepts about, psychiatric disorders vary across cultures, and these may influence the acceptability of drug treatments. There is a dearth of mental health professionals and care facilities in developing countries, especially in rural areas. In a study by de Silva J et al 2012²¹ showed that seventy eight patients (71.6%) had received informal treatment. Similar to our study where 65% had received informal treatment In which Ayurveda and indigenous Medicine costs Rs.1,000-3,000/month, faith healer (Pooja, exorcism, tying blessed thread, ect) cost free to Rs.50000.

Similarly study by Lahariya C et al (2010)¹⁵ shows that 68% of patient with psychiatric illness went to faith healer . Most of these studies suggest that beliefs in supernatural factors are quite prevalent in lay public and caregivers of mentally ill patients. Similar study by Kulhara P, et al (2000)¹⁴ show that many patients and their caregivers seek help of faith healers to get rid of patient's symptoms, in another study by Saravanan B (2008)²⁵ and it has also been shown that indigenous healing methods are considered complementary to the medical management of mental illness. Kate N et al 2012¹² reported that in our social setting mental diseases are associated with superstitious beliefs which adds to the cost.

Similar to our study by (Guest J F et al 1996)⁹.(Rouillon F 1997)²⁰ also shown that drug costs form a small fraction of the total cost, varying from 2% to 5.6% of the total cost (Knapp M 1997)¹³ . (Evers S 1995)⁴ reported direct costs have ranged from 13% to 53% of the total cost, and indirect costs from 47% to 87%..

In Various other studies similar result were obtained. (Grover S et al 2006)⁷ reported Burden on the family, including financial burden, social discrimination, restriction of social and leisure activity, effect on health of others etc. Studies by (Ali MR & Bhatti RS 1988)² . (Pai S & Kapur RL.1983)¹⁸ (Gautam S & Nijhawan M.1984)⁵ Among all these, financial burden was found to be a common area of burden,. This was truer when the person was an earning member of the household. Schizophrenia imposes a high financial burden because of various reasons. These include early onset, which may lead to lifelong disability; disease chronicity, which may result in long-term morbidity; hospitalization and maintenance drug therapy; and social and economic effects on caregivers, like expenditure incurred due to extra arrangements, loans taken or savings spent, putting off any planned activity

because of the financial pressure of the patient's illness etc Financial constraints further lead to poor drug compliance and relapse, which further perpetuates the financial burden.

Conclusion –

Medicines are more effective and affordable i.e. direct cost was less than indirect cost. Indirect cost due to alternative treatment was higher and putting financial constrain on the family, it was because of lack of education, improper counseling, social stigma associated with disease. Therefore we must recommend proper counseling , give proper education, and create program for general public awareness so that patient and their family members must have faith & compliance toward medication.

Acknowledgment - Thankful to patient and their care giver for cooperating. Also thankful to the department of Psychiatry and department of Pharmacology.

Limitation

Though the results of the study are in accordance to studies previously conducted, there a certain limitations associated with the study. Only a limited number of patients could be obtained during the study time, had the study period been longer the more relevant results could have been obtained. Different methods of direct and indirect cost calculation are used in different study this led to a larger value of standard deviation. If the scope of the study could be broadened more conclusive results could have been drawn from the study and hence similar studies should be conducted

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