

**Investigation of the National Drug Lists and the Perception of Pharmacists and Physicians  
about Generic Drugs at Health Institutions in the North Central Region of Trinidad**

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**ABSTRACT**

**Objective:** To investigate the drugs on three annual national drug pricing lists and *via* a survey determine the perception and concerns physicians and pharmacists have about generic drugs.

**Method:** Windows<sup>®</sup> Excel 2007 and Minitab<sup>®</sup> version 17 examined the pricing lists and a self-administered questionnaire was used to perform a non-randomized, cross-sectional study with convenient sampling of physicians and pharmacists after obtaining written consent.

**Results:** Physicians (78.6%) and pharmacists (87.1%) agreed and strongly agreed, respectively that there are medical conditions for which brand name drugs are preferred including cardiovascular conditions and diabetes; which were comprised in the five major medication categories on the national drug list. Overall, physicians and pharmacists showed a 'Good' to 'Excellent' perception of generic drugs but had some safety and efficacy concerns. Lack of reporting of adverse drug reactions and quality issues by health professionals was also observed.

**Conclusion:** Education and communication amongst patients, physicians and pharmacists can improve perception of generic drugs; hence, increase confidence in prescribing, dispensing and patient management.

**Keywords:** Drug list, generic drugs, perception of pharmacists and physicians, Trinidad

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## **INTRODUCTION**

The World Health Organization's (WHO's) Essential Medicines List helped develop national drug lists that addressed major health needs of a country's population and provided WHO's recommendations of safe, effective, affordable and good quality medicines (1–4). Drug lists guide prescribing patterns, address morbidity and mortality diseases, assist in medication consumption, manage drug acquisition and distribution, and make necessary medicines available and accessible to those who require them (1–3). However, some physicians indicated that a drug list restricts their practicing (3).

In Trinidad and Tobago, as in Jamaica, there is no Essential Medicines list, however, the national drug list contains drugs classified as Vital, Essential and Necessary (VEN) for public sector use, commonly referred to as the 'VEN' list (4, 5). The annual drug pricing lists consist of items from the VEN list tendered for a particular year with the inclusion of manufacturer, brand name and distributor (6, 7). Generic drugs are defined as being similar to their brand name counterparts in dosage form, performance, route of administration, strength, quality, safety and indicated use (8).

Trinidad and Tobago and other countries have included multisource/generic drugs on their national drug list because these decrease the price to patients or government; therefore, increase medicine access (9–13). The Ministry of Health of Trinidad and Tobago has guaranteed that the medicines provided to its population are safe, efficacious and of superior quality (14, 15). Nevertheless, Trinbagonian physicians have indicated that the generic drugs used in the public health sector are not as effective as the brand name drugs (15, 16).

Perception refers to the process of receiving data, analyzing it and then producing a response (17). Researchers have identified various factors that may influence perception including prior experience, emotions, culture and knowledge (18). The perception of generic drugs can affect the prescribing behaviour of physicians; the ordering and procuring of generic drugs by the pharmacists and the adherence of patients to their medications (11, 19, 20).

## **METHODS**

### **National drug lists investigation**

Annual national drug pricing lists for 2008 to 2011 were obtained from the internet and a listing (6, 7). The items were entered in Windows<sup>®</sup> Excel 2007; recoded and descriptive analyses were performed on the data using Minitab<sup>®</sup> version 17. Internet searches were used to confirm data including that of manufacturers and drugs.

### **Survey**

#### *Design and collection tool*

A non-randomized, cross-sectional study was performed from June to August 2010. Research done by Kersnik and Peklar (2006), Shrank *et al* (2011), Sharrad *et al* (2011), Chong *et al* (2010), Chua *et al* (2010) and others were used to develop the self-administered questionnaires (11, 19–24). Open-ended questions, Likert scales and Visual Analog scales (VAS) were applied to acquire the necessary data. VAS ranged from zero, which represented ‘Poor’, to ten, which represented ‘Excellent’. The question items aimed to obtain data on variables such as cost; efficacy

and safety of generic drugs; support of switching from a brand name drug to a generic or generic to generic; if generic drugs are the same as brand name ones; knowledge, understanding and views of generic drugs and communication of healthcare professionals and patients. Some items of the questionnaire were combined to create specific categories such as cost, safety and total perception and these combinations were referred to as domains (groups of questions). The domains and the single item for perception utilized the quartile method which divided the responses into four groups – Poor, Fair, Good and Excellent.

The questionnaires were pre-piloted among supervisors and colleagues and they were then piloted prior to the beginning of the study. Face validity ensured that the questions measured what it was supposed to measure, therefore, certifying the collection of meaningful data.

#### *Sampling method*

The North Central Regional Health Authority (NCRHA) and institutions in Trinidad were conveniently selected from the five Regional Health Authorities (RHAs) in Trinidad and Tobago. The list of the health institutions within the NCRHA was obtained from the Trinidad and Tobago, Ministry of Health website and three health centres and five district hospitals were chosen (25, 26). Participants included both genders, all ethnic/racial composition, at least eighteen years of age, willing to give written informed consent and employed at the various health institutions.

#### **Statistical analysis**

Data entry was done *via* the computer using Microsoft Office Excel<sup>®</sup> 2007 then transferred into Minitab<sup>®</sup> version 17 and Statistical Package for Social Sciences (SPSS<sup>®</sup>), versions 11 and/or 12, for data analysis incorporating a coding scheme.

Reliability analysis was performed to verify the internal consistency of each item within the different domains and Cronbach's alpha coefficients were calculated in SPSS 11 and/or 12. A reliability coefficient of 0.8 and more was necessary to confirm reliability of a domain while those that did not meet the requirement were considered as individual items in the analyses. Additionally, some of the questions were asked in a different part of the questionnaire so as to confirm reliability of the items. Various analyses were achieved including descriptive statistics, correlations and ordinal logistic regression.

### **Ethical approval**

The research was approved by the Ethics Committee of The University of the West Indies. Respect for persons included a written informed consent from the physicians and pharmacists and confidentiality was maintained. In addition, permission was granted from the North Central Regional Health Authority (NCRHA) and the selected health institutions prior to the initiation of the study.

### **RESULTS**

Thirty-one pharmacists and 70 physicians participated in the study and most were of East Indian ethnicity from each group. Pharmacists were predominantly females (77.4%) of 31–40 years (38.7%) while physicians were chiefly males (51.4%) of 21–30 years. Pharmacists (40%) and physicians (53.0%) mainly had five years or less working experience and 63.3% of the pharmacists and 54.0% of the physicians worked in the public health sector for this same period.

About 64% of the physicians compared to 48.4% of the pharmacists agreed that generic drugs can be used for all chronic diseases. Both physicians (78.6%) and pharmacists (87.1%) agreed that there are medical conditions for which brand name drugs are preferred such as cardiovascular conditions, diabetes mellitus, infections and cancer. The main classes of medications on the drug lists were central nervous system (293/1473), anti-infectives/antibiotics (226/1473), cancer (177/1473) and cardiovascular (139/1473). The major routes of administration on the national drug lists were the oral (50.94%) and parenteral (31.50%) while the rectal route (0.54%) was the least.

Most pharmacists (67.7%) and physicians (42.4%) estimated the percentage of generic medicines stocked at their pharmacies as 76–100 and 51–75, respectively. Approximately 54% of pharmaceuticals on the drug lists were generic formulations. Pharmacists (27/31) and physicians (65/70) believed that India was the main country from which most generic drugs originated while the second choice was Canada for pharmacists (51.6%) and South America for physicians (14.3%). The five main countries that manufactured the pharmaceuticals on the drug lists were India (395/1499), United States of America (266/1499), United Kingdom (172/1499), Switzerland (110/1499) and Canada (85/1499).

Physicians rated their general understanding of generic drugs as predominantly ‘Good’ (33/70); whereas most pharmacists rated their understanding as ‘Very Good’ (12/31).

Doctors (51.4%) and pharmacists (41.9%) agreed that they were comfortable prescribing/dispensing generic drugs from the Trinidad and Tobago drug listings. Prior experience influenced prescribing/dispensing behaviour while 87.1% of pharmacists and 51.4% physicians were concerned about the difference in colour, shape, size, taste and packaging of generic medicines.

Pharmacists (38.7%) showed a 'Poor' perception about generic drugs in the Cost domain, in respect to value and price, as oppose to the physicians (34.8%) who demonstrated a 'Good' perception.

Physicians (39.4%; 37.3%) and pharmacists (50.0%; 38.7%) demonstrated an 'Excellent' and 'Good' perception for the safety and efficacy domains, respectively.

Doctors (80%, 51.5%) and pharmacists (67.7%, 48.4%) agreed that pharmacist should only substitute a brand name drug with a generic one with doctor's and patient's consents correspondingly.

On a VAS, the most responses were of the score 5 (20.6%) followed by 6 (19.6%). This single perception item showed a mean score of 5.58, median and mode scores of six and five, respectively, and standard deviation of 2.0. Physicians (20/70) and pharmacists (14/31) mainly showed an 'Excellent' perception of generic drugs in the single item. However, for the perception domain pharmacists (10/29) had an 'Excellent' perception while physicians (20/62) had a 'Good' perception of generic drugs.

Physicians (23.7%) and pharmacists (26.45%) made recommendations to diminish poor perception of which education was the most popular. Most physicians (37.1%) and pharmacists (45.2%) indicated that they sometimes communicate with their patients regarding generic drugs. More physicians (44.3%) declared that Doctors/Dentists should be the chief educators for patients about generic drugs whereas pharmacists (67.7%) stated that it should be the Pharmacists.

Pharmacists (35.5%) and 21.4% of physicians stated that they seldom report any complaints of generic drugs; in contrast to 29% of pharmacists and 64.3% of physicians who have never made a report.

## **DISCUSSION**

The medicines referred to by the participants, in our study, were those on the annual national drug lists. The pharmacists and physicians shared comparable perception of generic drugs but highlighted specific concerns about efficacy, safety and difference in physical appearance of generic medicines compared to their counterparts.

Management of medication safety and efficacy includes reporting adverse effects and quality issues, however, our study demonstrated poor reporting by physicians and pharmacists (27, 28). Our study observed other factors that influenced perception of generic drugs which were also seen in studies from New Zealand and Malaysia (12, 19). However, where cost can affect some countries, in Trinidad and Tobago, various medications to patients in the public sector are supplied gratis by the Government (9, 10).

Our study stated that education within the healthcare system would improve perception and each group stated that they were the main person to educate patients about generic drugs (12, 19). Studies in Iraq and South Africa showed that patients were more likely to agree to generic substitution if it was suggested by a physician as oppose to a pharmacist (21, 24). Nevertheless, the study from Iraq and other studies stated that education of generic drugs should be from both physicians and pharmacists (12, 19, 24). Furthermore, a Malaysian study indicated that communication between pharmacists and physicians can better the perception of generic drugs and their partnership can improve the quality of generic drugs (19, 27).

Physicians and pharmacists stated that there are some medical conditions where generic drugs should be restricted. Other researchers have encountered similar concerns and have identified certain diseases such as cardiovascular conditions and epilepsy (29, 30).

Limitations of the study included a small sample size and convenient sampling. A larger study comprising all the RHAs and private sector will obtain enough data to represent the pharmacists and physicians of The Republic of Trinidad and Tobago.

## **CONCLUSION**

The single item and domain perception of generic drugs were mainly ‘Excellent’ for pharmacists and physicians but they had concerns about safety and efficacy. However, a safety and efficacy mechanism of reporting adverse drug reactions and quality matters was not performed sufficiently by the healthcare professionals. Education and communication can provide valuable information for physicians and pharmacists; thus, address their apprehension of generic drugs and ensure medicines on the national drug lists are safe and effective for patients.

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## **AUTHORS’ NOTE**

AR Villarroel Stuart conceived paper; performed study design; conducted data collection, analysis and interpretation; and wrote, revised and approved final version of manuscript. The author declares no conflict of interest.

## REFERENCES

1. World Health Organization. Essential medicines [Internet] 2016 [cited 2016 8th Oct 2016]; Available from: [http://www.who.int/medicines/services/essmedicines\\_def/en/](http://www.who.int/medicines/services/essmedicines_def/en/).
2. American Society of Health-System Pharmacists. ASHP guidelines on the pharmacy and therapeutics committee and the formulary system. *Am J Health Syst Pharm* 2008; **65**: 1272–83.
3. Schiff GD, Galanter WL, Duhig J, Koronkowski MJ, Lodolce AE, Pontikes P et al. A prescription for improving drug formulary decision making. *PloS Med* 2012; **9**: 1–7.
4. Pinto Pereira L. Trinidad and Tobago Ministry of Health, Drug Formulary - a guide to rational drug prescribing: Trinidad and Tobago Ministry of Health, Pan American Health organization/World Health Organization; 1994.
5. The Ministry of Health of Trinidad and Tobago, Pan American Health Organization, World Health Organization. Trinidad and Tobago Pharmaceutical Country Profile. [Internet] 2012 [cited 2013 Feb 12]; Available from: [www.who.int/medicines/areas/coordination/PSCP\\_TRT\\_en.pdf](http://www.who.int/medicines/areas/coordination/PSCP_TRT_en.pdf).
6. The Ministry of Health of Trinidad and Tobago. Pharmaceutical and Non-Pharmaceutical Price List 2009-2010. [Internet]: Government of the Republic of Trinidad and Tobago; [cited 2017 16th Jan]; Available from: <http://www.health.gov.tt/sitepages/default.aspx?id=130>
7. The National Insurance Property Development Company Limited. Ministry of Health Pharmaceutical Price List October 2010 - September 2011. In: Pharmaceutical Division, editor. Chaguaramas: NIPDEC; 2010.

8. Nguyen N. The American pharmacy staff's experiences and opinions of generic drug substitution - A study in California [Masters]: Uppsala Universitet; 2010.
9. Parliament of the Republic of Trinidad and Tobago. Fifth report of the joint select committee on ministries, statutory authorities and state enterprises (Group1) on the administration and operations of the ministry of health with specific focus on primary health care. 2012/2013. p. 65–9.
10. Abbott F, Abbott R, Bannenberg W, Schörmann M. Regional assessment of patent and related issues and access to medicines - CARICOM member states and the Dominican Republic, Final draft report 2009.
11. Thomas R, Vitry A. Consumers' perception of generic medicines in community pharmacies in Malaysia. *South Med Rev. [Research Briefs]* 2009; **2**: 20–3.
12. Babar Z, Grover P, Stewart J, Hogg M, Short L, Seo HG et al. Evaluating pharmacists' views, knowledge, and perception regarding generic medicines in New Zealand. *Res Social Adm Pharm* 2011; **7**: 294–305.
13. Alfonso-Cristancho R, Andia T, Barbosa T, Watanabe JH. Definition and classification of generic drugs across the world. *Appl Health Econ Health Policy. [Review]*. 2015; **13(Suppl 1)**: S5–S11.
14. Ministry of Health of the Government of the Republic of Trinidad and Tobago. Drug Safety. [Internet] 2012 [cited 2013 Feb 12]; Available from: <http://www.health.gov.tt/news/newsitem.aspx?id=323>.

15. Life is Trinidad and Tobago. Health Ministry: Hospital drugs safe and effective. [Internet] 11th Feb 2012 [cited 2013 Feb 12]; Available from: [http://www.trinidadexpress.com/news/Health\\_Ministry\\_\\_Hospital\\_drugs\\_safe\\_and\\_effective-139168444.html](http://www.trinidadexpress.com/news/Health_Ministry__Hospital_drugs_safe_and_effective-139168444.html).
16. Lambie I. Truth about CDAP drugs. [Trinidad and Tobago Newsday] 5th Jul 2007 [cited 2013 Feb 12]; Internet]. Available from: <http://www.newsday.co.tt/news/0,60026.html>.
17. Perception Process. In: A Primer on communication studies. [Internet] [cited 2014 Aug 9]; 1.0:[Book section]. Available from: <http://2012books.lardbucket.org/books/a-primer-on-communication-studies/s02-01-perception-process.html>.
18. Stefanucci JK, Gagnon KT, Lessard DA. Follow your heart: emotion adaptively influences perception. *Soc Personal Psychol Compass* 2011; **5**: 296–308.
19. Chua GN, Hassali MA, Shafie AA, Awaisu A. A survey exploring knowledge and perceptions of general practitioners towards the use of generic medicines in the northern state of Malaysia. *Health Policy* 2010; **95**: 229–35.
20. Chong CP, Hassali Mohammed A., Bahari MB, Shafie Asrul A. Evaluating community pharmacists' perceptions of future generic substitution policy implementation: A national survey from Malaysia. *Health Policy* 2010; **94**: 68–75.
21. Patel A, Gauld R, Norris P, Rades T. This body does not want free medicines: South African consumer perceptions of drug quality. *Health Policy Plan* 2010; **25**: 61–9.
22. Shrank WH, Liberman JN, Fischer MA, Girdish C, Brennan TA, Choudhry NK. Physician perceptions about generic drugs. *Ann Pharmacother* 2011; **45**: 31–8.

23. Kernk J, Peklar J. Attitudes of Slovene general practitioners towards generic drug prescribing and comparison with international studies. *J Clin Pharm Ther* 2006; 31: 577–83.
24. Sharrad AK, Hassali MA. Consumer perception on generic medicines in Basrah, Iraq: Preliminary findings from a qualitative study. *Res Social Adm Pharm* 2011; **7**: 108–12.
25. Ministry of Health. Public Health Facilities. [Internet]: Government of the Republic of Trinidad and Tobago; 2014 [updated 2014; cited 2014 Aug 9]; Available from: <http://www.health.gov.tt/moh-healthfacilities/>.
26. World Health Organization. World Health Statistics. World Health Organization; 2012 [cited 2013 Feb 23]; Available from: [http://www.who.int/gho/publications/world\\_health\\_statistics/EN\\_WHS2012\\_Full.pdf](http://www.who.int/gho/publications/world_health_statistics/EN_WHS2012_Full.pdf).
27. Holloway K, Green T. Drug and therapeutics committees - a practical guide. Holloway K, editor. France: World Health Organization 2003.
28. Olson C. Hospital pharmacy management. *MDS-3:Managing Access to Medicines and Health Technologies*. Arlington, VA: Management Sciences for Health; 2012. p. 45.1 - .17.
29. Kesselheim AS, Misono AS, Lee JL, Stedman MR, Brookhart MA, Choudhry NK et al. Clinical equivalence of generic and brand-name drugs used in cardiovascular disease: a systematic review and meta-analysis. *JAMA* 2008; **300**: 2514–26.
30. Kesselheim AS, Stedman MR, Bubrick EJ, Gagne JJ, Misono AS, Lee JL et al. Seizure outcomes following use of Generic vs. Brand name Antiepileptic drugs: A systematic review and meta-analysis. *Drugs* 2010; **70**: 605–21.

