

Original Article

# Ambiguous pricing of topical dermatological products: A survey of brands from two South Asian countries

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**Abstract** *Background* Cost of drugs is an important factor influencing compliance with treatment. Skin diseases are a common problem in Nepal. A large number of dermatological preparations are available. Studies on the price variation between brands are lacking. Hence the present study was carried out to obtain information on the price variation between different brands of topical dermatological preparations. The variation within and between Nepalese and Indian brands was also studied.

*Materials and methods* The prices of brands were obtained from three sources, the pharmacy price list of the Manipal hospital, the Nepal Drug review and Advance Drug Review. The percentage cost variation was calculated using the formula

$$\text{Percentage cost variation} = \frac{\text{Cost of highest priced} - \text{cost of lowest priced brand}}{\text{Cost of lowest priced brand}} \times 100$$

The drugs were grouped into therapeutic categories and the average variation for different categories was calculated.

*Results* A total of 37 Nepalese and 397 Indian brands were surveyed; 40 drugs or drug combinations were studied. Twenty-five drugs (62.5%) showed more than 75% variation. The combination of betamethasone, gentamicin and clotrimazole showed the maximum variation. The Nepalese brands were generally cheaper than their Indian counterparts but there were exceptions. Among the therapeutic categories, the maximum variation was observed among topical antiseptics, topical antivirals and corticosteroids. The variation within Nepalese brands was less compared to that within Indian ones.

*Conclusions* There was substantial price variation observed. Information on product quality and prices should be widely disseminated. 'True' competition between brands should be encouraged.

**Key words**

Dermatological preparations, drugs, drug information, price variation.

## Introduction

Drugs are a sensitive and essential component of health services.<sup>1</sup> Drug costs account for a substantial part of health costs, varying from 10-15% in developed countries to 30-40% in developing countries.<sup>2</sup> Cost of

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drugs is an important factor influencing compliance with drug treatment in developing countries.<sup>3</sup> Variation in cost of medicines has been seen in Nepal<sup>1</sup> and other countries.<sup>4,5</sup> The doctors should consider drug prices while prescribing for reasons which are both ethical and economic.<sup>6</sup>

Skin diseases are a major problem in Nepal accounting for 6.1% of total outpatient visits to primary health care facilities in the year 2003-2004.<sup>7</sup> In the Western development region of the country where Pokhara city is located, this figure was 7.2%. The incidence is especially high in the mountainous districts of Nepal. Many skin diseases are chronic and require a long duration of treatment.

A large number of formulations are available in the Indian market<sup>8</sup> and many of these formulations are imported into Nepal. Wide variation in prices of the same drug manufactured by various companies makes it difficult for the doctor to choose the most cost-effective treatment.<sup>4</sup> Information on the price variation of topical dermatological preparations in South Asia were not available in the literature. Hence the present study was carried out. The objectives of the study were to:

- a) Obtain information on the price variation between formulations manufactured by different companies of a particular medicine.
- b) Calculate the price variation for different therapeutic groups of medicines.
- c) Note the association, if any, between the number of brands and price variation.

- d) Calculate the percentage variation within and between Nepalese and Indian brands.

### **Materials and methods**

The prices of topical dermatological preparations were obtained from three sources. The sources were the price list supplied by the hospital pharmacy, the October-December issue of Advance Drug Review (ADR) and the December 2005 issue of Nepal Drug Review (NDR). ADR and NDR are books describing various drugs in brief; their mechanism of action, adverse effects, precautions, contraindications and uses are covered. ADR lists the various dosage forms, strength, manufacturers and cost of Indian brands while NDR gives the same for Nepalese brands. For each drug, the cost of different brands of a particular strength and dosage form were noted. The variation in cost was calculated using the following formula:

$$\text{Percentage cost variation} = \frac{\text{Cost of highest-priced brand} - \text{cost of lowest-priced brand}}{\text{cost of lowest-priced brand}} \times 100$$

Some of the dermatological preparations, especially ointments, creams and gels were not available in standard dosage forms. In that case we took a particular amount, usually 10 g of the preparation as a standard and converted the amount of other preparations to the standard.

The number of Indian and Nepalese brands for a particular drug or fixed dose combination was noted. The price variations noted were classified into five groups, 0-25%, 25-50%, 50-75%, 75-100% and more than 100%. If a particular drug had more

than one preparation in different strengths or dosage forms then the price variation for each strength and dosage form was calculated. These were then averaged to calculate the price variation for the particular drug. The top ten brands in terms of price variation were noted.

The drugs were grouped into various therapeutic categories. The categories were antiseborrheics, drugs used in acne, topical antibacterials, antifungals, antivirals, ectoparasiticides, emollients, topical antiseptics, corticosteroids and demelanizing agents. For the therapeutic categories, the price variation of different individual drugs constituting the category was averaged. The number of brands was obtained by adding the number of individual brands. Correlation, if any, between price variation and number of brands was looked into.

For drugs where both Indian and Nepalese brands were available, the average cost of the two groups was noted and the variation in price between the groups was calculated. The variation between various Nepalese and Indian brands were also worked out.

## Results

A total of 397 Indian brands and 37 Nepalese brands were surveyed. A total of 40 single drugs or fixed dose combinations (FDCs) were studied. The number of Indian and Nepalese brands for a few selected drugs is shown in **Table 1**. The FDC of silver sulfadiazine and chlorhexidine gluconate had the maximum number of brands (32). The percentage cost variation of individual drugs grouped into categories according to the amount of variation is

**Table 1** Number of Nepalese and Indian brands for selected topical dermatological drugs

Drug	Number of brands	
	Nepalese	Indian
Ketconazole	2	16
Benzoyl peroxide	0	5
Erythromycin	0	4
Tretinoin	0	4
Silver sulfadiazine + Chlorhexidine gluconate	4	28
Sodium fusidate	0	7
Clotrimazole	1	7
Acyclovir	1	9
Benzyl benzoate	4	1
Gamma benzene hexachloride	4	17
Emollients & demulcents	3	21
Povidone iodine	4	22
Betamethasone	1	6
Betamethasone + gentamicin	1	22
Betamethasone + gentamicin + miconazole	1	15
Fluocinolone	1	3

**Table 2** Percentage price variation of topical dermatological drugs.

Percentage variation	Number of drugs
0-25	3
25-50	8
50-75	4
75-100	6
> 100	19

shown in **Table 2**. Nineteen of the 40 drugs (47.5%) showed more than 100% variation. Twenty-five of the 40 drugs (62.5%) showed more than 75% variation.

**Table 3** shows the top 10 individual drugs in terms of percentage price variation. The FDC of betamethasone, gentamicin and clotrimazole, FDC of betamethasone and gentamicin showed the maximum price variation. **Table 4** shows the therapeutic category, the average percentage price variation and the number of brands. The maximum variation was observed among topical antiseptics, topical antivirals and corticosteroids. There was no correlation

**Table 3** Top ten drugs in terms of price variation.

<i>Drug/drug combination</i>	<i>Percentage price variation</i>	<i>Number of brands</i>
Betamethasone + gentamicin + miconazole	244.7	16
Betamethasone + gentamicin	234.8	23
Povidone iodine + Metronidazole	180	11
Hydroquinone	169.5	8
Fluocinolone + ciprofloxacin	162.9	8
Clotrimazole + gentamicin + beclomethasone	153.9	9
Miconazole	147	8
Silver sulfadiazine + Chlorhexidine gluconate	145.5	32
Clobetasol + gentamicin	141.9	8
Clotrimazole	139.9	24

**Table 4** Percentage price variation according to therapeutic category.

<i>Therapeutic category</i>	<i>Average percentage variation</i>	<i>Number of brands</i>
Topical antiseptics	138.5	57
Topical antivirals	120	10
Corticosteroids	117.2	166
Demelanising agents	110.5	12
Topical ectoparasiticides	105.4	26
Emollients & Demulcents	94	24
Topical antifungals	92.86	61
Anti acne drugs (topical)	75.09	32
Topical antibacterials	74.91	46
Antiseborrheics	61.35	18

between price variation and the number of brands. The percentage price variation between Nepalese and Indian brands, where applicable is shown in **Table 5**. The mean variation for all medicines among Indian brands was 109.3% while it was 63.2 % for Nepalese brands. The Nepalese brands in

**Table 5** Variation between the mean prices of Nepalese and Indian brands for selected drugs.

<i>Drug</i>	<i>Percentage variation*</i>
Ketoconazole	114.57
Silver sulfadiazine	15.71
Clotrimazole	-21
Clotrimazole + beclomethasone	-37.7
Acyclovir	-1.5
Benzyl benzoate	79.7
Gamma benzene hexachloride	-16.45
Povidone iodine	-9.76
Beclomethasone	-7.67
Beclomethasone + gentamicin + clotrimazole	-58.8
Betamethasone	-20.2
Betamethasone + gentamicin	-125.41
Betamethasone + gentamicin + miconazole	-180.13
Fluocinolone	-69.2
Fluocinolone + ciprofloxacin	-65
Mometasone	16.7

\* Negative values indicate that the average price of Nepalese brands was less than Indian ones

general were cheaper than the Indian ones but there were exceptions. Many preparations did not have Nepalese brands while some others had only a single brand available.

We also noted examples of multi-ingredient preparations (containing more than 3 active ingredients). A few examples are a FDC of silver sulfadiazine, chlorhexidine gluconate, aloe and allantoin, FDC of clotrimazole, tannic acid, choline salicylate and cetrimide and FDC of clotrimazole, gentamicin, beclomethasone and iodochlorhydroxyquinolone.

## Discussion

The Indian market has over 100,000 formulations and there is no system of registration of medicines. The drugs are mainly sold under brand names.<sup>8</sup> Many of

these formulations are imported into and are available in Nepal. Many Nepalese companies also manufacture topical dermatological preparations.

A study in the United States found drug prices to be high and that price discrimination occurred across the industry.<sup>4</sup> The market structure of the pharmaceutical industry, asymmetry of information, costs of research and development, government laws and numerous channels of distribution were said to be some of the factors responsible.<sup>4</sup> Many of these factors may also be operational in Nepal. Our study found wide variation in drug prices. Similar variations were observed among cardiovascular drugs in India.<sup>5</sup> Price variation has also been observed in a Nepalese survey.<sup>1</sup> In 1977, a study in 20 pharmacies found that drug prices among pharmacies varied up to 200%.<sup>9</sup>

Many factors could be responsible for the variation. New chemical entities enjoy patent protection. After the expiry of the patent, generic drugs are produced by many companies and the price decreases.<sup>5</sup> Studies have observed variations between the price of the innovator brand, the most sold generic (MSG) and the lowest-priced generic (LPG).<sup>10</sup>

In South Asia, people often get medicines (even prescription medicines) directly from pharmacies without a doctor's prescription.<sup>11,12</sup> A previous study in the Pokhara valley found self-medication and non-doctor prescribing to be common.<sup>13</sup> Patients or buyers lack information about medicine prices and are not knowledgeable about price variation between brands. Also

often pharmacies do not stock all brands of a particular drug. Stocking all brands can be very difficult considering the multiplicity of brands available. So the patients' choice is restricted to the available brands. Doctors also often lack information about medicine prices in many cases and their prescription is often limited to brands available in neighbourhood pharmacies. All this has the effect of decreased competition between drug companies and may lead to heterogeneity in prices.

Pharmaceutical distribution takes place through several independent channels which include government procurement agencies, hospitals, retail buying groups, wholesalers, retail pharmacies etc.<sup>5</sup> The price may change as the quantity purchased changes. Studies have shown that substantial differences in cost exist between the government and retail sector. Investigating this was, however, beyond the scope of the present study. A few companies follow a propaganda type of marketing and provide attractive margins to retailers. The margin provided can be substantial.<sup>1</sup> This may also be a factor behind price variations.

In South Asia, prescribing of medicines is commonly by brand names. Several brand names are similar looking (orthographic) or similar sounding (phonological).<sup>14</sup> This was also observed in the present study. There is a risk of wrong prescribing due to similarities in brand name. Prescribing by generic names may decrease cost. However, doubts about quality and lack of awareness among physicians regarding prices may be factors preventing generic prescribing. An educational program teaching physicians

about drug costs was found to be helpful in reducing patients' drug expenses.<sup>15</sup>

In India and Nepal only a few medicines come under the purview of the price control order. The pharmaceutical policy of India, 2002 calls for further relaxation of production and price controls. Following the policy less than 40 drugs in India will be under price control.<sup>8</sup> A study in Nepal had suggested that the government should control the price of pharmaceutical products.<sup>1</sup> Cost of raw materials, manufacturing, distribution and promotion costs, government regulations, projected life cycle of the drug, targeted return on investment, estimated market share and market size are factors influencing the cost of drug.<sup>16</sup>

In our study, in many cases Nepalese brands were cheaper than their Indian counterparts. However, the number of Nepalese brands was low and many preparations did not have a Nepalese brand. There was marked heterogeneity in the cost of Indian brands. Labour costs may be cheaper in Nepal but the cost of raw materials for medicines, most of which are imported are higher.

Multi-ingredient preparations were available in the market. Problems were noted with some of these. A FDC of two antibacterials was observed. Also some preparations contained a corticosteroid, an antibiotic and an antifungal. Some of the antibacterial preparations containing a particular antibacterial were much more expensive compared to preparations containing a different antibacterial.

Our study had many limitations. We calculated the prices based on ADR, NDR and the hospital pharmacy price list. Drug prices as we have already detailed vary depending on whether it is purchased from a public clinic, a charitable agency or a private pharmacy. This was not investigated in the present study. In some cases we standardized the cost based on a particular amount of preparation. This may have led to an error which was not estimated. In Nepal, the cost of medicines in remote areas may be higher due to transportation and other costs. Investigating this was beyond the scope of the present study.

### **Conclusion**

As suggested, previous information on product quality and prices should be made widely available to both doctors and consumers. This may force firms to compete for the price level, reducing pharmaceutical product pricing to the true market price.<sup>16</sup> Hospital drug and therapeutics committees should consider drug prices during procurement. Nepalese pharmaceutical industry should manufacture more dermatological preparations and 'true' competition between brands should be encouraged.

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