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GENERIC PRESCRIPTION IN INDIA - A REVIEW

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ABSTRACT

In India, a Generic drug plays a major role where most of the people afford and depend on it, due to the budget-friendly and easily available widely. However, some of the pharmaceutical manufacturer's license was terminated due to the unsold or banned products of branded drugs, which are manufactured in USFDA as small plants, were manufactured in India without the approval. There were many misconceptions with the manufacturers, for following the right strategy to bring generic medications, clearing data integrity issues, sales, and marketing aspects of drugs for the successful outcome. India has also been subject to increasing inspections by global regulatory bodies in recent times. There has been an increase in enforcement actions taken by regulatory bodies for cases related to data integrity. From this review, it concluded that what are the current trends involved in the generic drugs and their category based on the license, impact, and issues involved and also provides the recommendations to be followed to prevent further issues in the future.

Keywords: Generic drugs, Current issues, Legal hurdles, Impact, Potential changes, Recommendations.

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INTRODUCTION

On April 17, 2017, while introducing a philanthropy clinic in Surat, Prime Minister declared that the administration proposed to move a law to guarantee that specialists recommend prescriptions by their generic names as it were. The proposition has produced a warm discussion in the media and the pharma business [1]. It is an incongruity that despite being the fourth-biggest maker of pharmaceuticals and taking into account the necessities of 20% of the worldwide prerequisites for conventional prescriptions, India is as yet unfit to guarantee access to numerous cutting edge drugs to a huge segment of its population [2]. Despite this circumstance in India, Prime Minister's empowering words on this issue have allegedly pulled in the fierceness of some segment of the pharma business, which, by chance, he knows about it, as obvious from his discourse. This is not the first time that the government is trying to ban the use of brand names [3]. Last time the government had attempted something like this was under the Janata Party government in 1978. Then, the idea was shelved after the pharma industry challenged the order in court. It is the nexus between the branded generic makers and doctors that the new government wants to break, to bring down the prices for drugs. The Prime Minister's worry is deeply certified [4]. If any specialist recommends a costly marked nonexclusive medication, the concerned patient ought to have the lawful alternative accessible to approach the retailer for its substitution with a more affordable conventional or even whatever other marked generic proportionate, which should work similarly just as the endorsed marked nonexclusive. The Union Health Ministry plans to make prescription of generic medicines mandatory by amending the drug and cosmetic rules [5]. The plan to amend the drugs and cosmetics rules to make generic drugs affordable was announced by Finance Minister Arun Jaitley in the budget. The official said: "Doctors will have to prescribe only generic medicines. They will not be allowed to specify brands [6]." For instance, rather than prescribing Crocin, the doctor will be obligated to mention paracetamol, the official explained. This will be ensured by the Medical Council of India by way of notification to all doctors [7]. Typically, doctors prescribe branded products to their patients and there is a view within the government that the cost of healthcare could be reduced by promoting generic medicines. Generics are drugs on which licenses have terminated. They are sold either as marketed items or as misbranded items under their nonexclusive names. These nonexclusive names universally have short names called

International Non-Proprietary names. For instance, paracetamol is the name for an agony easing and fever decreasing prescription and crocin is one brand name of paracetamol [8].

DISCUSSIONS OF THE INDIAN PHARMACEUTICAL MARKET

In 2008, the administration propelled a chain of drug stores called Jan Aushadhi to supply modest conventional prescriptions. Over the most recent 9 years, just a couple of such stores have been operational and they regularly have had stock-outs and different issues. India has seven lakh retail drug store shops and still, numerous country regions are underserved. There are <10,000 Jan Aushadhi [9]. An individual looking for these meds in a city would almost certainly need to go to one of these couples of Jan Aushadhi stores, arranging thick traffic in an urban area or travel from a town to another town, all to spare a couple of rupees. Purchasing medications for a constant condition such as diabetes or hypertension make more sense in India [10].

WHAT IS THE VALUE DISTINCTION?

It is commonly evident that conventional name items are more affordable than their image counterparts. Huge organizations additionally make conventional name items at extremely focused costs. The residential pharmaceutical plans market is about Rs. 1 lakh crore. The market for nonexclusive name prescriptions is worth about Rs. 10,000 crore [11]. Drugs on the national list of essential medicines (NLEM) 2015 that are undervalued control to establish fewer than 12% of all market of one lakh crore. Another 4% of the market are helpful medicines that have been put under value control by the legislature under Para 19 of the Drug Price Control Order 2013 [12].

In any event, 90% of the residential Indian pharmaceutical market, consequently, comprises the closeout of marked items. On the off chance that the legislature institutes a standard that specialists must endorse just conventional names, a patient will still wind up purchasing a noticeable medication because as effectively called attention to nonexclusive drugs have low edges and in this manner probably not going to be loaded by the retail drug specialist [13]. This along these lines does not guarantee that the expense of his medicine will go down by conventional name remedies. A generic drug list available in India for samples with their indication is represented in Table 1.

FIXED-DOSE COMBINATIONS (FDC)

The market for fixed portion mixes is about 45% of the complete market and worth about Rs. 45,000 crores. To endorse these drugs under conventional names, a specialist should compose unambiguously the nonexclusive constituents of the fixed portion blend in each remedy [15]. For instance, a specialist composing a remedy for corex should compose chlorpheniramine maleate and codeine phosphate, or amoxicillin in addition to clavulanic corrosive rather than Augmentin. These are less complex prescriptions. Many fixed portion mixes as multivitamin items have somewhere in the range of 3–10 fixings. So for any event, 45% of the market, the transition to get endorsing specialists to compose solutions in conventional names will be a non-starter [16].

INTERNATIONAL EXAMPLES

To outline the point with a couple of models, recommending in the conventional name or at the end of the day "Motel – International Non-proprietary name is allowed in 66% of Organisation for Economic Cooperation and Development (OECD) countries like the United States and it is compulsory in a few different countries, for example, France, Spain, Portugal, and Estonia [17]. Thus, drug specialists can lawfully substitute brand name drugs with conventional counterparts in most OECD nations, while such substitution has been required in nations, for example, Denmark, Finland, Spain, Sweden, and Italy. Further, in a few unique nations, drug specialists have additionally the commitment to advise patients about the accessibility regarding a less expensive option [18].

HAPPENINGS CONCERNING INDIA

For this to be a success, the first thing government has to see is that the companies that will manufacture generic-generic drugs are aligned to global manufacturing practices [19]. The quality will be a big issue and doctors may not have confidence in prescribing a generic-generic drug and may not take responsibility for the patient's care. At present, India has three kinds of categories, which has shown in Fig. 1.

CHALLENGE INVOLVED

The biggest challenge is we will be moving from the doctor's control to the hands of retailers (e-commerce), which will be a big risk. The risk of this shift in control to retailers would mean that they would push only those products that give higher margins and not quality products necessarily and this could over a longer period reduce prices [21]. The drugs will be sold as commodities that this will commoditize the entire pharma industry, which would be unfair. The cost of manufacturing

Table 1: Few generic drugs cost price in India [14]

Generic drug name	Indication	Cost
Cefixime	Bacterial infection	Rs. 225/10 tablets
Ofloxacin	Diarrhea	Rs. 92/10 tablets
Fluconazole	Fungal infection	Rs. 99/10 tablets
Paracetamol	Fever	Rs. 9.80/10 tablets

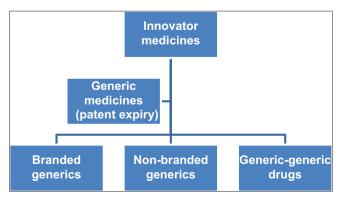


Fig. 1: Generic drug categories [20]

a branded-generic and generic-generic drug may be the same for the manufacturer unless it is manufactured in a USFDA approved plant compared to maybe a plant that has been locally approved. Shifting the business from branded-generic to generic-generic will take a long time to happen [22].

Indian regulatory framework does not provide unrestricted opportunities for all pharmaceutical companies as the quality system, infrastructure, and the requirements to make sure that every generic drug is of the same quality and has passed the same quality system is not there yet in India [23]. The intent is understandable and worthy. However, implementation is going to be very challenging because we are not ready yet. Unfortunately, the problem in our country is that we do not have the same standards being implemented in all the states. But what, of course, cannot be comparable is the fact that in most countries who have this approach also have large procurement which is covered under a large national insurance kind of a scheme, which India does not have [24]. Government generic pushes will utilize Rs. 90,000 crore branded pharmaceutical market. Pharmaceutical organizations may take a long start, the charming scientists as the new government intends to make it compulsory for specialists to endorse unadulterated nonexclusive medications, rather than marked generics as they do now [25].

India, as a large portion of other developing markets, is overwhelmingly a marked nonexclusive play with a 90% share in the Rs. 1 lakh crore advertisements, which implies that medication creators auction these patent medications through their associations with specialists. In created nations, for example, the US, just protected medications are sold under a brand, which is promoted through their connections to specialists [26]. Off patent, medications are sold uniquely as unadulterated nonexclusive, without utilizing any brand name. It helps in making unadulterated generics less expensive. This is not the main move; the legislature has brought to cut down the costs of pharmaceutical items. It has likewise realized 200 medication details, including those for treating disease, under the NLEM, taking the number of such medications to 716, with this, the Government had the option to cut down the cost of cancer tranquilizes by 85% [27].

PRESCRIBING GENERIC MEDICINES MAY COMMODITISE ENTIRE PHARMA INDUSTRY: EXPERTS

The push to get specialists to endorse conventional names is one of the numerous means the legislature has been taking to decrease therapeutic expenses in India. The key ones have been an extension of the NLEM, bringing them under cost top, push by the administration to build attention to conventional medication costs and increment access through the Jan Aushadhi program [28]. A move to a conventional nonexclusive model from the marked conventional model as of now in India requires certainty among specialists, drug specialists, and patients on the nature of medications accessible in the market. This affirmation, however, is altogether ailing in India [29]. There have been rehashed instances of medications bombing quality tests or patients not reacting to treatment because of the nature of medications. The key focal point of the administration then should be toward fortifying and engaging the controller. It additionally needs to institutionalize the medication endorsement process [30].

While the push to a nonexclusive remedy is a positive advance for the purchaser, without quality affirmation and mindfulness, we accept noticeable generics will even now hold the dominant part share. Remedies by conventional names will simply move the brand determination capacity to a drug specialist, a negative [31]. The focal point of organizations, in the present condition, will at that point move to drug specialists for promoting their medications. At the drug store level, conventional nonexclusive medications have a lot higher edges than marked medications, yet the lower retail cost and absence of value confirmation will keep marked medications the preferential pick for drug specialists to assign [32].

THE LEGAL HURDLE

Substitution of the arrangement would be unlawful in India in perspective on section 65(11) C in Drugs and Cosmetics Rules 1945 which states as "At the hour of distributing, no individual controlling a cure containing substance decided in 21 (Schedule X or H) may supply whatever different preparation on account of containing a comparable substance" [33]. To address this legal issue, the Ministry of Health purportedly had displayed a recommendation to the Drug Technical Advisory Board (DTAB) to the Drug Controller General of India, for an idea. In the recommendation, the Health Ministry suggested a revision of Rule 65 of the Drugs and Cosmetics Rules, 1945 to engage the retail logical specialists substituting a stamped medicine plan with its more affordable equivalent, containing a comparable nonexclusive fixing, in a comparable quality and the estimation structure, with or without a brand name [34]. Regardless, in the 71st social occasion of the DTAB held on May 13, 2016, its people purportedly turned down that recommendation of the administration. DTAB felt that given the structure of the Indian retail pharmaceutical market, the sensible impact of this proposition may be limited [35].

VOICE OF THE MEDICAL AND PHARMACEUTICAL FRATERNITY

The following are some of the voices/opinions of the medical and pharmaceutical fraternity enlisting the pros and cons of the generic prescription initiative by the Indian Government:

- This is a good-natured, however, unrealistic proposition the current
 medication advertise in the nation makes it difficult to actualize,
 said Chandra Gulhati, a senior pharmacologist and supervisor of the
 Monthly Index of Medical Specialties, India. "Practically all drugs sold
 in India have brand names, incorporating nonexclusive medicines
 with brands [36]"
- Chandra Gulhati a senior Pharmacologist and others bring up that around 40% of the evaluated 60,000 medication plans sold in India are fixed portion blends, or FDCs, of various pharmacological fixings which are just sold through brand names
- Numerous FDCs contain four to upwards of 40 fixings, can specialists compose a remedy with such a significant number of fixings alongside their amounts? [37]
- Experts state the Prime Minister's promise, while good-natured will be difficult to actualize and refer to the disappointment of the Medical Council of India, the office that controls specialists, to authorize its proposal looking for remedies with nonexclusive names made in 2002 and again in 2016
- The medicines with conventional names just could bargain tolerant security because the decision of the medication to be given over to patients would move from the specialist to the retail scientist [38]
- A representative with the Organization of Pharmaceutical Producers
 of India (OPPI) said the specialist quiet relationship included "trust
 and confidence" and was in this manner not the same as the retailer
 persistent relationship which was "just value-based" and likely
 determined by impulses of edges retailers make
- "It winds up clear that any such move (to make nonexclusive names just compulsory) will bargain persistent security" T.K. Kanchana, executive general of the OPPI, said in an announcement sent to the paper [39]
- "Indian patients may confront quality issues without value advantage as an extreme challenge among advertisers will prompt boosting a physicist," says D G Shah, secretary-general of the Indian Pharmaceutical Alliance
- Sujay Shetty, the accomplice at consultancy firm PWC, said such an
 arrangement would be extremely hard to actualize. "With such a
 significant number of conventional medication creators, how can
 one make a differentiation dependent on quality?"
- On the government's push for nonexclusive medications, Kiran Mazumdar Shaw, CMD of Biocon stated, "Usage will be testing since we are not prepared at this point" [40].

IMPACT ON THE PHARMACEUTICAL INDUSTRY

The March 2017 report of – India Brand Equity Foundation states that Indian pharmaceutical area represents about 2.4% of the worldwide

pharmaceutical industry is worth terms, 10% in volume terms and is relied upon to extend at a compound annual growth rate of 15.92% to the US \$ 55 billion by 2020 from the US \$ 20 billion out of 2015 [41]. With 70% piece of the pie (as far as worth), nonexclusive medications comprise its biggest section. Over the counter medicines and licensed medications comprise the parity 21% and 9%, separately. Marked generics comprise around 90% of the conventional market [42].

If the above choice of the Prime Minister is executed, we are probably going to observe distinguishable changes in the market elements and individual organization's exhibition viewpoint is as per the following:

- No long term and the large unfavorable market effect is conceived, as the costs of 700 basic drugs have just been topped by the National Pharmaceutical Pricing Authority. In any case, some momentary market changes are conceivable, as a result of a few different components [43]
- There could be a noteworthy effect on the (brand) pieces of the overall
 industry of different organizations. Some will have a more prominent
 introduction and some lesser, contingent upon their present deals
 and showcasing models and business standpoint
- The deals and promoting the consumption of the marked nonexclusive players could come down essentially, improving the primary concern [44]
- A critical decrease in the number of field powers is likewise conceivable, as the business advancement spotlight gets more keen on the retailers
- The nonexclusive medication makers should rapidly adjust to "low edge – high volume" plans of action, utilizing economies of scale [45].

POTENTIAL CHANGES IN SALES AND MARKETING STRATEGIES

If it truly occurs, the key promoting center should move from fundamentally item brand advertising and partner's commitment for the equivalent to escalated corporate brand showcasing with progressively serious partner commitment techniques, for a better top of mind review as a patient agreeable and minding company [46]. Thus, the business advancement methodology for marked generics would potentially move from principally the specialists to likewise the top retailers. It would not be probably going to realize that the significant retailers are taking an interest in the pharmaceutical organization supported "Proceeding with pharmacy education incomparable or considerably more extraordinary spots than the specialist [47]."

RECOMMENDATIONS

To have better access to medicines, we need at the base by accompanying:

- All details, portrayal, and measurements of an augmented rundown of basic and life sparing medications to be put under value control
- The strategy for fixing value control in Drug Price Control Orders 2013 must be changed to a cost-based maximum price tag assurance. The present basic normal equation legitimizes high edges of up to 100% over the expense of the item. Along these lines, techniques for value control likewise need considerably more regulation [48]
- Laws for empowering the substitution of nonexclusive and marked counterparts by drug specialists should be presented
- A free prescription and diagnostics conspire in all states on the lines of such projects in Tamil Nadu and Rajasthan
- A completely working general well-being framework with free human services for all like in the United Kingdom, Canada, and Scandinavian nations [49]
- No brands for medications that are out of patent similar to the training in all around managed nations
- Briefer formally endorsed exchange names for all balanced fixed-portion blends with the goal that specialists do not need to distressingly work out the conventional names of their various constituents
- Creative utilization of government utilizes mandatory permit arrangements in the patents act to guarantee rivalry in excessive protected medications and along these lines make them less expensive [50].

DISCUSSION

Manufacturing generic drugs are not so easy since it requires a lot of agreements, patent laws and no objection certificates from the innovators, regulatory bodies, and authority members. It should also free from certain legal issues and should overcome the upcoming issues from certain individuals. The formulators were facing many challenges to develop a generic drug right from the raw materials used and till it reaches the customers from the market, including fixing the price for the drug. The current status of generics and the need of potential changes, strategies, and key recommendations were discussed which helps to overcome the legal issues.

CONCLUSION

The drug controller of the nation guarantees and has additionally over and over insisted that there is no distinction in viability, well-being. and quality profile between any endorsed marked conventional and its nonexclusive reciprocals. Furthermore, by executing a viable track and follow a framework for all medications, such hesitation on misleading conventional medicines, both with or without brand names, can be all the more successfully intended, if not wiped out. By chance, revealed rates of USFDA import bans on medication quality parameters and rupture of information honesty incorporate numerous enormous Indian marked conventional makers. This issue has spoiled the pharmaceutical industry in India and has forced companies to rethink their methods of ensuring quality and compliance and sustaining business. Further, the costly marking activity of fundamental medications, only for a business increase and antagonistically affecting patients entrance to these medications, have now been addressed with no justifications, none else than the Prime Minister of India. The conventional medication makers should rapidly adjust to "low edge to high volume" plans of action, utilizing economies of scale and tolerating the unmistakable reality was communicated in an article distributed in Forbes as "the period of ware me medicines draw near." Indeed, even something else, what is going on in the term ware, either particularly when nonexclusive drugs have been authoritatively and legitimately named basic products in India. In general, the reasonable sign from Prime Minister that "Remedies in conventional names be made an absolute necessity in India," all around by proper lawful and administrative systems, while making ready for another area of universal health care in India.

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CONFLICTS OF INTEREST

The author declares that there are no conflicts of interest.

REFERENCES

- Arafat M, Ahmed Z, Arafat O. Comparison between generic drugs and brand name drugs from bioequivalence and thermoequivalence prospective. Int J Pharm Pharm Sci 2017;9:1-4.
- Medina JR, Cortes M, Romo E. Comparison of the USP apparatus 2 and 4 for testing the *in vitro* release performance of ibuprofen generic suspensions. Int J Appl Pharm 2017;9:90-5.
- Kamath A. Prescribing generic drugs using a generic name: Are we teaching it right? Indian J Med Ethics 2016;1:194.
- Janodia M. Differences in price of medicines available from pharmaceutical companies and "Jan Aushadhi" stores. Value Health 2015;18:A850.
- National Pharmaceuticals Pricing Authority. Available from: http:// www.nppaindia.nic.in/wp-content/uploads/2019/03/Notification-25.02.2019-Final.pdf.
- Joshi SS, Shetty YC, Karande S. Generic drugs-the Indian scenario. J Postgrad Med 2019;65:67-9.

- World Health Organization. International Nonproprietary Names. Available from: http://www.who.int/medicines/services/inn/en.
- Swain S, Dey A, Patra CN, Bhanoji Rao ME. Pharma regulations for generic drug products in India and US: Case studies and future prospectives. Pharm Regul Aff 2014;3:1-6.
- Rana P, Roy V. Generic medicines: Issues and relevance for global health. Fundam Clin Pharmacol 2015;29:529-42.
- Money Control. Prescribing Generics. Available from: http://www.moneycontrol.com/news/business/companies/prescribing-generic.
- Food Drug Administration. Generic Drug Facts. Available from: https://www.fda.gov/Drugs/ResourcesForYou/Consumers/ BuyingUsingMedicineSafely/GenericDrugs/ucm16799.
- 12. Central Drugs Standard Control Organisation. Revised Checklist for BA/BE NOC. Available from: http://www.cdsco.nic.in/writereaddata/BABE%20website%202014%20revised%20document%20required.pdf.
- Marzo A, Porro E, Barassi A. Generic drugs: Myths, facts, and limitations. Ital J Med 2012:6:146-52.
- 14. The Telegraph. Generic Prescription Hurdles. Available from: https://www.telegraphindia.com/1170420/jsp/nation/story_147325.jsp.
- Gupta YK, Ramachandran SS. Fixed dose drug combinations: Issues and challenges in India. Indian J Pharmacol 2016;48:347-9.
- Raghavan P. ET Bureau, Delhi High Court Refuses to Vacate Stay on Drug Ban; 2016. Available from: https://www.economictimes. indiatimes.com/news/politics-and-nation/delhi-high-court-refuses-to-vacate-stay-on-drug-ban/articleshow/51608253.cms?from=mdr.
- 17. Singh SK. Bureau of Pharma PSUs of India (BPPI), (Under Department of Pharmaceuticals, Government of India). Message from CEO; 2018. Available from: http://www.janaushadhi.gov.in/mesgceo.aspx.
- Pharmaceuticals-Indian Brand Equity Foundation. Available from: https://www.ibef.org/download/Pharmaceutical-March-2017.pdf.
- Andrade C. Bioequivalence of generic drugs: A simple explanation for a US food and drug administration requirement. J Clin Psychiatry 2015;76:e742-4.
- Godman B, Shrank W, Andersen M, Berg C, Bishop I, Burkhardt T, et al. Policies to enhance prescribing efficiency in Europe: Findings and future implications. Front Pharmacol 2011;1:141.
- Approved Drug Products with Therapeutic Equivalence Evaluations (Orange Book). Available from: https://www.fda.gov/drugs/informationondrugs/ucm129662.html.
- The Telegraph Online Edition. 73 Percent Cut at Fair Price Medicine Shop; 2015. Available from: https://www.telegraphindia.com/states/ westbengal/73-per-cent-cut-at-fair-price-medicine-shop/cid/1468788.
- 23. Biowaivers: Criteria and Requirements-MOPH; 2015. Available from: https://www.moph.gov.lb/DynamicPages/download_file/538.
- Guidance for Industry Dissolution Testing of Immediate Release Solid Oral Dosage Forms. Available from: https://www.fda.gov/downloads/ drugs/guidances/ucm070237.pdf.
- Revised Checklist for BA/BE NOC Effective; 2014. Available from: http://www.cdsco.nic.in/writereaddata/BABE%20website%20 2014%20revised%20document%20required.pdf.
- Wouters OJ, Kanavos PG, McKEE M. Comparing generic drug markets in Europe and the United States: Prices, volumes, and spending. Milbank Q 2017;95:554-601.
- Gota V, Patial P. Toward better quality of anticancer generics in India. Indian J Cancer 2014;51:366-8.
- Generic Drug Facts; 2018. Available from: https://www.fda.gov/ Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/ GenericDrugs/ucm16799.
- Srinivas I. The myth of branded generics. Econ Polit Wkly 2014;49: 30.
 Davis JS, Barrett T, Harris L. Knowledge of proprietary and generic drug names among hospital prescribers: Time to mandate generic prescribing? Intern Med J 2017;47:959-62.
- Thapar K. Generic Drugs Truth; 2019. Available from: https://www. hindustantimes.com/columns/the-scary-truth-behind-generic-drugs-inindia/story-OfuB4IJAwWhBNkvg6pz3sN.html.
- 32. Mishra R, Sathyaseelan B. Generic drug distribution in India-issues and challenges. J Pharm Care Health Syst 2019;6:1-4.
- 33. Rohit RS, Nilesh BL, Ravikiran BK, Pallavi MC, Pramod VK, *et al.* The Indian pharmaceutical industry; evolution of regulatory system and present scenario. Int Res J Pharm 2012;5:49-55.
- 34. Dubey N, Sharma RK, Gupta H, Dubey N, Dubey N, *et al.* Performance of the Indian pharmaceutical industry pre and post TRIPS era: A study. Asian J Pharm Life Sci 2011;1:187-94.
- Gani MO. Distribution system of pharmaceuticals products: A study on square pharmaceuticals. D U J Mark 2016;16:31-40.
- 36. Narayana SA, Pati RK, Vrat P. Research on management issues in the

- pharmaceutical industry: A literature review. Int J Pharm Healthc Mark 2012;6:351-75.
- Mühlebach S. Regulatory challenges of nanomedicines and their follow-on versions: A generic or similar approach? Adv Drug Deliv Rev 2018;131:122-31.
- 38. Pareek M, Prakash M. Providing Generic Medicines to the Poor in India: An Overall Assessment of Government-Run Generic Medicine Scheme Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) with Reference to the Experience of Store Owners in the City of Jaipur; 2019. Available from: https://www.ssrn.com/abstract=3382656.
- 39. Asher MG. Social Protection Initiatives in India. Singapore: Lee Kuan Yew School of Public Policy Research; 2014. p. 17-2.
- Dixit A, Kumar N, Kumar S. Use of generic medicines. J Health 2018;
- Bell RG, DeStefano A, Jeiven M, Kak N, Kancijanic S, Kaul A, et al. Improving the Quality of Generic Drugs. United States: University Research Company; 2015.
- Mckinsey. India Pharma 2020 Propelling Access and Acceptance, Realising True Potential; 2018. Available from: https://www. pharmaphorum.com/articles/a_history_of_the_pharmaceutical_industry/procurementofdrugs.
- 43. Evens RP, Kaitin KI. The biotechnology innovation machine: A source

- of intelligent biopharmaceuticals for the pharma industry-mapping biotechnology's success. Clin Pharmacol Ther 2014;95:528-32.
- 44. Iyer R. Making the Case for Indian Generic Drug Manufacturing; 2019. Available from: https://www.pharmamanufacturing.com/articles/2019/making-the-case-for-Indian-generic-manufacturing.
- 45. Gangadhar BN. The brand of generic prescriptions. Indian J Med Ethics 2018;3:84-5.
- Srivastava P, Roy S, Emamezi SE. Comparative analysis of generic drugs over proprietary counterparts in Indian market. J Clin Epigenet 2017;3:40.
- Ahire K, Shukla M, Gattani M, Singh V, Singh M. A survey based study in current scenario of generic and branded medicines. Int J Pharm Pharm Sci 2013:5:705-11.
- 48. Rathe J, Larsen P, Andersen M, Paulsen M, Jarbøl D, Thomsen J, et al. Associations between generic substitution and patients' attitudes, beliefs and experiences. Eur J Clin Pharmacol 2013;69:1827-36.
- Bindu Shajan Perappadan. No Country for Generic Medicines; 2019.
 Available from: https://www.thehindu.com/news/cities/Delhi/no-country-for-generics/article26977692.ece.
- Handoo S, Arora V, Khera D. A comprehensive study on regulatory requirements for development and filing of generic drugs globally. Int J Pharm Investig 2012;2:99-105.