PRESCRIPTION ANALYSIS FOR VARIATION IN THE COST OF DIFFERENT BRANDS OF SAME MEDICINE FOR THE TREATMENT OF DEPRESSION AT A TERTIARY HOSPITAL OF NEPAL

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ABSTRACT

Introduction

Depression often remains unrecognized, misdiagnosed and/or under treated. There are multiple drugs from multiple companies which are available for treatment of depression. The prices of same drug with different brands are variable which questions the afford ability of treatment to the patients and their compliance.

Objective

The study was conducted to analyze the cost variation of different brands of antidepressant drugs prescribed in a tertiary care hospital of Nepal.

Methodology

This study design was cross-sectional and method was quantitative method and conducted at department of pharmacology of a tertiary care hospital from September 2018 to January 2019 after getting approval from institutional review committee. The commonly prescribed antidepressant drugs were recorded from prescription records of department of psychiatry and their cost, cost ratio and percentage variation were calculated as per current index of medical specialties and National index of medical specialties. The data were recorded in MS excel and presented as simple descriptive statistics.

Result

The study included seven commonly prescribed antidepressants obtained from 214 prescription records. The cost of one course of citalopram 40 mg tablet was found to be higher and the cost of one course of imipramine 25 mg tablet was found to be lower. The maximum and minimum cost ratio was 2.46 and 1.08 with fluoxetine 20 mg capsule and dothiepin 50 mg tablet respectively. The maximum and minimum percentage of cost variation was with fluoxetine 20 mg capsule and dothiepin 50 mg tablet.

Conclusion

Costs of antidepressants had wider variations depending on the manufacturers and availability of different dose and brands.

KEYWORDS

Antidepressants; cost; escitalopram; fluoxetine; pharmacoeconomics

INTRODUCTION

Depression affects the population by its occurrence, distress, ill health and economic burden which is often unrecognized, misdiagnosed and/or undertreated.[1] It is regarded as fourth leading contributor to global burden of diseases.[2; 3] The crude prevalence of depression was 11.7% in Nepal.[4] Antidepressants have a broad spectrum of use in medical practice which will incur higher pharmacoeconomic burden in health care services.[5-7] Overall cost of antidepressant is high because of the direct cost of individual drug as well as cost of drugs for a course of therapy.[8] It is not only associated with substantial direct costs but also indirect and intangible costs which encompasses the loss of productivity, and the pain and suffering of the patients resulting in declination of their quality of life, social isolation and impairment of their personal satisfaction respectively.[8]

Nepali markets are flooded with large number of antidepressant drug formulation and the same formulations are also sold under different brand with wide variation in cost. [8,9] The commonly prescribed antidepressant drugs are escitalopram, paroxetine, sertraline, fluoxetine, amitriptyline, etc.[10,11] The cost of antidepressant medication corresponds to approximately 8% of the daily wage of a day laborer.[12-14] Evaluating the total cost of treatment is equally important as evaluating the treatment for depression because if the patient took the treatment as a financial burden it will hamper the compliance of the drug as well as it might exaggerate the ongoing episode of depression.[15, 16] There is necessity of study involving the cost of antidepressant drugs of different brands and total cost of the treatment before prescribing the drugs so that the patient can afford and have better compliance as well as prescriber have clear idea regarding the afford ability of treatment.[15-17] Hence, the study was conducted to analyze the prescriptions for variation in cost of different brands of same medicine for treatment of depression at a tertiary care hospital of Nepal.

METHODOLOGY

A cross-sectional study was performed in department of pharmacology of a tertiary care hospital of Nepal from September 2018 to January 2019 after getting an ethical approval from Institutional Review Committee of Nepalese Army Institute of Health Sciences. The commonly prescribed antidepressant drugs were recorded as per prescription record of department of psychiatry of tertiary care hospital. Cost of antidepressant drugs manufactured by various pharmaceutical companies were obtained from latest edition of current index of medical specialties (CIMS) July-October 2018, National index of medical specialties (NIMS) 2018 and from drug labels/leaflets obtained from pharmacies. The findings were recorded in proforma which includes name of drug, dosage form, name of manufacturing companies, dose, minimum and maximum cost, cost ratio and percentage variation per dosage forms. The cost of single drug in the same strength and dosage forms being manufactured by various companies and the difference in maximum and minimum price of same drug with different brand names were also recorded and compared. The drugs manufactured by only one company and parenteral formulations were not included in the study. The total cost of a course of treatment was also calculated keeping indications, side effects, chemical composition, dosage form and strength of the prescribed drug constant. The duration for the particular indication was kept constant. The adjuvant drugs like proton pump inhibitors, analgesics, etc. are excluded. The cost of treatment in Nepali rupees (NRs) was evaluated taking duration of six months (180 days) as the main indication of antidepressant drugs is major depressive disorder (MDD) for which the duration is prolong, may be between 6-12 months and sometime more than a year.[5,6]

Cost ratio= maximum cost of a drug/ minimum cost of a drug (brand varies)

Percentage (%) cost variation= [(maximum cost – minimum cost) x 100] divided by minimum cost

Cost of one course of antidepressant = Cost of antidepressant per day x 180 days

The data were recorded in MS excel and presented as simple descriptive statistics using percentages, numbers, tables and bar diagrams.

RESULT

The total of 214 prescriptions for depression from the record section of department of psychiatry was analyzed in the duration of the study. The commonly prescribed antidepressants with their frequency in prescription were found to be doxepin (11), dothiepin (13), imipramine (22), citalopram (40), fluoxetine (41), sertraline (46) and escitalopram (58) which were further analyzed for the variations in their prices. The 17 prescriptions included the multiple drug combinations whereas 197 prescriptions included single antidepressant drug prescription. The adjuvant drugs like proton pump inhibitors are excluded. Only the price of oral dosage forms and topical dosage form was included. Oral drugs were available in three formulations viz. tablets, capsules and syrup whereas topical dosage form included cream only. The drugs included in the study with dosage forms, number of brands or manufacturing companies, daily dose and strength of dosage forms are depicted in table 1.

Table 1: List of study drugs with dosage forms, dose and number of brands or manufacturing companies

S. N	Name of drug	Number of dosage forms available	Number of brands or manufacturing companies	Daily dose[18]	Dose/ Strength
1	Doxepin	Tablet	1	25-150 mg	25 mg
		Capsule			75 mg
		Phial (cream)			30 mg
2	Dothiepin	Tablet	4	50 mg -150 mg	25 mg
			2		50 mg
3	Escitalopram	Tablet	9	10 mg- 30 mg	5 mg
			10		10 mg
			8		20 mg
4	Fluoxetine	Tablet	4	20 mg -60 mg	20 mg
		Capsule	6		10 mg
			15		20 mg
			3		60 mg
		Phial (Syrup)	2		20mg/5 ml (60 ml)
5	Imipramine	Tablet	8	50 mg -200 mg	25 mg
			6		75 mg
6	Sertraline	Tablet	4	50 mg -200 mg	25 mg
			4		50 mg
			3		100 mg
7	Citalopram	Tablet	4	20 mg – 40 mg	10 mg
			3		20 mg
			2		40 mg

Doxepin was available in three dosage formulations from single manufacturing company. There was differences in price among different formulations, the maximum price was for phial i.e. NRs 126.40 and minimum price was for 25mg tablet i.e. NRs 2.50. Escitalopram 5mg tablet, fluoxetine 40mg tablet, imipramine 50mg tablet were also manufactured by only one company.

Dothiepin, imipramine, sertraline, fluoxetine, citalopram and escitalopram were available in single oral dosage form (tablet). Dothiepin tablet was found in two different doses i.e. 25 mg and 50 mg. Imipramine tablet was also available in two strengths i.e. 25 mg and 75 mg. Sertraline and escitalopram both were available in three strength tablets whereas fluoxetine was available in three formulations- tablet, capsule and syrup. Tablet fluoxetine and syrup fluoxetine were in single strength i.e. 20 mg and 20 mf/5ml in 60 ml phial respectively but capsule fluoxetine was found in three dose strength- 10 mg, 20 mg and 60 mg. The pharmacoeconomic details which include cost of each formulation along with cost ratio, percentage variation and cost of one course of study drugs are shown in table 2.

Table 2: Pharmacoeconomic details of antidepressant drugs

S.N	Name of drug	Dose/Strength	Minimum cost/each (NRs)	Maximum cost/each (NRs)	Cost ratio	% variation per tab
1	Dothiepin	25 mg	2.37	3.56	1.5	50.21
		50 mg	6	6.5	1.08	8.33
2	Imipramine	25 mg	1.1	2.5	2.27	127.27
		75 mg	2.25	4.8	2.13	113.33
3	Fluoxetine	20 mg (tablet)	3.25	4.64	1.42	42.76
		10 mg (capsule)	3.2	4.32	1.35	35
		20 mg (capsule)	2.86	7.04	2.46	146.15
		60 mg (capsule)	9.44	13.84	1.46	46.61
		20mg/5 ml (60 ml)	47.84	68.8	1.43	43.81
4	Sertraline	25 mg	1.84	2.95	1.6	60.32
		50 mg	3.29	5.7	1.73	73.25
		100 mg	4.35	6.52	1.49	49.88
5	Citalopram	10 mg	3.52	6.4	1.81	81.81
		20 mg	9.68	10.72	1.1	10.74
		40 mg	12	18.88	1.57	57.33
6	Escitalopram	5 mg	5	6.5	1.3	30
		10 mg	7	12	1.7	71.42
		20 mg	15	18.8	1.25	25.33

The cost of one course (6 months) of antidepressant drug treatment is shown in figure 1. The maximum cost of one course of antidepressant was found to be NRs 3398.4 with citalopram 40 mg and the minimum cost of one course of antidepressant was found to be NRs 198 with imipramine 25mg tablet.

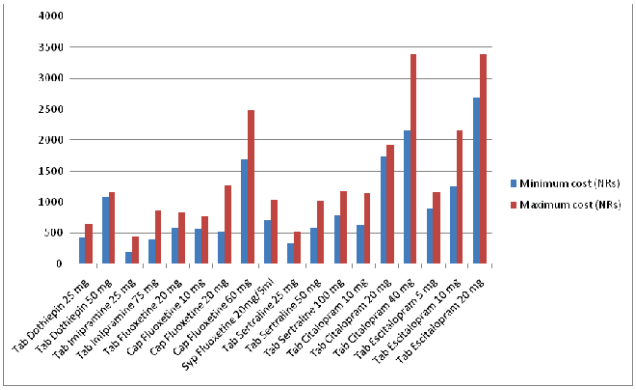

Figure 1: Cost of one course (6 months) of antidepressant drug treatment

DISCUSSION

This study demonstrated the cost variation in different brands of same antidepressant drugs. Out of seven antidepressant drugs, six (85.7%) drugs were available in more than one oral dose formulations. In the study by Paunikar et al, they analyzed total of 25 drugs (21 single and 4 combination preparations) available in 66 different formulations.[19] In our study, the drugs were from two groups of antidepressant i.e. tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs) but Paunikar et al included serotonin norepinephrine reuptake inhibitors (SNRI), monoamine oxidase-A inhibitors (MAO-I) and atypical antidepressants in addition to SSRIs and TCAs. Dothiepin and imipramine are tricyclic antidepressants. Sertraline, fluoxetine, citalopram and escitalopram are selective serotonin reuptake inhibitors. SSRIs are orally active with consistent elimination half-lives so mostly they are used orally.[20] In our study, SSRIs were found to be commonly prescribed because of their ease of use, safety in overdose, relative tolerability, cost and broad spectrum of uses. Cost ratio of antidepressant drugs showed wide variations. The highest cost ratio and lowest cost ratio was 2.46 and 1.08 with fluoxetine 20 mg capsule and with dothiepin 50 mg tablet respectively. The maximum and minimum percentage of cost variation was 146.15% with fluoxetine 20 mg capsule and 8.33% found with dothiepin 50 mg tablet respectively. However, the study conducted by Patel VJ et al found 110.19% cost variation with fluoxetine 20 mg capsule.[21] Another study done in Mumbai in 2015 by Paunikar et al had findings contrast to ours which reported fluoxetine 10 mg capsule (12%) with the minimum percentage cost variation and escitalopram 10 mg tablet (284.49%) with higher percentage cost variation.[19] The study conducted byChaithra KN et al showed reboxetine (2mg) with the maximum price variation of 900% and dapoxetine (30 mg) with maximum price variation of 2360% whereas the similar study by Patel VJ et al found maximum and

minimum price variation with escitalopram 10 mg tablet (495.23%) and imipramine 75mg tablet (48.03%) respectively.[17,21] The antidepressants like dothiepin (25 mg tab), fluoxetine (20 mg tab, 10 mg cap, 60 mg cap, 20mg/5ml), sertraline (100 mg tab) and escitalopram (5 mg, 10 mg) were found to have 10 to 50% price variation. Similarly, sertraline (25 mg tab, 50 mg tab), citalopram (10 mg, 20 mg, 40 mg) and escitalopram (20 mg) were found to have 50% to 100% price variation. Beside fluoxetine 20 mg capsule, imipramine 25 mg and 75 mg tablets also showed more than 100% cost variation. However, the similar study in India, 2017, demonstrated 19 dosage formulations of antidepressant with price variation 100% or more than 100% whereas only 1 dosage formulation have price variation <1%.[17]The main reason behind the wider cost variation might be due to the more number of companies manufacturing the drugs in various dosage formulations. Other reasons might be the increased number of frequency of drug administration, the manufacturer being the multinational companies with wider margin of profit and availability of only expensive brand of drugs.

The duration was taken as 6 months for calculation of total cost because after the successful initial treatment phase, 6 to 12 month maintenance treatment phase is required before drug is gradually withdrawn. But sometimes when patient is diagnosed as chronically depressed (for more than 2 years), lifelong treatment with an antidepressant is also advisable.[22] The maximum cost of a course of drug treatment was with escitalopram 20 mg tablet and minimum cost with fluoxetine 20 mg tablet. The variation of total cost of treatment with escitalopram might be due to the higher range of minimum and maximum cost per tablets of escitalopram in comparison to other antidepressants. The cost of prescribed drug is an important factor especially among the patients with low socioeconomic status. The ignorance in the price of drugs might result in prescription of expensive drugs when the cheaper alternative is available. Similarly, the physician who is prescribing the medicines should have data for cost of different drugs that can be done by providing updated information of cost of various brands of drugs in the manual.[23-25] The overwhelming productions of me-too drugs have led to the cost variations of same generic drug with different brands which imposed unwanted, unintended and unnecessary economic load to the patients.

CONCLUSION

The present study found low to high variation in the cost of the same medicine in different doses with different brands used to treat depression. The cost effective antidepressant drug in our setting was found to be fluoxetine which also have wider cost variation. The further study focusing on pharmacoeconomic aspect of antidepressant drugs are needed to established appropriate prescription guidelines for depression in our settings.

RECOMMENDATION OF THE STUDY

The burden of antidepressant therapy to the patients can be reduced by prescribing the affordable drugs as per the economic status of the patients. The inclusion of pharmacoeconomic aspect of prescription in undergraduate teaching is recommended and the awareness among health care professionals, health care payers, government agencies and policy makers to minimize the health care costs on patients should be spread.

LIMITATIONS OF THE STUDY

The number of antidepressant drugs was lesser and only included from a single center. This study included only oral formulations. The study excluded the cost of adjuvant drug therapy. This study was focused on direct cost as it includes the prices mentioned in the current index of medical specialties (CIMS), leaflets and drug labels which does not include indirect and intangibles costs. Study also lacks in mentioning the names of different brands and manufacturing companies as there was no permission from the authority.

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CONFLICT OF INTEREST

None

FINANCIAL DISCLOSURE

None

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