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COST ANALYSIS OF CALCIUM SUPPLEMENTS USED IN A TERTIARY CARE HOSPITAL

Pharmacology

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ABSTRACT

Background: Pharmacological intervention is the main line of managing patients & calcium supplements help in management of osteoporosis, rickets, osteomalacia by reducing morbidity & enabling patients to live a more meaningful & stable life with fewer relapses & reducing the need for hospitalization. But Calcium supplements are costly & are the main reasons for poor compliance in India & with increase in number of Calcium supplement brands, there can be difficulty in prescribing more cost effective brand to the patients.

Aim: To evaluate the cost of Calcium Supplements of different generic classes & different brand names & to analyse price variation among various Calcium Supplements available in a tertiary care hospital in India.

Methodology: The Current Index of Medical Specialities android app containing the latest updates was used to analyze the prices of various calcium supplements. The cost of each molecule of different strengths was tabulated and cost range and % price variation were calculated.

Results: The maximum price variation was observed in Calcium citrate & Vitamin D3 combination [4361%]. Some of the most commonly used drugs were available at a subsidized cost in the hospital with some of them even being available for free. The least price variation was seen in Calcium lactate 500 mg [191.30%].

Conclusions: Price control mechanism has an important role and is very much important to reduce the cost burden of treatment particularly in India.

KEYWORDS

INTRODUCTION

Rational use of medicines means patients received medicines appropriate to the clinical need at the proper dose for the proper duration & at the lowest cost. So it is very important for the prescriber to consider cost while writing the prescription along with other criterias.[1] Osteoporosis, rickets, osteomalacia are diseases associated with significant & long lasting health, social & financial burden. Pharmacological intervention is the main line of managing patients & calcium supplements help in management of osteoporosis, rickets, osteomalacia by reducing morbidity & enabling patients to live a more meaningful & stable life with fewer relapses & reducing the need for hospitalization. [2,3,4] But Calcium supplements are costly & are the main reasons for poor compliance in India & with increase in number of Calcium supplement brands, there can be difficulty in prescribing more cost effective brand to the patients. [5]. Therefore it becomes increasingly necessary to examine issues of comparability across different pharmacological agents as well as individual user costs to influence the compliance of patients. [6] This study was designed to evaluate the cost of Calcium Supplements of different generic classes & different brand names & to analyse price variation among various Calcium Supplements available in a tertiary care hospital in India.

MATERIALS & METHODS

Data regarding the most commonly prescribed Calcium Supplements was taken from the Orthopaedics, Peadiatrics, Obstetrics & Gynaecology & Geriatric medicine departments of a tertiary care hospital. The data consisted of names of commonly prescribed brands along with its contents, dosage & indications.

Current Index of medical Specialities [CIMS] android application containing the latest updates was used to analyse the prices of Calcium Supplements prescribed in the hospital. Data about the cost of calcium supplements was collected for all the strengths and dosage form.

1] Cost of a particular drug [per 30 tablets] of various strengths & dosage forms being manufactured by different companies was compared.
2] The drugs manufactured by only one company were also included and minimum and maximum cost was written as the same.
3] Syrup formulations were also included.
4] Difference between the maximum & minimum cost of same drug was also calculated [cost difference]
5] Percentage price variation were calculated for each

Following formula was used to calculate price variation [7]

$$\text{Percentage price variation} = \frac{(\text{Price of most expensive brand} - \text{Price of least expensive brand})}{\text{Price of least expensive brand}} \times 100$$

The study was discussed & approved in the departmental review meeting.

RESULTS

Table 1 shows the cost variation of different calcium supplements. It was observed that the number of brands varied from 2 to 12, with T Calcium carbonate + vitamin D3 combination having the maximum number of brands. There was substantial evidence in the prices of the different brands available. The maximum price variation was observed in Calcium citrate & Vitamin D3 combination [4361%]. Some of the most commonly used drugs were available at a subsidized cost in the hospital with some of them even being available for free. The least price variation was seen in Calcium lactate 500 mg [191.30%].

DISCUSSION:

Pharmacoeconomics is a branch of health economics which particularly focuses upon the cost and benefit of drug therapy thereby providing a guide for decision making on resource allocation and in planning process. Government & private healthcare institutes are targeting curtailment of expenditure on drugs for saving in healthcare costs.[1]

It is very much important for the prescribing doctors to know about the cost of drugs to reduce the price burden on the patient but there are not many studies carried out on the topic. So we undertook the above study. In our study calcium supplements were used for osteoporosis, osteomalacia, rickets, hypoparathyroidism, chronic kidney disease, pregnant & lactating females, latent tetany and in cases of generalized weakness with no specific cause. Some of the most commonly used

drugs were available at a subsidized rate or even for free at the hospital in order to reduce the patients expenditure on drugs. However when they were not available the price variation went upto almost 4361% in drugs like Calcium citrate+ vitamin D3 combination making them almost unaffordable for the patients. Calcium citrate & vitamin D3 combination showed the most price variation because of having less number of brands. Since calcium supplements are given for a long period of time major price differences may make it unfeasible for the patients to afford calcium supplements for the entire period of their treatment.

Drug prices are controlled according to drug price control act 2013 [DPCO]. Celing price of drugs are fixed by national pharmaceutical pricing authority [NPPA] government of India in accordance with DPCO 2013.[8] So far it has fixed celing prices of 509 drug formulations included in National list of Essential Medicines. Since May 2014 NPPA has notified prices of 251 formulations under DPCO 2013 resulting in benefit of Rs. 558 crore to consumers.[9]

It is important to create awareness about cost effective prescription via – Undergraduate teaching of price of medicines Practical exercise of finding cheapest brand for each molecule Providing doctors updated information of cost of various brands Motivating pharmacists to dispense only those brands which the doctor has prescribed rather than those in which he has maximum benefits.

Prescribing generic drugs whenever possible to decrease expenditure of patient on drug.

Table 1:

Drug	No of brands included	Strengths	Min Cost [INR]	Max Cost [INR]	Cost difference [INR]	% Price Variation
Calcium Carbonate	7	500 mg	Free	495	495	-
	7	250 mg	Free	400	400	-
T Calcium Carbonate + Vitamin D3	12	500 mg + 250 IU	Free	661	661	-
Syrup Calcium Carbonate + Vitamin D3	6	200 ml 50ml = 200 mg	25	440	415	1660%
Calcium Acetate + Magnesium Carbonate	3	435 mg + 235 mg	43	250	207	481.39%
Calcium Gluconate	3	500 mg	Free	150	150	-
Calcium Acetate	1	667mg	35	35	0	0
Calcium Citrate + Vitamin D3	8	1000 mg + 200 IU	13	580	567	4361%
Calcium Ascorbate	2	500 mg	399	1775	1376	344.86%
Calcium Lactate	3	500 mg	23	67	44	191.30%

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