



Journal of Pharmacy & Pharmacognosy Research

ISSN: 0719-4250

editor@jppres.com

Asociación de Académicos de Ciencias Farmacéuticas de
Antofagasta

Chile

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Journal of Pharmacy & Pharmacognosy Research, vol. 6, no. 3, 2018, May-June, pp. 136-147
Asociación de Académicos de Ciencias Farmacéuticas de Antofagasta
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Acceptance and perceptions of generic substitution among pharmacists: A preliminary study in Vietnam

[Aceptación y percepción entre farmacéuticos sobre la sustitución de genéricos: Un estudio preliminar en Vietnam]

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Abstract

Context: Over the last ten years, many research studies concerning pharmacists' perceptions of generic medicines have been conducted worldwide, although this issue remains underexplored in Vietnam.

Aims: To evaluate pharmacists' views on generic medicines and to investigate the generic substitution practices in community pharmacies in the context of Vietnam.

Methods: A cross-sectional survey comprising a 24-item self-administered anonymous questionnaire was distributed to 480 pharmacists in eleven provinces in southern Vietnam between December 2016 and March 2017. The main outcome measures were pharmacists' views on generic medicines.

Results: Of the 480 pharmacists who received the questionnaire, the effective response rate was 35.63% (n=171 pharmacists); however, 45 pharmacists chose all three correct generic names. Some 47.3% of respondents indicated that all the products that are approved as exhibiting generic equivalence can be considered therapeutically equivalent to the innovator drugs. Yet, 25.2% of respondents agreed that generic medicines are of inferior quality to branded medicines. The pharmacists who graduated from universities and those who had undergone only a short period of training differed significantly in terms of their knowledge and perceptions. About 60.2% of pharmacists recommended generics over branded products. Approximately 89% of respondents disagreed with the notion of implementing certain compulsory generic substitutions in Vietnam.

Conclusions: The pharmacists who had completed only a short training period exhibited a lack of knowledge regarding generic names. This issue should hence be addressed by both pharmacy educators and relevant government agencies in order to ensure the wider use of generic products.

Keywords: acceptance; generic substitution; perception; pharmacist; Vietnam.

Resumen

Contexto: En los últimos diez años muchas investigaciones sobre las percepciones farmacéuticas de los medicamentos genéricos se han llevado a cabo en todo el mundo, pero esta área ha sido subexplorada en Vietnam.

Objetivos: Evaluar las opiniones de los farmacéuticos sobre los medicamentos genéricos e investigar las prácticas de sustitución genérica en las farmacias comunitarias en el contexto de Vietnam.

Métodos: Una encuesta transversal que comprendía un cuestionario anónimo autoadministrado de 24 ítems se distribuyó a 480 farmacéuticos en once provincias del sur de Vietnam entre diciembre de 2016 y marzo de 2017. Las principales medidas de resultado fueron los puntos de vista de los farmacéuticos sobre los medicamentos genéricos.

Resultados: De 480 farmacéuticos, la tasa de respuesta efectiva fue del 35,63% (171 farmacéuticos), sin embargo, sólo 45 farmacéuticos eligieron los tres nombres genéricos correctos. El 47,3% de los encuestados indicó que todos los productos que fueron aprobados como equivalencia genérica pueden ser considerados terapéuticamente equivalentes con los innovadores. El 25,2% de los encuestados estuvo de acuerdo en que los medicamentos genéricos eran de calidad inferior a las marcas. Los farmacéuticos se graduaron en las universidades y los que recibieron capacitación en un período corto fueron significativamente diferentes en sus conocimientos y percepciones. Alrededor del 60,2% de los farmacéuticos recomendaron medicamentos genéricos sobre los productos de marca. El margen de beneficio, la reputación de la empresa y la demanda local afecta estrictamente la adquisición de genéricos. Aproximadamente, el 89% de los farmacéuticos no estuvieron de acuerdo en implementar ciertas sustituciones genéricas obligatorias en Vietnam.

Conclusiones: Los farmacéuticos de corta formación carecen de información sobre nombres genéricos. Los farmacéuticos vietnamitas no confían en el sistema genérico de fabricación y/o aprobación. Este tema debe ser abordado por educadores de farmacia y agencias gubernamentales relevantes para investigaciones más amplias.

Palabras Clave: aceptación; farmacéutico; percepción; sustitución genérica; Vietnam.

ARTICLE INFO

Received: August 18, 2017.

Received in revised form: January 15, 2018.

Accepted: January 21, 2018.

Available Online: February 18, 2018.

Declaration of interests: The authors declare no conflict of interest.

Funding: The authors confirm that the project has no funding or grants.



INTRODUCTION

A generic medicine is defined as a pharmaceutical product, intended to be interchangeable with the innovator product, which is manufactured without a license from the innovator company and marketed following the expiration of the patent or other exclusivity rights (World Health Organization, 2012). The substitution of generic drugs for their patented counterparts is based on both bioequivalence and therapeutic equivalence. The concept of bioequivalence (BE) is based on the pharmacodynamic principle that the therapeutic effect of a given medicine is directly related to the concentration of its active substances in the blood stream (Pearce et al., 2004). A generic product that has been proven to be bioequivalent is capable of delivering the active ingredient(s) to the blood stream at a similar rate and to the same extent as the innovator brand; hence, the clinical safety and efficacy profile of the generic drug will be tantamount to those of the brand name drug (Pearce et al., 2004).

Due to their lower price, the substitution of generic products for innovator products is a common practice worldwide in an effort to reduce the escalating costs of medicines. According to Cameron et al. (2012) cost-minimization analysis of 17 developing countries, including four Association of South East Asia Nations (ASEAN) members, the potential cost savings stemming from generic substitutions in 2008 were 38,183,032 international dollars (int\$) in the Philippines, int\$16,682,860 in Malaysia, int\$15,259,172 in Indonesia, and int\$3,997,118 in Thailand (Cameron et al., 2012). Their study also demonstrated that China saved the highest total medical cost (int\$369,889,300) among the 17 included countries, while Malaysia achieved the largest cost saving per capita (int\$0.64) (Cameron et al., 2012).

Nevertheless, the question of whether or not generic substitution is actually a beneficial reform measure remains controversial among healthcare specialists and patients alike. Among 138 patients in Norway who had their medications substituted, Kjoenniksen et al. (2006) found that 36% reported negative experiences following the switch. Furthermore, Håkonsen et al. (2009) showed that among 174 Norwegian hypertensive patients, 29%

were anxious when starting to use generically substituted drugs, while 8% perceived changes in terms of the medication effects. These studies illustrate the doubts of patients regarding the similarity between branded and generic products as well as their apprehension of adverse effects and therapy failure.

It is undeniable that physicians, pharmacists, and patients represent the key stakeholders in ensuring the success of generic medicines. Moreover, the pharmacist, who in most instances serves as the first point of contact for patients, can be the paramount source of information about generic drugs (Kjoenniksen et al., 2006). A study conducted in France that sought to evaluate the perceptions of health and non-health professionals with regard to prescribing drugs according to the international non-proprietary name (INN) (Biga et al., 2005) found that pharmacists' knowledge and perceptions of generics play an important role in promoting generic medicines among wider society.

Over the last decade, a number of research studies have focused on pharmacists' perceptions of generic drugs. Such studies have been conducted in a range of countries worldwide, including the United States (US) (McAuley et al., 2009), Sweden (Olsson and Källemark Sporrang, 2012), France (Allenet and Barry, 2003), Nigeria (Auta et al., 2014), Czech Republic (Maly et al., 2013), Portugal (Quintal and Mendes, 2012), Ireland (Dunne et al., 2014), New Zealand (Babar et al., 2011), Australia (Chong et al., 2011a), and Malaysia (Chong et al., 2011b). The majority of Czech pharmacists (Maly et al., 2013) considered generic drugs to be therapeutically equivalent (74%), whereas the proportion in Malaysia was only 50.2% (Chong et al., 2011b). In terms of the issue of substitution, while Allenet and Barry (2003) claimed that 90% of French pharmacists were in favour of implementing generic substitution. Olsson and Källemark Sporrang (2012) emphasized that the switch can confuse and worry patients in Sweden. Moreover, Dunne and Dunne (2015) recommended that "further research may be needed in the area of pharmacist opinions as they have a direct impact on patient acceptance of generic medicines and very little attention has been paid to this group". In addition, based on the results of a systematic search, it appears that no prior study has been conducted in Vietnam regarding the percep-

tions and practice of pharmacists in relation to generic products. Therefore, understanding this underexplored issue should be of crucial importance to Vietnamese policy makers.

The objective of this study is to evaluate pharmacists' views on generic medicines in the context of Vietnam as well as to investigate the generic substitution practices in community pharmacies southern Vietnam.

MATERIAL AND METHODS

Study design and participants

This descriptive research study, which took the form of a cross-sectional survey, was performed in 11 provinces in southern Vietnam (including Ho Chi Minh City, An Giang, Ba Ria-Vung Tau, Binh Duong, Ca Mau, Can Tho, Dong Nai, Kien Giang, Long An, Tay Ninh, and Tra Vinh provinces) between December 2016 and March 2017. A self-administered anonymous questionnaire (Table 1) was distributed to 480 pharmacists (80 to those in Ho Chi Minh City and 400 equally between the other ten provinces). All the registered pharmacists who were present at the time of the researchers' visit and accepted the invitation to participate in the study were sent a questionnaire. The total response rate was 39.6% (n=190). However, after eliminating 19 questionnaires that were incorrectly and/or incompletely filled out, 171 questionnaires were included in the statistical analysis, giving an effective response rate of 35.6%.

Data collection

The data collection tool used in this study was a questionnaire, which was developed based on a review of the prior literature investigating generic medicine utilization among pharmacists. It was formed from a combination of two studies conducted in Malaysia (Chong et al., 2011b; Babar and Awaisu, 2016). The questionnaire was tested with regard to its face validity by two experts and a group of five pharmacists. After pilot testing with thirty hospital and community pharmacists, feedback was sought regarding any grey areas of the questionnaire that needed to be adjusted.

The final version of the questionnaire contained 24 items that were split into three sections intended

to measure the respondents' views regarding generic medicine and generic substitution practice. The first section comprised ten questions that investigated the demographic and practice characteristics of the participating pharmacists. The next section contained seven questions intended to explore the respondents' knowledge of generic drugs as well as their attitude toward generic substitution. In order to evaluate the pharmacists' knowledge, six common medicines from the Vietnamese medications market (three generic names and three branded counterparts) were randomly chosen. The respondents were requested to select exactly three generic names in order for their knowledge to be classed as "Good". The seven questions in the third section assessed the pharmacists' general views on generic medicines, including their efficacy (Q18A, Q18B, and Q18C), safety (Q18C and Q18G), quality (Q18F), and the Drug Administration of Vietnam's (DAV) regulatory standard for generic medicines (Q18A, Q18D, and Q18E). The responses were given on a five-point Likert scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree).

Ethical approval

Ethical approval for this study was given by the Science Research Board of the University of Medicine and Pharmacy at Ho Chi Minh City, Vietnam (No. IORG0007145). Participation in the study was completely voluntary, and all collected information was anonymous and used only for research purposes.

Statistical analysis

All collected data were entered into Microsoft Excel for Windows® 2016. The tabulated data were then extracted to the SPSS® version 22.0 software package (SPSS Inc., Chicago, USA) to generate descriptive statistics. Any differences in the respondents' views on generic medicines were compared using the Kruskal-Wallis test for those that consisted of more than two independent groups. This non-parametric test was chosen due to the skewed data. All the statistical analyses in this study were set at a confidence level of 95% or a p-value of less than 0.05.

Table 1. Questionnaire used in the study.

PART 1: DEMOGRAPHIC CHARACTERISTICS		
No.	Question	Please indicate your answer by filling in the box like this <input checked="" type="checkbox"/>
01	Year of birth	— — — —
02	Gender	<input type="radio"/> Male <input type="radio"/> Female
03	Highest education in pharmacy	<input type="radio"/> Ph. D (Doctor of Philosophy) <input type="radio"/> Master <input type="radio"/> Bachelor <input type="radio"/> Three – year pharmacy technician <input type="radio"/> Two – year pharmacy technician <input type="radio"/> One – year pharmacy technician
04	Number of year(s) of practice	<input type="radio"/> ≤ 5 <input type="radio"/> > 5 – 10 <input type="radio"/> > 10 – 20 <input type="radio"/> > 20
05	Type of pharmacy where practicing	<input type="radio"/> Hospital pharmacy <input type="radio"/> Clinic pharmacy <input type="radio"/> Independent pharmacy (from 1 to 4 branch(es)) <input type="radio"/> Chain pharmacy (at least 5 branches) <input type="radio"/> Drugstore <input type="radio"/> Community hospital
06	Province where pharmacy located	_____
07	Area where pharmacy located	<input type="radio"/> Urban <input type="radio"/> Rural
08	Employment position	<input type="checkbox"/> Self or part owner <input type="checkbox"/> License holder <input type="checkbox"/> Adviser <input type="checkbox"/> Seller
09	Monthly income (USD\$)	<input type="radio"/> ≤ 250 <input type="radio"/> > 250 - 500 <input type="radio"/> > 500 - 750 <input type="radio"/> > 750
10	Are your daily needs ensured by the income?	<input type="radio"/> Yes <input type="radio"/> No

Table 1. Questionnaire used in the study (continued...).

PART 2: GENERIC - RELATED KNOWLEDGE, PERCEPTIONS AND ATTITUDES	
11	<p>Please indicate generic products in the following list:</p> <p><input type="checkbox"/>¹ Cetirizin Stada (cetirizine HCl)</p> <p><input type="checkbox"/>² Glucophage (metformin HCl)</p> <p><input type="checkbox"/>³ Agi – Calci (calcium carbonate + vitamin D3)</p> <p><input type="checkbox"/>⁴ Glomoti (domperidone)</p> <p><input type="checkbox"/>⁵ Nexium (esomeprazole)</p> <p><input type="checkbox"/>⁶ Ventolin (salbutamol)</p>
12	<p>In your practice, would you recommend branded or generic?</p> <p><input checked="" type="radio"/>¹ Branded</p> <p><input type="radio"/>² Generic</p>
13	<p>Would customer's appearance be one of your considerations in recommending generic?</p> <p><input checked="" type="radio"/>¹ Yes</p> <p><input type="radio"/>² No</p>
14	<p>When you recommend generic substitution, how the customers respond to your recommendation?</p> <p><input checked="" type="radio"/>¹ Accept</p> <p><input type="radio"/>² Refuse</p>
15	<p>Would you educate your customer regarding generic medicine?</p> <p><input checked="" type="radio"/>¹ Yes</p> <p><input type="radio"/>² No</p>
16	<p>What are the factors that affect your purchase of generic medicine?</p> <p><input type="checkbox"/>¹ Profit margin</p> <p><input type="checkbox"/>² Product popularity and local demand</p> <p><input type="checkbox"/>³ Bioequivalent studies</p> <p><input type="checkbox"/>⁴ Company's reputation</p> <p><input type="checkbox"/>⁵ Quality and safety</p> <p><input type="checkbox"/>⁶ Terms and conditions of payment</p> <p><input type="checkbox"/>⁷ High variety of stock</p> <p><input type="checkbox"/>⁸ Marketing strategy</p>
17	<p>What are your views about compulsory generic substitution? Do you think it can be an opinion for Vietnam?</p> <p><input checked="" type="radio"/>¹ Yes,</p> <p><input type="checkbox"/>^{1.1} Because not everyone can afford costly drugs</p> <p><input type="checkbox"/>^{1.2} But for quality generics only</p> <p><input type="checkbox"/>^{1.3} But drugs with narrow therapeutic index should not be included</p> <p><input checked="" type="radio"/>² No,</p> <p><input type="checkbox"/>^{2.1} Because customer has the right to choose whatever they like</p> <p><input type="checkbox"/>^{2.2} Because branded works better</p> <p><input type="checkbox"/>^{2.3} Because not easy to implement in case of Vietnam</p>
18	<p>On the scale of 1 to 5 (with highest = 5, lowest = 1), please rank your agreement with the following statements</p> <p>Circle your answer</p>
18A	<p>All products that are approved by the Drug Administration of Vietnam as generic equivalents can be considered therapeutically equivalent with the brand products</p> <p>1 2 3 4 5</p>
18B	<p>Therapeutic failures are a serious problem with some generic drugs</p> <p>1 2 3 4 5</p>
18C	<p>I feel that substitution of drugs with narrow therapeutic index is inappropriate</p> <p>1 2 3 4 5</p>
18D	<p>A generic drug must contain the same amount of active ingredients as the brand name drug</p> <p>1 2 3 4 5</p>
18E	<p>A generic drug must be in the same dosage form as the brand name drug</p> <p>1 2 3 4 5</p>
18F	<p>Generic drugs are of inferior quality compare to branded name drugs</p> <p>1 2 3 4 5</p>
18G	<p>Generic drugs produce more side-effects than brand name drugs</p> <p>1 2 3 4 5</p>

RESULTS

Of the 480 questionnaires that were initially distributed, 171 met the inclusion criteria for the study (an effective response rate of 35.6%). A higher percentage of respondents were female ($n=90$, 52.6%) and aged between 31–40 years ($n=58$, 33.9%). The majority of the participating pharmacists were sellers and had been practicing for under five years. There was an insignificant difference in the proportions of pharmacists who graduated from universities (Doctor of Philosophy, Master, and Bachelor) and those who trained for a short period (one-, two-, and three-year training), accounting for 47.4% and 52.6% of respondents, respectively. The pharmacists' monthly incomes were commonly under five hundred US dollar (US\$) ($n=130$, 76.0%), while 83.0% believed that their earnings secured the necessities of life.

The majority of respondents practiced in an independent pharmacy ($n=70$, 40.9%), three-quarters of them in urban areas ($n=133$, 77.8%). Approximately 56.1% of the surveyed pharmacies were located in five provinces in south-east Vietnam (Ho Chi Minh City, Ba Ria-Vung Tau, Binh Duong, Dong Nai, and Tay Ninh provinces), while the others were located in the south-west region (An Giang, Ca Mau, Can Tho, Kien Giang, Long An, and Tra Vinh provinces). Table 2 presents the characteristics of the respondents.

In the generic-related knowledge assessment, only a quarter of respondents ($n=45$, 26.3%) gave a "Good" answer, which required three generic names to be selected. It is noteworthy that 35 out of 45 correct answers were given by pharmacists who had graduated university. The results of the knowledge appraisal are also illustrated in Table 2.

In this study, around 47.3% of respondents indicated that all products approved as generically equivalent can be considered therapeutically equivalent to the innovator brand. About half (51.4%) of the surveyed pharmacists agreed that therapeutic failure is a serious problem associated with some generic medicines. A larger percentage (60.2%) of respondents expressed that the substitution of narrow therapeutic index medicines is inappropriate. More than half of all respondents indicated that a

generic medicine must contain the same amount of active ingredients (72.6%) and be in the same dosage form as the innovator brand (60.3%). When assessing whether generic medicines are of inferior quality to innovator brands, some 25.2% of respondents agreed with such a statement, while 38.6% expressed disagreement. Approximately a quarter of the pharmacists (27.4%) agreed that generic medicines result in more side effects than brand name medicines (Table 3). In addition, a statistical analysis was performed using the Kruskal-Wallis test on the seven five-point Likert scale questions in order to detect differences in the subgroups of the three domains (education level, age, and years of practice). Table 4 presents those particular results.

When investigating the respondents' generic substitution practice, the results proved diverse (Table 5). Approximately 60.2% ($n=103$) of the pharmacists recommended generics over branded products. Only 44.4% of respondents stated that a customer's physical appearance (i.e., whether they appeared wealthy or otherwise) had an influence on their substitutional decision. The majority of respondents claimed to educate their customers regarding generic medicine (80.1%), while about three-quarters of them believed that their customers accepted their recommendations. When asked about the major factors that affect their procurement of generic products, the profit margin, company's reputation, and local demand were given as the three major influencing factors. Only 39.8% of respondents indicated that the results of bioequivalence studies were important considerations with regard to procurement. The majority did not believe a high variety of stock and the marketing strategy to be indispensable factors. Most pharmacists (88.9%) also considered that compulsory generic substitution should not be introduced in Vietnam for a number of reasons.

DISCUSSION

This study revealed that more than half (52.7%) of all respondents disagreed or were dubious regarding the therapeutic equivalence of generic products.

Table 2. Respondents' characteristics and generic-related knowledge assessment (n=171).

Characteristics	Frequency		Characteristics	Frequency	
	n	%		n	%
Gender			Education level		
Male	81	47.4	Doctor of Philosophy	1	0.6
Female	90	52.6	Master	6	3.5
Age group (years)			Bachelor	74	43.3
≤ 25	41	24.0	Three-year pharmacy technician	12	7.0
26–30	46	26.9	Two-year pharmacy technician	75	43.9
31–40	58	33.9	One-year pharmacy technician	3	1.8
41–50	20	11.7	Type of pharmacy where practicing		
> 50	6	3.5	Hospital pharmacy	21	12.3
Number of year(s) of practice			Clinic pharmacy	17	9.9
≤ 5	67	39.2	Independent pharmacy ^a	70	40.9
6–10	55	32.2	Chain pharmacy ^b	14	8.2
11–20	33	19.3	Drugstore ^c	49	27.9
> 20	16	9.4	Area where pharmacy located		
Monthly income (US\$)			Urban	133	77.8
< 250	51	29.8	Rural	38	22.2
250–500	79	46.2	Province where pharmacy located		
500–750	28	16.4	South-East ^d	96	56.1
> 750	13	7.6	South-West ^e	75	43.9
Are your daily needs provided for by your income?			Medicines		
Yes	142	83.0	Cetirizin Stada (cetirizine HCl) ^g	154	90.1
No	29	17.0	Glucophage (metformin HCl)	86	50.3
Employment position ^f			Agi-Calci (calcium carbonate + vitamin D ₃) ^g	98	57.3
Owner or part owner	70	40.9	Glomoti (domperidone) ^g	111	64.9
License holder	60	35.1	Nexium (esomeprazole)	42	24.6
Adviser	52	30.4	Ventolin (salbutamol)	21	12.3
Seller	115	67.3			

^aIndependent pharmacy indicated those that have one to four branches.^bChain indicated those that have five or more branches.^cDrugstore indicated those that are owned by a two-year pharmacy technician.^dSouth-East provinces were Ho Chi Minh City, Ba Ria-Vung Tau, Binh Duong, Dong Nai, and Tay Ninh.^eSouth-West provinces were An Giang, Ca Mau, Can Tho, Kien Giang, Long An, and Tra Vinh.^fOne respondent may hold more than one position in the pharmacy.^gGeneric medicines.

Table 3. Pharmacists' responses to the five-point Likert scale questions (Q18A to Q18G, n=171).

Statement	Frequency									
	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	n	%	n	%	n	%	n	%	n	%
Q18A	All products that are approved by the Drug Administration of Vietnam as generic equivalents can be considered therapeutically equivalent with the brand products									
	12	7.0	36	21.1	42	24.6	71	41.5	10	5.8
Q18B	Therapeutic failures are a serious problem with some generic drugs									
	3	1.8	24	14.0	56	32.7	70	40.9	18	10.5
Q18C	I feel that substitution of drugs with narrow therapeutic index is inappropriate									
	3	1.8	8	4.7	57	33.3	72	42.1	31	18.1
Q18D	A generic drug must contain the same amount of active ingredients as the brand name drug									
	7	4.1	19	11.1	21	12.3	82	48.0	42	24.6
Q18E	A generic drug must be in the same dosage form as the brand name drug									
	9	5.3	32	18.7	27	15.8	68	39.8	35	20.5
Q18F	Generic drugs are of inferior quality compare to branded name drugs									
	17	9.9	49	28.7	62	36.3	40	23.4	3	1.8
Q18G	Generic drugs produce more side-effects than brand name drugs									
	21	12.3	53	31.0	50	29.2	43	25.1	4	2.3

Table 4. Differences in responses to the five-point Likert questions between groups by education level, age, and experience (n=171).

			Q18A	Q18B	Q18C	Q18D	Q18E	Q18F	Q18G
Education level	Mean score	Ph.D ^a , Master and Bachelor	2.77	3.69	3.78	4.21	4.00	3.12	3.10
		Short period training ^b	3.56	3.22	3.63	3.39	3.08	2.48	2.42
	χ^2 (df = 1)		23.289	11.522	1.909	35.534	31.077	21.778	18.652
	P value		< 0.001*	0.001*	0.167	< 0.001*	< 0.001*	< 0.001*	< 0.001*
Age (years)	Mean score	≤ 25	3.37	3.34	3.59	3.63	3.17	2.76	2.71
		26 – 30	3.26	3.33	3.78	3.52	3.43	2.87	2.72
		31 – 40	3.05	3.55	3.66	3.97	3.76	2.81	2.78
		41 – 50	3.25	3.45	3.80	3.90	3.40	2.55	2.65
		> 50	2.33	4.00	4.00	4.50	4.50	2.83	3.17
	χ^2 (df = 4)		6.033	4.703	1.559	9.660	10.867	1.989	1.500
	P value		0.197	0.319	0.816	0.047*	0.028*	0.738	0.827
Year(s) of practice	Mean score	≤ 5	3.31	3.34	3.58	3.63	3.40	2.73	2.64
		6 – 10	3.09	3.51	3.84	3.75	3.49	3.07	2.95
		11 – 20	3.24	3.39	3.61	3.97	3.64	2.55	2.73
		> 20	2.81	3.75	3.94	4.13	3.81	2.50	2.50
	χ^2 (df = 3)		3.018	3.242	4.126	3.869	2.316	8.845	3.159
	P value		0.389	0.356	0.248	0.276	0.509	0.031*	0.368

^aDoctor of Philosophy; ^bIncluding one-, two- and three-year training; ^cDegree of freedom; *Significant difference

Table 5. Generic practice assessment result (n=171).

Question	Frequency	
	n	%
<i>In your practice, would you recommend branded or generic?</i>		
Branded	103	60.2
Generic	68	39.8
<i>Would customer's appearance be one of your considerations in recommending generic?</i>		
Yes	76	44.4
No	95	55.6
<i>When you recommend generic substitution, how the customers respond to your recommendation?</i>		
Accept	128	74.9
Refuse	43	25.1
<i>Would you educate your customer regarding generic medicine?</i>		
Yes	137	80.1
No	34	19.9
<i>Factors that affect generic procurement*</i>		
Profit margin	120	70.2
Product popularity and local demand	103	60.2
Bioequivalent studies	68	39.8
Company's reputation	115	67.3
Quality and safety	81	47.4
Terms and conditions of payment	31	18.1
High variety of stock	23	13.5
Marketing strategy	23	13.5
<i>What are your views about compulsory generic substitution? Do you think it can be an opinion for Vietnam?*</i>		
Yes,	19	11.1
Because not everyone can afford costly drugs	14	8.2
But for quality generics only	11	6.4
But drugs with narrow therapeutic index should not be included	2	1.2
No,	152	88.9
Because customer has the right to choose whatever they like	119	69.5
Because branded works better	70	40.9
Because not easy to implement in case of Vietnam	41	24.0

*Respondent may choose more than one answer.

This result reflects the fact that pharmacists may lack confidence in the generic manufacturing and/or approval system. Yet, this result may also suggest that pharmacists perhaps misunderstand the concept of bioequivalence. About 60% of the participating pharmacists believed in or were uncertain about the inferior quality of generic medicines when compared to innovator medicines. This negative belief may be related to their limited understanding of bioequivalence and therapeutic equivalence as observed in their responses to question Q18A. This outcome is analogous to that found in a study conducted in Nigeria (Auta et al., 2014), which claimed that 54.5% of respondents did not

believe in the equivalent quality of generic and brand name products, as well as a study in the Czech Republic (Maly et al., 2013), which found that 65% of pharmacists considered original brands to be higher quality than their generic counterparts. Conversely, studies conducted in Ireland (Dunne et al., 2014) and New Zealand (Babar et al., 2011) demonstrated opposite results, with the majority of pharmacists considering generic medicines to be both therapeutically equivalent and as effective as the respective brands.

In terms of substitution, most pharmacists (60.2%) carried generic products over brands. Additionally, among the 68 cases who did not recom-

mend generics, 44.1% (n=30) worked in hospital and clinic pharmacies where customers refused generic medicines apart from prescriptions. The higher prevalence of the use of generics despite uncertainty regarding their quality may relate to customers' acceptance of lower-price medicines. This result conflicts with the findings of a study conducted in Malaysia, which suggested that the majority of pharmacists recommended 40–50% of drugs be branded drugs (Babar and Awaisu, 2016). Even though substituting generic names for their branded counterparts is generally a safe, simple, and cost-saving phenomenon (Haas et al., 2005), pharmacists vary with regard to their propensity to perform therapeutic switches (Mott and Cline, 2002). In Australia, the “generic substitution” policy permits pharmacists to dispense a different brand of the drug without reverting to the prescriber even though the physician has written a prescription for a particular brand. Moreover, the “generic prescribing” policy allows pharmacists to dispense any brand of the drug whenever the non-proprietary name is written on the prescription (Birkett, 2003).

The pharmacists included in this study were educated differently. As a consequence, there were significant differences in terms of their views on generic medicines between the university graduated group and the short training period groups (Kruskal-Wallis test shows a p-value < 0.001 for six statements, except Q18C). This reflected the fact that the two cohorts may have attended dissimilar education programs. A lack of knowledge about generic versus branded medicines as well as negative beliefs about the quality and safety of generics are issues that must be addressed. The pharmacy curricula hence need strengthening in the area of generic drugs, especially the concept of bioequivalence and the related policies. Continuous training for practicing pharmacists could also be considered in order to enhance the pharmacists' understanding of generic medicines. Taking Australia as an example, three organizations, namely the National Prescribing Service, the Pharmaceutical Society of Australia, and the Pharmacy Guild of Australia, have collaborated to supply frequent information and guidelines on generic medications to the community of pharmacists (National Prescribing Service Limited, 2007). The aim of this educational activity is to

strengthen the pharmacists' knowledge and improve their confidence in informing customers about the safe and appropriate use of generics.

A statistical analysis was also performed for the five-point Likert questions between the groups of different ages and different experiences. The test showed a significant difference ($p < 0.05$) in the answers of the different age subgroups for questions Q18D and Q18E, which relate to the regular standard for generic medicines in Vietnam. The comparative analysis between the subgroups of practicing time found a significant difference ($p < 0.05$) in the responses to question Q18F, which relates to the generics' quality assessment.

Certain limitations were perceived in relation to this study. The response rate was insufficient to meet the minimum required representative sample size of Vietnamese pharmacies. As the study was conducted in eleven provinces using convenience sampling, it is too regional to achieve nationwide generalizability. Apart from its limited sample, the skewed figures concerning respondents from different demographic groups prevented the use of more powerful parametric statistical tests in order to discover differences between the groups of pharmacists.

Future studies should conduct a national survey as well as focusing on generic policy implementation. A comparison between locally manufactured medicines and those supplied by international manufacturers is also recommended, since pharmacists seem to place greater trust in global pharmaceutical companies.

CONCLUSIONS

The pharmacists who were trained in a short period of time (one, two, or three years) did not clearly understand generic drugs. Some 52.7% of respondents disagreed or felt uncertain about the therapeutic equivalence of generic names. This result suggests that Vietnamese pharmacists may lack confidence in the generic manufacturing and/or approval system and, further, that they might misunderstand the concept of bioequivalence. This issue should be addressed by pharmacy educators through the provision of more educational activities designed to enhance the knowledge and confidence of pharmacists regarding generic medicines. A na-

tional investigation is needed to achieve the required representative sample size of Vietnamese pharmacies.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENT

The authors confirm that the project has no funding or grants. The authors wish to acknowledge the pharmacists who voluntarily participated in this study. They express their gratitude to all the staff at the Professional Healthcare Management, Education and Research Center (ProHES) as well as to Ass. Prof. Pham Dinh Luyen at the Faculty of Pharmacy, University of Pharmacy and Medicine at Ho Chi Minh City, for their support.

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Contribution	Tran QV	Nguyen TD	Nguyen TTH	Ngo NHY	Vo TQ
Concepts or ideas	X				X
Design	X				X
Definition of intellectual content	X				X
Literature search	X				X
Data acquisition	X		X	X	X
Data analysis	X	X	X	X	X
Statistical analysis	X	X	X		X
Manuscript preparation	X	X	X	X	X
Manuscript editing	X	X		X	X
Manuscript review	X				X

Citation Format: Tran QV, Nguyen TD, Nguyen TTH, Ngo NHY, Vo TQ (2018) Acceptance and perceptions of generic substitution among pharmacists: A preliminary study in Vietnam. J Pharm Pharmacogn Res 6(3): 136–147.