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COMPARITIVE PHARMACOECONOMIC STUDY OF GENERIC AND BRANDED PRESCRIPTIONS

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Abstract

The present study emphasizes the pocket impact of branded and generic medicines in selected pharmacies located in Hyderabad, India. The augmented medication expenditure demands the use of cost-effective pharmacotherapy. Generic medicines, which are bioequivalent to branded medicines, offer significant price advantages. Government initiatives like PMBJP play an important role in encouraging the use of quality generic medicines and private models like Generic Aadhaar were also reviewed to understand their role in promoting generic medicine utilization. An observational cross-sectional study across five retail pharmacies was carried out. Data on name of the drug, strength, dosage form, and retail price were collected from prescriptions and analysed. Percentage price variation ranged from 3% to 72% across major therapeutic categories. More savings were seen in the category of antidiabetics, analgesics and antibiotics which are commonly prescribed drugs. The observations made pose a potential impact on patient's pocket. Increased use of generic medication can improve medication adherence, access to health care ultimately implied by affordability.

Keywords: *Branded drugs, Generic Aadhaar, pharmacotherapy, affordability, observational study.*

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Introduction

The socioeconomic impact of preference of generic over branded medications has made government to support stores that dispense generic medicines in India and globally as well. The general public's access to pharmaceutical items has always been significantly hampered by price. The "medication adherence and health care costs", which leads to non-adherence to therapy [1]. The out of packet expenses were recognised to be the main cause of non-adherence to medication. There is a 23% rise in expenditure on pharmaceuticals in the last two financial years. [2]. Being the third leading producer of pharmaceuticals in the world there is a great shift from branded to generic pharmaceuticals [3]. Among the 17 sustainable development goals set to achieve goal 3 there is a need to rise the expenditure on health 4-5% [4]. In order to achieve this growth, there is a need for affordable medication to the public.

Branded Medicines Vs Generic Medicines

Branded (innovator) drugs are patented medicines developed through extensive R&D and clinical trials, marketed under a proprietary name. They are under a 20-year exclusivity with no permissions to manufacture generics facilitating incentives to innovator limiting early competition. According to FDA "a drug product that is comparable to branded product in dosage form, strength, route of administration, quality and performance, characteristics and intended uses". It refers to a pharmaceutical product that can be used in place of an innovator product and is marketed after the patent or other exclusive rights have expired [5]. The comparison of branded and generic medicines is represented in table 01.

The utilization of branded and generic drugs at the global level depicted in figure 01.

Table 01: Comparison of Branded and Generic Medicines

S.No	Parameters	Branded Medication	Generic Medication
1.	Cost	High cost incurred due to R & D involved.	Less as there is no development cost.
2.	Time required to enter market	It takes long time before entering the market.	It takes long time before entering the market.
3.	Patentright	It is manufactured protected by FDA patent right.	It is only manufactured after the patent right of the brand drug is over.
4.	Packing	Usually invest significantly in attractive and durable packaging.	Usually impleand functionality of the packaging is adequate.
5.	Profit Margin	Less as MRP is fixed by the companies with less trade margin.	High as generic manufacturers offer larger trade margins and discounts to promote sales.

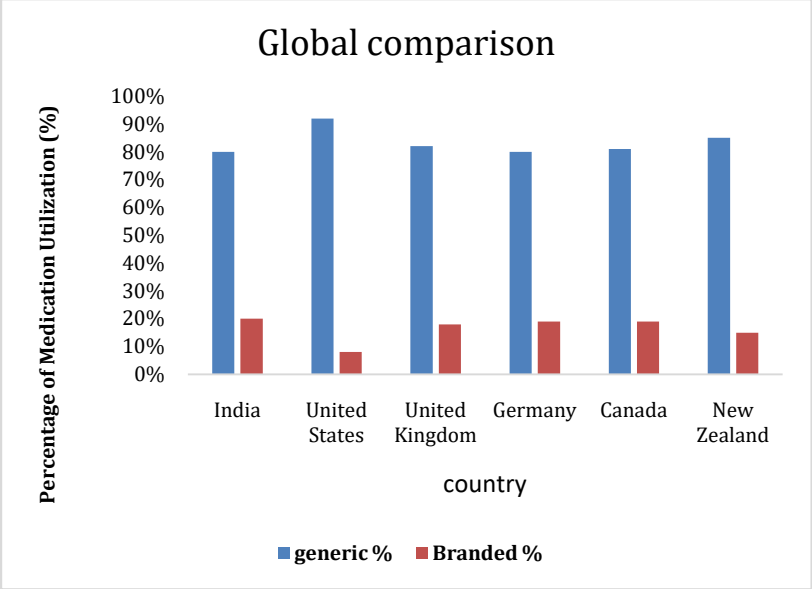

Figure 01: Global utilization of generic and branded medication

In India about 20% of the family's expenditure goes to healthcare (6). About 8% of world's generic medicine requirement is met by Indian manufacturers. Under different schemes like Pradhan Mantri Bharatiya Janaushadhi Pariyojana (PMBJP) around 14000 janaushadhi stores are started in India [7]. The scheme also emphasises on providing employment low-cost medicines to economically backward sections of people. This provides a strong proof and acts as a basement for promoting generic medicines utilization in India. The drawback in the above perspective is lack of knowledge and awareness in people, even though India is standing tall amongst the world's pharmaceutical industries. India is known for manufacture of low-cost medicines and vaccines and exporting globally. The fruits of all this grandeur are usually not being experienced by Indian citizens [8]. Even though there are wide spread establishments of stores supplying generics in India there is no specific data available on the effectiveness and % cost savings people can gain in using them. In the current work the data obtained upon observational cross-sectional study was analysed in selected pharmacy stores in Medchalmalkajgiri district of Telangana, India which could effectively promote use of generic medicines by providing necessary data from a local, observational, cross-sectional study conducted.

Methodology

An observational, cross-sectional study was conducted in five different pharmacy stores located in Medchal malkajgiri district, Hyderabad, Telangana.

Study Design: An observational, cross-sectional study design was chosen as the objective was to analyse existing prescribing patterns and cost differences between generic and branded medicines without any intervention across five different pharmacy stores, making it suitable for pharmacy practice–based on pharmaco-economic evaluation.

Study Area: Five retail pharmacies located in Chintal, Suraram, Bahadurpally, Jagathgiri Gutta, and Bharat Nagar, Hyderabad. The geographical location was given in table 02.

Table 02: Pharmacies considered for the study

S. No	Name of Pharmacy Store	Selection of Area	Location
1.	Sri Sai Ram Medical Store	Chintal	Bhagath Singh Nagar, Chintal, Hyderabad, Telangana. Lat:17.50125^0;Long: 78.44074^0
2.	Hari Hara Medical & General Store	Suraram	Rajiv Gandhi Nagar, Suraram, Hyderabad, Telangana. Lat:17.533636^0; Long: 78.433165^0
3.	Sri Sai Hasmitha Medical& General Store	Bahadurpally	Located in Shivalaya Nagar Colony, Bahadurpally, Hyderabad, Telangana. Lat:17.53894^0; Long: 78.431205^0
4.	SriShiva Sai Medical & General Store	Jagathgiri Gutta	Located in Deenabhandu colony, Jagathgiri Gutta, Hyderabad, Telangana. Lat:17.49750^0; Long:78.42340^0
5.	Krishna Tulasi Medical Store	Bharat Nagar	Located in Hig Colony, Bharat Nagar, Hyderabad, Telangana. Lat: 17.46552^0; Long: 78.42708^0

Data Collection: Prescriptions were collected after informed consent from patients. About 50 prescriptions from each of the pharmacy were analysed for drug name, strength, dosage form, and retail price of branded and generic versions. Each of the data collected were meticulously recorded in Microsoft excel sheet. The data collected from five different pharmacy stores were segregated according to the category as Anti-allergic drugs, antibiotics, antacids, analgesics, antihypertensives, antidiabetics, vitamin supplements, and antihyperlipidemic drugs.

Statistical Analysis: Statistical analysis was carried out using Python. All the data obtained was represented as mean± SD.

The percentage price variation was calculated using the formula:

$$\frac{Branded\ price - Generic\ price}{Branded\ price}\ X\ 100$$

Results

There is a clear difference that is observed for cost savings of generic medication compared to branded medication which is in accordance with earlier studies (9). Among different categories of drugs analysed 50% cost savings was observed among Anti-hyperlipidaemic drugs in which Tonact 10mg showed 50% cost savings whereas Preva Gold 20mg CAP, showed 14.9±3.77% savings.

In the Anti-Allergic drug category, the highest savings of cost upto 79±4.21% was seen with DAZIT 5mg TAB. Commonly used in the management of allergic conditions. The lowest percentage variation was observed with Montex FX 10mg TAB, showing 4±0.2% cost effectiveness. It is commonly used for the treatment of seasonal allergies.

Among anti-diabetic drugs, the highest cost savings of 74.3±3.42% was observed with Gluconorm G2. It is commonly used for type 2 diabetes Mellitus to improve glycaemic control. The lowest percentage variation was observed with Gluconorm-GS Forte TAB, showing 3±0.05% price variation, also used for Type 2 Diabetes Mellitus as shown in figure 02.

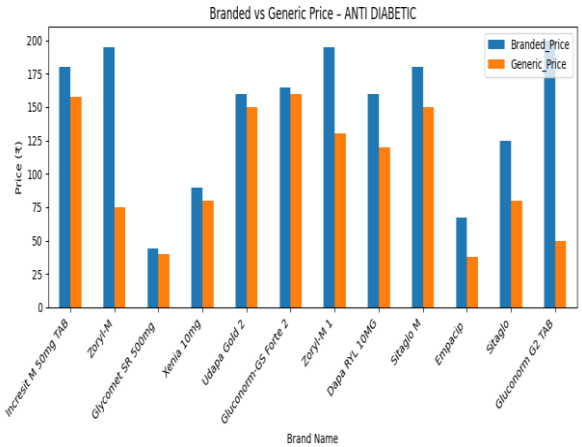

Figure 02: Comparison between branded and generic price of Anti-diabetic

Among Antibiotic drugs, the highest price variation was observed with Noxafil 100mg TAB, showing approximately 71.1±5.33% variation as shown in figure 3. It is commonly used for the treatment of bacterial infections. The lowest percentage variation was observed with Macdox LB CAP, showing 10±0.42% price variation. In the category of analgesics and antipyretics, the highest cost savings of up to 78.6±1.55% as depicted in figure 4. The least cost savings were observed with Fepanil 650 TAB, showing 33.3±1.91 % price reduction. It is commonly used to treat mild pain reliever and helping to reduce discomfort.

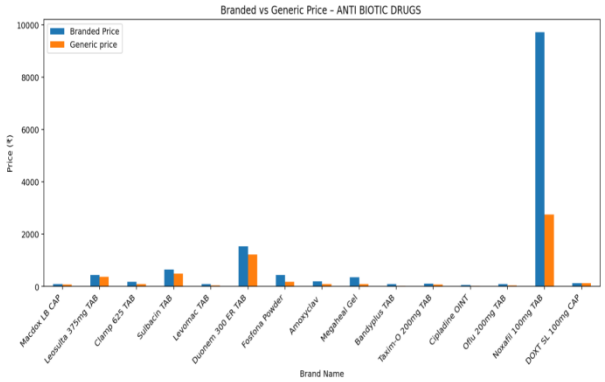

Figure 03: Comparison between branded and generic price of Antibiotic

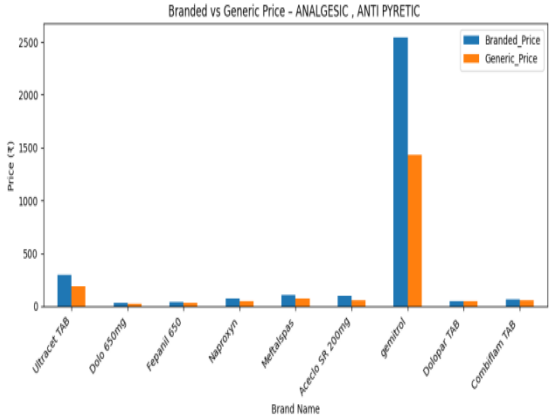

Figure 04: Comparison of branded and generic price of analgesics and antipyretics

In Anti-hypertension, CHF and diuretic drugs, the highest reduction of burden on people was observed with Carvistar 3.125 TAB, showing approximately 68±3.32% variation. It is commonly used to treat hypertension, CHF. The least savings of 20±0.07% was observed with Betafix Plus TAB.

Considering the wide utilization of vitamin supplements as over the counter drugs to treat and prevent vitamin and mineral deficiencies, the highest price variation of this category was observed with MVT TAB, showing approximately 66.7±3.4% cost savings. The least economic impact of expenses on these supplements was observed in the case of Zincovit Syrup, showing 5.7±0.11% price reduction, as depicted in figure 5.

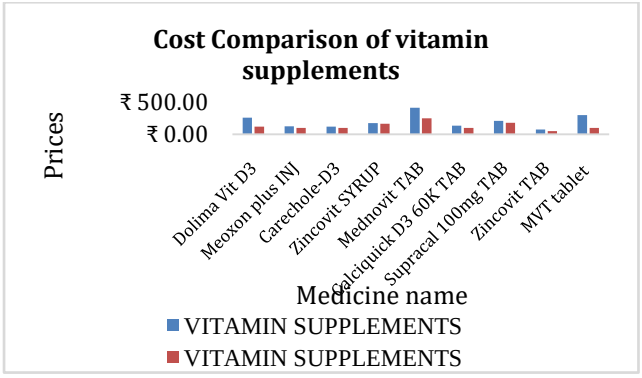

Figure: 5 Comparison of branded and generic prices of Vitamin supplements

Upon analysis of different category drugs in all the stores under study more of the variation was seen in the categories of antidiabetics (74.3±3.42), analgesics and antipyretics (78.6±1.55), antibiotics (71.1±5.33).the category wise cost savings (%) was shown in figure 06.

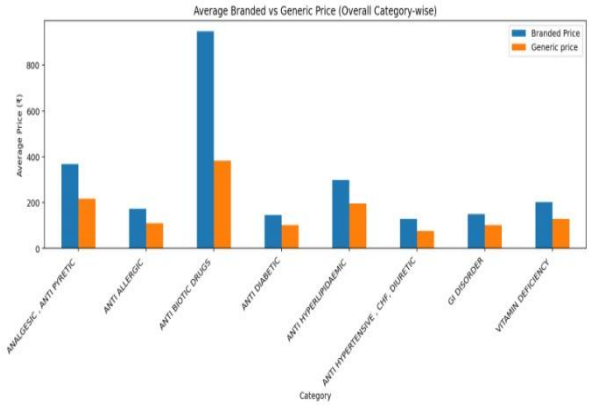

Figure 6: Category wise cost savings (%)

Figure 7 shows the cost savings (%) the patients could achieve by choosing generic drugs over branded drugs. The pharmacy store 3 has been observed to offer highest % of savings of up to 38 % to the patients. The store 4 was found to be 10% more pocket friendly which is the least among the stores under study.

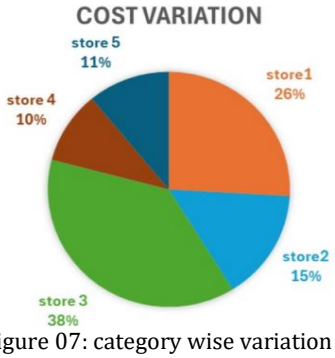

Figure 07: category wise variation

Discussion

An observational, cross-sectional design used in the study was appropriate to evaluate real-time prescription patterns and cost differences in the selected pharmacy stores of study in Hyderabad. Of all the prescriptions analysed there is more than 50% cost savings of generic drugs compared to branded medication. The prescription analysis showed that less than 50% of prescriptions are prescribed with generic drugs [9].

The present study focussed mainly on the economic impact from five different pharmacies and further studies can be carried out by involving larger sample sizes which may provide more comprehensive insights.

The present study evaluated category-wise cost differences between generic and branded medicines across five different pharmacy stores. The branded prescriptions consistently associated with greater average cost compared to generics. There is a continued dominance of branded prescribing despite the availability of cost-effective generic medicines.

The observed cost differences are consistent with previous studies, which have reported substantial variation in prices between branded and generic formulations of the same drug [10]. The cost differences can significantly impact treatment affordability and adherence [4]. Category-wise analysis in the present study revealed particularly high-cost differences in certain the classes of antiallergics, antihypertensives, antihyperlipidaemics, antibiotics, antidiabetics, vitamin supplements, analgesics and antipyretics. Area-wise comparison showed variation in average prescription costs between the two study locations. This may reflect differences in socioeconomic status, prescriber habits, pharmacy stocking practices, or patient awareness regarding generic substitution [11]. The geographic differences emphasize the importance of localized data. Promoting generic prescribing and pharmacist-led substitution can substantially reduce patient expenditure without compromising therapeutic efficacy (12). Government initiatives aimed at increasing availability of affordable generic medicines may further strengthen cost-effective prescribing practices [13]. Thus, the present study emphasizes the establishment of more generics.

Conclusion

Encouraging generic prescribing and pharmacist-led substitution can significantly reduce patient cost burden and improve access to affordable medicines. There is a need to widen the awareness on different schemes promoting establishment of generic stores.

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Conflict of Interest

The authors declare no conflict of interest

Funding

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Informed Consent

Yes

Ethical Statement

No animal studies are included

Author Contribution

- Durgeswari Matcha – data collection, carried out data analysis using Python. V Sridevi Vakkanti-manuscript preparation and editing, communication. Meghana Thummuru- data collection, manuscript preparation
- Shere Pavan-data collection, Bhanu Prakash Pullamoni-data collection, Vamshi Krishna Valluri-data collection. Mallik Arunabha-permissions granted as head of the organization to carry out the work

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