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RESEARCH ARTICLE

STUDY OF PRICE VARIATIONS BETWEEN GENERIC MEDICINES AND PRINCEPS IN SENEGAL

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ABSTRACT

Introduction: Generic drugs constitute a major tool for regulating drug expenses insofar as they allow each patient to benefit from best suited therapeutic strategy to their pathology, under same safety conditions, but at a significantly lower cost. The purpose of our work was to study price variations between generic and princeps in Senegal. **Methodology:** Based on Laborex Software, we first made a reasoned choice of seventy-five (75) generic drugs. After calculating the difference between the public price of each generic drug and that of its original drug, we proceeded to generics classification according to price difference. **Results and discussion:** An increase in price variations has been noted between generics, but also between generics and princeps. A low availability of generics in INN, and generics intended for chronic diseases and pediatric management. **Conclusion:** These inadequacies both in generic price variation, as well as generics availability used in management of diabetes and hypertension, raised the problem of generic medicines policy in Senegal.

INTRODUCTION

Generic drugs represent a major tool for regulating drug expenses insofar as they provide for patients same therapeutic benefit as their reference drugs, under same safety conditions, but at a significantly lower cost. In Africa, generics present themselves as a reliable and economical alternative in the eyes of populations, constitute a significant source of savings for health systems, and appear as a first choice remedy in the event of morbid episodes. In Senegal, the availability and financial accessibility of generic medicines is a major challenge to be addressed by the Ministry of Health and Social Action (1). In an increasingly constrained budgetary context, initiatives aimed at promoting generic drugs have been put in place by public authorities, with the aim of allowing each patient to benefit from the most effective therapeutic strategy. adapted to its pathology, at the fairest price for the community (2). In fact, generic drug is a very close copy of the princeps, which lower price does not take into account research and development costs. In such a context, it is up to the public sector, at the national level, to regulate the prices of generic medicines to make them accessible and thus contribute to the health of populations (3). However, generic drugs that are relatively more expensive than original drugs have been reported in certain pharmacies, where several generic drugs are sold. The question is whether the pricing of generics is regulated on the one hand? And on the other hand if there is a price difference between generics, but also between generics and their original products? Also, does the registration of generics take public health needs into account?

Hence the interest of our study, the objective of which is to study price variation between generics and princeps in Senegal.

Main objective

- Study of price variations between generic and princeps in Senegal.

Specific objectives

- Classify targeted generic INNs according to diseases;
- Compare generic prices according to INN or Brand name;
- Compare generic prices according to disease types;
- Compare generic prices according to dosage forms;
- Compare generic prices according to packaging types.

MATERIALS AND METHOD

Material

We used as working tools drug stock management software of Laborex-Sénégal, and a Vidal available on the site (vidalreco@vidal.fr) to identify the names of generics. SESAME AFRIQUE software was also used to collect sale prices of selected generics.

Methodology

This is a six-month retrospective cross-sectional study from December 1st, 2015 to May 31st, 2016, carried out at "Laborex Plateau". We chose twelve molecules, three of which are commonly used in the treatment of acute illnesses (paracetamol, ibuprofen and amoxicillin), and nine in that of chronic illnesses (diabetes and hypertension). For diabetes, these are metformin and glimepiride. For hypertension they are diuretics (furosemide, spironolactone, spironolactone + altizide), beta blockers (Atenolol, Bisoprolol), calcium channel blockers (amlodipine), enzyme converting inhibitors (captopril). For acute illnesses, we were interested in oral forms (syrup, tablet and capsule); while for chronic diseases we limited to tablets. First, based on dosages, we calculated for each drug (princeps and generic), its price per unit according to the formula: Price per unit = drug price / drug packaging. This is the price of a tablet or capsule for solid forms, or the price of a milliliter for liquid forms. Then, knowing the price/unit of each drug, we calculated the price differences (in percentage) between princeps and each generic according to the following formula: Price differential = (Price per generic unit/price per princeps unit - 1) * 100. Finally, after calculating the price difference, we classified the prices of generics according to their cost compared to princeps.

Data collection : Referring to the twelve targeted molecules, we used Laborex drug stock management software, and the electronic Vidal, to collect both prices of generics according to active ingredients selected, but also those of their respective princeps. Also, we insisted on certain parameters such as packaging, dosage form, name, and nature of the disease treated; likely to impact the price of generics. Furthermore, we noted for each parameter two modalities specific to it. For disease, these are "acute and chronic" modalities; for oral forms "solid and liquid"; and for the names "INNs and Brand".

Data analysis : Prices difference between generics first, and between each generic and its princeps were calculated. After noting differences, we classified generic prices according to those of princeps; but also according to parameters studied and their modalities.

RESULTS AND DISCUSSION

This work presents certain inadequacies linked to the number of active ingredients retained to collect generics, but also that of chronic diseases limited to diabetes and hypertension. The results obtained are distributed as follows. These are the generics used according to the nature of the diseases, the prices of generics according to their cost, according to certain parameters and their terms.

Distribution of targeted generic INNs according to diseases : However, a total of 75 generics were listed, classified according to diseases. A generic medicine is a medicine identical or equivalent to the original medicine, if it is 50% less expensive than the original medicine. In France, manufacturer price excluding tax of generic s set at -60% of the princeps price(4). In our study, 64% of generics are sold cheaper than their princeps. In practice, prices difference between generics and princeps are not homogeneous(5). This difference could be explained from an economic point of view, to the extent that generics do not require significant investments in research. However, 19% of the generics in our study are sold at the same price as the originator and 17% are sold at a more expensive price than their originator. In case of generic medicines, operator is exempt from filing transparency file, but not from that of price file (6). The main economic difference between a generic and its princeps is the price (7). This aforementioned result, is a contradictory situation which could be the result of an insufficiency in the financial regulation of generics price.

Generic prices according to INNs or Brand : According to availability, 44% of the generics in our study are in INN, compared to 56% which are brands.

This is simply explained by the fact that generic products can be named in two different ways: INN and BRAND. This difference between the two names being purely economic. Among generics sold 50% cheaper than their princeps, our study shows that 65% are in INN, compared to 35% which are branded generics. This difference can be explained by the fact that for generics in DCI, either there is no promotion, or promotion only concerns quality of its manufacturing, reputation of the laboratory, or the range of products within which it is marketed. Private sector prescribers widely use branded drugs, which are much more expensive than their generic equivalents (8). Concerning generics which are sold at the same price as their original products, 71% are branded generics, compared to only 29% in INNs. This situation could be explained by the fact that branded generics are the subject of specific promotion close to that of the patented medicine. As for generics sold more expensive than their original products, 83% are branded generics, compared to only 17% in DCI. In fact there are generics called "GENERIQUES PLUS", of higher quality than the original. Thus, any improvement requires a new file and consequently we end up with copies that are more expensive than the original (9). Furthermore, this can be explained by the fact that to counter generics, the holders of patents which are about to expire or after, can lower their prices in order to encourage their prescription, which gives them a quality/price advantage. It appears from the above that INN generics promote better financial accessibility than branded generics. Therefore their availability must be greater than that of branded generics. It's not the case in our study where 44% of generics are INN, compared to 56% which are branded generics.

Generic prices depending on disease types : Generally, care for acute illnesses is short-term, if treatment is taken early, unlike chronic illnesses which require very expensive and long-term care. According to our study, 78% of available generics are used to treat acute illnesses, compared to only 22% used to treat chronic illnesses. The low availability of generics intended for the treatment of chronic diseases can be explained by the variability in bioavailability between generics on the one hand, and between a generic and its originator on the other. Thus, imagining that a person begins their treatment with an "under-dosed" generic then a second "over-dosed" brand compared to the princeps, there may be an upward variation in bioavailability which could be the cause of toxic effects to the patient. This is why it is often recommended that pharmacies use the first specialty prescribed. This said recommendation could be the probable cause of the low availability of generics intended for the treatment of chronic diseases. As for the price difference between generics treating the two types of illnesses, it changes depending on the availability of generics used for the treatment of acute illnesses.

Generic prices according to dosage forms : According to our study, 75% of generics treating acute illnesses are in solid dosage form, compared to only 25% in liquid dosage form. This difference in availability can be explained by the use of certain excipients in generics in liquid forms, which can arouse distrust because on the one hand in appearance the medication has changed, on the other hand excipients with notorious effects can cause sometimes unexpected reactions (allergy, intolerance), another source of worry. In principle, substitution of the princeps is preferentially done with a generic without excipients with a known effect or with the same excipients as those of the princeps (10). Considering the above, and vulnerability of children, there are fewer liquid generics in our study that are used for pediatric treatment conditions. When a treatment is prescribed for a period of at least three months, including through the multiple renewal of a monthly treatment, and a large package is available for the medicine concerned or for its generic form, the pharmacist has the obligation to deliver the treatment in this form (11). According to our study, 69% of generics treating chronic diseases are in non-hospital packaging, compared to only 31% in hospital packaging. This situation may be due to the fact that some patients consider, on the one hand, these generics to be ineffective for certain pathologies; and on the other hand they represent a source of concern in the event of therapeutic failure, despite their economic advantage.

Table I. INNs classification according to disease types

GENERIC REPERTORIES (75)		
ACUTE DISEASE (59)	CHRONIC DISEASE = (16)	
PARACETAMOL = 18	ANTIDIABETICS = (3)	ANTIHYPERTENSEURS = (13)
IBUPROFEN = 16	METFORMIN = 2	DIURETICS = 3 Furosemid 40mg (1) Spironolacton 500mg (1) Spironolacton + Altizide 25/15mg (1)
AMOXICILLIN = 25	GLIMEPIRID = 1	BETABLOCKERS = 4 Atenolol 50mg (1) Atenolol 100mg (1) Bisoprolol 10mg (2)
		CALCIC INHIBITORS = 4 Amlodipin 5mg (2) Amlodipin 10mg (2)
		ENZYM CONVERTING INHIBITORS = (2) Captopril 25mg (1) Captopril 50mg (1)

Table II. Generic prices variation according to INNs and Brands

	Fifty percent cheaper than Princeps	Less than fifty percent cheaper than Princeps	Same price with Princeps	Price more expensif than the Princeps	TOTAL
INNS	15	10	4	2	31
BRAND NAME	8	13	10	13	44
TOTAL	23	23	14	15	75

Table III. Generic prices variation according to disease types

	Fifty percent cheaper than Princeps	Less than fifty percent cheaper than Princeps	Same price with Princeps	Price more expensif than the Princeps	TOTAL
ACUTE	19	19	11	15	59
CHRONIC	4	4	3	0	16
TOTAL	23	23	14	15	75

Table IV. Generic prices variation according to solid and liquid forms

	Fifty percent cheaper than Princeps	Less than fifty percent cheaper than Princeps	Same price with Princeps	Price More expensif than the Princeps	TOTAL
SOLID FORM	22	17	13	8	60
LIQUID FORM	1	6	1	7	15
TOTAL	23	23	14	15	75

Table V. Generic prices variations according to hospital packaging

	Fifty percent cheaper than Princeps	Less than fifty percent cheaper than Princeps	Same price with Princeps	Price More expensif than the Princeps	TOTAL
HOSPITAL	11	5	0	0	16
NON HOSPITAL	12	18	0	0	30
TOTAL	23	23	0	0	46

CONCLUSION

The generics covered by our work show a disparity in the setting of their prices: 19% of generics have the same price as their original products and 17% are more expensive than their original products. Also, the availability of INN generics is low, even though they provide better financial accessibility than branded generics. In our study, 44% of generics are INN compared to 56% which are branded generics. Regarding chronic diseases, there is a low availability of generics (22%) intended for their treatment and a predominance of non-hospital packaging (69%), compared to only 31% under hospital packaging. For acute illnesses, there is a predominance of solid forms (75%), compared to 25% of liquid forms intended for the management of pediatric conditions. This is a problem in our developing countries where for public health reasons, the therapeutic management of pediatric conditions and chronic diseases requires the availability of quality generic drugs accessible at a lower cost. . The price variations observed in our work raise insufficient prices of generic regulation. Hence the interest in putting in place a real generic medicines policy.

REFERENCES

1. Toure, I. Contribution to improving the terms and conditions for granting visas for generic medicines in light of Regulation 06/2010/CM/UEMOA. State doctorate thesis in Pharmacy. Year 2018.
2. Press release from the Ministry of Public Accounts of March 2008. The great crisis of 2008 still weighs on the public accounts. BIPE 2008 (accessed 11/30/23) on www.lefigaro.fr > economic situation >
3. Medicine Price. (accessed 11/30/23) available on: <http://www.seronet.info/article/le-probleme-du-prix-des-medicaments-dans-notre-societe-est-systemique-22-68728>)
4. Study of French mutuality. Review of 25 years of generic drug policy. Proposal for a more ambitious policy. (accessed 11/30/23). Available at : (http://www.leem.org/sites/default/files/100-questions_Leem_Fiche-62.pdf).. P.15, October 2008.
5. Study of french mutuality. A comparison of the average prices of generics and originator drugs observed in December 2007.(accessed 11/30/23). Available at : (<http://www.leem.org>)

- sites/default/files/100questions_Leem_Fiche-62.pdf).. P.18, October 2008. 2012 Generic Medicines Report. FNMF 2012 (accessed 12/21/2022). <http://goo.gl/IKWms>.
6. Evaluation of French generic medicines policy. IGAS. (accessed 12/21/2012) on:http://www.igas.gouv.fr/IMG/pdf/RM2012-115P-DEF_sans_sign.pdf.
 7. Dr. Cissé M. Survey on the price of medicines in Senegal. SOFAGIP p.3, Year 2005; .(accessed 11/30/23). <https://haiweb.org>.
 8. Generic drugs. (accessed 11/30/23). <http://sante.lefigaro.fr/social/sante-publique/medicaments-generiques/existe-t-il-differents-types-generiques>.
 9. Report from the National Academy of Pharmacy “Generic drugs”. Framework of the right of substitution.. p.68, 2012.
 10. Medicine delivery. Section 7: Miscellaneous provisions (Articles L5125-23).Legislative part. Book I: Pharmaceutical products. Medicines for human use.Chapter V: Community pharmacy.
