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The magnitude of prescribing medicines by brand names at Muhimbili National Hospital, Tanzania

Ombeni Kisamo[1], Manase Kilonzi[1], Wigilya P Mikomangwa[1], George M Bwire[2], Hamu J Mlyuka[1], Alphonce I Marealle[1] and Ritah F Mutagonda[1]

Abstract

Background: Tanzania National Treatment Guidelines and National Therapeutic Committee circular of 2012 requires prescribers to prescribe medicines using their generic names as recommended by the World Health Organization. The implementation of the aforementioned recommendations by prescribers is not well documented in our settings. Therefore, this study aimed to explore the compliance on the use of generic names by prescribers at Muhimbili National Hospital.

Methods: A descriptive cross-sectional study was conducted at Muhimbili National Hospital from January to May 2019 in both inpatient and outpatient pharmacy units. Data were analyzed using SPSS, version 23. Chi-square test was used to analyze proportions between the different variables of the study. A *p*-value for significance was <0.05.

Results: Of 1001 prescriptions analyzed, 71.6% contained medicines prescribed using brand names. The mean ($\pm$standard deviation (SD)) number of medicines per prescription was 2.98 ($\pm$1.5). The most frequently prescribed medicines by brand names were a combination of vitamin and mineral supplements (34.4%) followed by antibiotics (26.7%). Medical doctors (25.6%) and medical specialists (21.6%) prescribed $\geqslant$2 medicines using brand names per prescription compared to interns (15.0%) and residents (6.9%) ($p<0.001$).

Conclusion: Prescribing medicines using brand names was highly observed in this study. Supplements and antibiotics were among the products that were highly prescribed using their brand names. Qualitative studies to explore reasons for brand name prescribing practices are recommended.

Keywords

Medicines, prescription, brand name, and generic name

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Introduction

World Health Organization (WHO)[1] emphasizes 100% use of generic names during the prescribing of medications in all health care facilities. Prescribing using generic names allows for any suitable chemical substitute of the drug, rather than a particular brand of drug to be dispensed. Hence, a wider range of alternative preparations can be used rather than being limited to one which may not be stocked. In recent years, the use of molecularly identical generic versions of branded medicines has increased as a result of tiered

[1]Department of Clinical Pharmacy and Pharmacology, School of Pharmacy, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania
[2]Department of Pharmaceutical Microbiology, School of Pharmacy, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania

Corresponding author:
Manase Kilonzi, Department of Clinical Pharmacy and Pharmacology, School of Pharmacy, Muhimbili University of Health and Allied Sciences, P.O. Box 65013, Dar es Salaam, +255, Tanzania.
Email: manasekilonzi@yahoo.com

formularies, policies encouraging generic substitution, and other changes in prescription regulations.[2,3] The increase in the use of generic medications has generated substantial cost savings for patients and insurers.[4]

Habitual use of brand names may play an important role in the dispensing of branded medicines by community pharmacies, as they are required to provide medicines according to prescription received and patient autonomy in choosing the type of medication.[5,6] Consequently, this may reflect consumers' beliefs that branded medicines are superior to their generic counterparts.[7] For example, a study conducted in Malaysia revealed that the majority of consumers did not know if generic medicines can be marketed under different company names. From that study, some participants believed that generic medicines may cause more side effects and are cheaper than branded medicines.[8]

Several factors are said to contribute to the persistent prescription of medications by brand names while equivalent generic names are available. These include skepticism of many prescribers and patients toward generic versions, prescribers' lack of awareness of medicines costs, patients' lack of awareness of their ability to request generic versions of medicines,[9,10] and pharmaceutical industry marketing that emphasizes brand names.[11] Furthermore, studies done in the United States and Ethiopia showed that prescribers, patients, and pharmacy benefits, or pharmacy characteristics, influence the likelihood that patients will use generic medicines or branded medicines.[12]

Efforts have been made by the Ministry responsible for health in Tanzania through dissemination of circulars in 2012 requiring health care providers (HCPs) to prescribe and dispense medicines using their generic names.[13] However, brand name prescriptions are still reported in most hospitals in Tanzania, posing a threat to cost-effective medicine distribution and availability.[14] Recently, the government of Tanzania has ordered again for an immediate ban on using brand names when prescribing medicines. The ban insisted prescribers to strictly stick to the use of generic names.[14] Since the release of the government circular and guideline, there is no study done to explore compliance with the use of generic names by prescribers in Tanzania. Therefore, this study sought to examine the use of generic names in medicine prescriptions provided to patients attending Muhimbili National Hospital (MNH).

Methods

Study design and site

This was a descriptive hospital-based cross-sectional study which involved inpatient and outpatient pharmacy units at MNH. A total of 13 hospital pharmacies at MNH were involved in the study. The research was conducted from January to May 2019. In addition, MNH is a National Referral Hospital and University Teaching Hospital with a 1500-bed facility, with 1000 to 1200 outpatients per day, and admitting between 1000–1200 attendance inpatients per week.

Sample size calculation and sampling technique

The sample size was estimated based on a previous study conducted in the United States, where the prevalence (p) of brand name prescription by physicians was 46%.[15] Using a 95% confidence interval ($z = 1.96$) and margin of error 3.1%, the sample size calculated was 993 prescriptions. Half of the prescriptions were from inpatients, and the rest were from outpatients' pharmacies. Generally, the pharmaceutical personnel assign prescriptions separately based on either inpatient or outpatient. The sample size was equally distributed to all 13 pharmacy units. A systematic sampling technique was used, whereby a sampling interval (n) was determined by dividing the total number of prescriptions per week over the number of prescriptions in a particular pharmacy unit. Then prescriptions were sampled after every nth prescription. The formula used to calculate the sample size was $Z^2P(1-P)/d^2$.

Data collection

The data collection checklist was used to document information related to prescriptions with medicine written by brand and generic names. The checklist contained information on qualification of prescriber, number of medicine prescribed per prescription, number of generic name(s) per prescription, number of brand name(s) per prescription, name of the brand for medicine prescribed in brand name(s), generic name(s) for generic medicines prescribed, and pharmacological classification of medicines prescribed.

Data analysis

The collected data were stored in Microsoft Excel and transferred to SPSS software, version 23. Categorical variables like brand names and qualification of prescribers were summarized using frequency distribution tables and proportions. Association between different categorical variables was done by the chi-square test. The results were considered of statistical significance at $p < 0.05$.

Ethical consideration

The study protocol was reviewed and approved by the Research and Publication Committee of Muhimbili University of Health and Allied Sciences and granted ethical clearance number DA/25/111/01. The permission for data collection was granted by the Director of research at MNH, and accessibility to the pharmacy unit was granted

Table 1. Distribution of prescriptions with brand names based on outpatients and inpatients category and prescribers' qualification.

Variable	Brand name status, *n* (%)		*p*-value
Prescription category	Yes	No	
Outpatients	357 (71.3)	144 (28.7)	0.79
Inpatients	360 (72.0)	140 (28.0)	
Prescribers			
Specialists	272 (37.9)	113 (39.8)	0.108
Medical doctors	282 (39.3)	104 (36.6)	
Interns	149 (20.8)	54 (19.0)	
Residents	14 (2.0)	13 (4.6)	

by MNH Head of the pharmacy department. Only prescriptions were involved during data collection, and data collectors were not in contact with the patients; hence, signed consent form was not sought. For patients and prescribers' confidentiality, no personal information was included in the data collection checklist, and the identification number was given to the assessed prescriptions.

Results

A total of 1001 prescriptions containing 2978 prescribed medicines were studied. Out of 1001 prescriptions, 386 (38.56%) were prescribed by medical doctors, 385 (38.46%) by specialists, 203 (20.28%) by interns, and 27 (2.7%) by residents. The mean (±standard deviation (SD)) number of medicines per prescription was 2.98 (±1.5). Seven hundred and seventeen prescriptions (71.6%) contained medicine prescribed by brand names. It was revealed that 282 (39.3%) of the prescriptions with brand names were prescribed by medical doctors, specialists 272 (37.9%), interns 149 (20.8%), and residents 14 (2.0%) ($p=0.108$). The proportion of prescriptions with medicines prescribed in brand names from inpatient units 360 (72.0%) was not statistically different from that of outpatient unit 357 (71.3%), ($p=0.79$), see Table 1. Prescriptions with ⩾2 brand names were mainly from medical doctors 99 (25.6%) and specialists 83 (21.6%) compared to interns 14 (15.0%) and residents 4 (6.9%) ($p<0.001$), see Table 2.

The proportion of medicines prescribed using brand name

The most frequently prescribed medicines by brand names were multivitamins that contained iron, vitamin B_{12} and folic acid complex (15.4%), the antibiotics containing amoxicillin and clavulanic acid (15.4%), and calcium and vitamin D_3 supplements (5.8%), see Table 3. The commonest pharmacological groups of medicines prescribed by brand names were vitamin and mineral supplements (34.4%) followed by antibiotics (26.7%), see Table 4.

Table 2. Prescription by prescriber's qualification versus number of medicines prescribed by brand names.

Prescription by prescribers' qualification	Number of medicines prescribed by brand name, *n* (%)			
	0	1	⩾2	*p*-value
Specialists	113(29.4)	189 (49)	83 (21.6)	<0.001
Medical doctors	104 (27)	183 (47.4)	99 (25.6)	
Interns	54 (26.6)	135 (66.5)	14 (15)	
Residents	13 (48.1)	10 (37.0)	4 (6.9)	

Table 3. Medicines prescribed using brands names and their pharmacological groups.

Variable	Number, *n* (%)
Brand name	
Amoxyclav 625 mg tablets	141 (15.4)
Ferrotone capsules	141 (15.4)
Calcivita tablets	53 (5.8)
Repace H tablets	43 (4.7)
Artane 5 mg tablets	42 (4.6)
Nat B tablets	40 (4.4)
Flagyl IV	26 (2.8)
Amoxyclav IV	23 (2.5)
Others	(each <2.5)

IV: intravenous.

Table 4. Pharmacological groups for medicines prescribed by brand names.

Variables	Numbers, *n* (%)
Supplements	315 (34.4)
Antibiotics	245 (26.7)
Analgesics	60 (6.5)
Angiotensin receptor blockers	60 (6.4)
Antipsychotics	43 (4.7)
Anti-microbial	33 (3.6)
Diuretics	27 (2.9)
Anti-acids	25(2.7)
Cough syrup	23 (2.5)
Anti-fungal	18 (2.0)
Others	(each <2.0)

Discussion

The study described the compliance of prescribers on the use of generic names in prescribing at MNH. To our knowledge, this is the first study to be conducted in Tanzania since the recent ban on using brand names in prescribing medicines in 2018 by the Ministry responsible for Health.

In this study, a high proportion of prescribing by brand names (71.6%) in prescriptions at MNH was observed.

This is lower than findings reported in South Africa in 1996 (79%)[4] and 2004 (83.2%)[16] but was higher than what was reported in the United States.[15] The difference in proportion on the use of brand names between countries could be due to the strength and capacity of regulatory bodies. The observed high proportion of brand name prescribing at MNH could be contributed to various factors such as; the inventory and dispensing computerized system "*JEEVA system*" which is used at MNH. The system uses brand names. In addition, incentive promotions are done by pharmaceutical industries and suppliers in promoting their brands, availability of a particular brand compared to others and the price difference between generic and brand medicines.

In this study, supplements containing minerals and vitamins were highly prescribed using brand names followed by antibiotic combinations. This could be explained by the fact that most of the supplements and antibiotic combinations contain more than one active ingredient in one formulation which becomes hard for the prescribers to write all the active ingredients at once (others claiming that space provided in the prescription is too small). In addition, the prescriber's notion that some of the generic medicines are more effective than other available products containing the same medicines.

In this study, REPACE H (Losartan and Hydrochlorothiazide) and IROVEL H (Irbesartan and Hydrochlorothiazide) were the two antihypertensive medicines frequently prescribed using brand names. Gemmer (glimepiride and metformin) and Glucored Forte (glibenclamide and metformin) are the anti-diabetic formulations frequently prescribed by brand names. According to the personal explanation provided by the Tanzania Chief Pharmacist, the above two antihypertensive and two antidiabetic medicines were prescribed by the brand names to differentiate losartan and irbesartan containing hydrochlorothiazide antihypertensive and glimepiride and glibenclamide containing metformin anti-diabetics. According to the Chief Pharmacist, this practice has been there for a long time, and it has shown to be beneficial to prescribers and patients taking these medications to avoid confusion. The observed practice is consistent with what was reported in Thailand, whereby losartan and irbesartan were highly prescribed using their brand names.[17]

Surprisingly, in this study, it was observed that some brands which were previously available in the market and no longer available were still being prescribed. The MNH pharmaceutical personnel referred to this practice as "*medicine baptization.*" Examples of the medicines that have been baptized include benzhexol hydrochloride named Artane, furosemide named Lasix, methyldopa named Aldomet, and spironolactone named Aldactone. This prescribing of outdated brand medicines not only affect patients but also field learning students and new pharmacy attendees who are forced to either get familiarized with such names or refer to the most experienced attendees frequently. There is also a wastage of time by patients and health workers in searching for these medicines and sometimes mislabeled as out of stock while they are available in generic versions.

There is a strong relationship between the prescriber's qualifications and the extent of prescribing medicines using brand names. Unfortunately, those who are more qualified including specialists and medical doctors prescribe medicine using brand names more than interns and residents. The observed association could be due to those who are more qualified and are more exposed to the *JEEVA system* and brand names, making it difficult for them to change their prescribing habits to generic names. Moreover, manufacturers' incentives, seminars, and promotion from medicine importers, skepticism, and medicine baptization effects could be the reasons.

Limitations

Some of the explanations in the discussion are based on the authors' day-to-day practice experience at MNH as pharmacists as well as following informal discussions with MNH HCPs. Data were collected from the National hospital in Tanzania with qualified medical personnel delivering specialized services. Therefore, the generalization of the results for other hospitals in developing countries should be done with precaution.

Conclusion

Prescribing medicines using brand names was highly observed in this study. Supplements (vitamins and minerals) and antibiotics were highly prescribed using brand names at MNH. Most of the prescribing using brand names was done by medical doctors and specialists. This calls for actions in strategizing and revising approaches in combating the use of brand names in prescribing medicines. In addition, qualitative studies to explore the reasons for brand name prescribing practices are recommended.

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Authors' contributions

O.K. and M.K. had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Acquisition, analyses, and interpretation of data were performed by M.K., O.K., W.P.M., H.J.M., A.I.M., and R.F.M. Drafting the manuscript was performed by O.K. and M.K. Study concept, design, and critical revision of the manuscript for important intellectual content were performed by all authors. All authors read and approved the final manuscripts.

Availability of data and materials

The data set generated and/or analyzed during the current study is available from the corresponding author upon reasonable request.

Declaration of conflicting interests

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ORCID iD

Manase Kilonzi https://orcid.org/0000-0002-5355-8353

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