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Factors affecting purchasing behaviors of generic drugs versus originator counterparts in Jordan

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ABSTRACT

Background: The use of generic drugs is increasing in several countries due to their lower price while maintaining the same efficacy as their originator counterparts. But some concerns arise from the lack of knowledge or misunderstanding of the concept of bioequivalence and/or from manufacturers' marketing efforts that lead consumers to switch back to branded drugs.
Method: A random sample of 350 percipients has been enrolled; 304 had completed the questionnaire that was used in this study (regarding the factors influencing consumers' preferences for generic vs. branded drugs). The forms have been distributed online (using Google Form) among all participants.
Results: Results revealed that the most influential factor for participants when purchasing drugs was the role of the pharmacist. Lack of knowledge about the efficacy of drugs has the lowest effect on choosing the medication. Also, the price and confidence in brand-name drugs showed a statistically significant effect on selecting the medications.
Conclusion: Generic drugs seem to be the best option for patients but a progressive alteration is required in people's mentality to accept this fact. This can be done through promoting educational interferences to increase consumer and health system confidence in the capability of generic medications to treat chronic diseases.

INTRODUCTION

Regarding bioequivalence, two pharmaceutical products are considered to be bioequivalent in their bioavailabilities (rate and extent) and efficacies if they are administered in identical amounts of the same active substance(s), similar dosage forms, and same route of administration and if they display comparable properties (Dunne *et al*., 2013). Therefore, generic drugs are permitted by regulators based on evidence of pharmaceutical equivalence and bioequivalence with the originator counterparts. The excipients of the originator and generic drugs are not necessarily similar, which may affect the pharmacokinetics and pharmacodynamics parameters of the drug and its safety profile. According to the World Health Organization, a generic drug is a pharmaceutical product that is produced by a manufacturer without a license from the patent-holding company and marketed when the original patent has expired, which means that they do not need the originator company's approval to produce a generic drug (Dunne *et al*., 2013; US Food and Drug Administration, 2013). Also, they contain equivalent quantities and qualities of the same active substance(s) and the same pharmaceutical form as their reference original drugs, with low-cost price, and may contain different excipients (Desai *et al*., 2019; Kesselheim *et al*., 2008; Vogler, 2012). However, bioequivalence and the role of excipients may be elucidated regarding the clinical efficacy and safety when switching from originator to generic

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formulations. Cost-benefits, purchasing, and prescription behaviors can explain the choice between generic and originator counterparts (Gallelli *et al*., 2013). The use of generic drugs is trending upward in the upcoming years, accounting for approximately 90% of all prescriptions drug in the US (Desai *et al*., 2019). The definitive aim of generic drug production is to enhance the global access and regulation of generic drugs and to preclude drug shortages and supply disturbances (Håkonsen and Toverud, 2019). Likewise, many consumers and providers recognize generic drugs to be less effective and less safe than their originator counterparts (Kesselheim *et al*., 2016). These negative expectations may affect patients to experience negative clinical results while using generic drugs (Desai *et al*., 2019). Once the generic drug enters the market, an increase in cost savings is highly probable. In comparison to the originator, the use of generic drugs has a significant economic benefit in controlling healthcare spending and saving money for society. Thus, a true economic cost must be carefully considered before switching a drug, taking into account the clinical outcomes of the generic medication for any individual patient (Dunne *et al*., 2013; Johnston *et al*., 2010; Olsson and Sporrong, 2012).

In 2005, a health economic study examined the possible cost savings for the substitution of originator drugs with generic drugs based on data collected from 1997 to 2000. It showed that generic substitutions could save up to 5.9 billion dollars for populations younger than 65 years old and 2.9 billion dollars for populations older than 65 years old (Haas *et al*., 2005; Rizzo and Zeckhauser, 2009). Thus, generic drugs offer healthcare systems considerable cost savings; however, their acceptance is stalled by worries of physicians and patients about the efficacy and safety of these drugs (Tian *et al*., 2020). Many factors can affect the prescriptions/purchasing behavior of the bioequivalent medication (Rizzo and Zeckhauser, 2009). Physicians are the eventual decision-makers of which drug brands should be prescribed to their patients. Therefore, all the marketing strategies are being directed toward them (Ahmed *et al*., 2020; Shamim-ul-Haq *et al*., 2014). Their decisions have a profound impact on the quantity, quality, and costs of healthcare systems (Mohammadshahi *et al*., 2019). There are specific factors that affect the prescription attitude of physicians such as a new drug in the market, brand prescription, sponsorship to conferences, promotional tools, and free drug samples (Shamim-ul-Haq *et al*., 2014). Shamim-ul-Haq *et al*. (2014) suggest that new drugs, promotional tools, and drug samples significantly effluence the prescription behavior of physicians, and the remaining factors do not have any major effect. Originator products are always expensive compared to local products; consequently, the brand prescription is less effective on the prescription behavior of physicians due to the cost factor, whereas Raheem Ahmed *et al*. (2020) concluded that marketing elements (such as the brand of the drug, sales promotion, availability of drug information, medical representatives' effectiveness, patient's characteristics including their expectations and request for a particular drug, and pharmacist factors) have a positive and massive influence on the decision of physician to prescribe a drug. Furthermore, physician's habits and the cost-benefit ratio of the medicine have played a substantial moderating effect to prescribe a specific drug. Physicians are more willing to prescribe generic medications when a medical representative of a generic company visits them many times per month and provides them with sufficient information and upgrades about the generic drug (Shamim-ul-Haq *et al*., 2014).

On the other hand, the characteristics of the drug do not have any moderating influence on the expectations of patients and the decisions of physicians to prescribe the drug. Similarly, trustworthiness has a significant control impact on pharmacist–-physician cooperation, the pharmacists' expertise, and the decision of physicians to prescribe a drug (Schumock *et al*., 2004). Therefore, the financial incentives of the consumers and physician's influence play important roles in consumer purchasing patterns of prescription drugs (Kohli and Buller, 2013). The main purpose of this research was to understand what factors impact consumers' purchasing/prescription patterns of generic drugs versus originator drugs and to add sufficient knowledge based on consumer preference (Rizzo and Zeckhauser, 2009). Additionally, the aim was to investigate the role of healthcare professionals specifically physicians and pharmacists in the acceptance of generic drugs since they create the ultimate decision on what to prescribe and dispense. Also, the purpose of this research was to display the roles of healthcare professionals in persuading patients whose confidence in generic drugs often rests on the appropriate information provided by health specialists (Håkonsen and Toverud, 2019).

MATERIALS AND METHODS

Study design

This study was conducted in Jordan from March to October of 2020. Google Form surveys were used to investigate the factors affecting the choice between originator drugs and generic drugs (Al-Samydai *et al*., 2020). A simple random sampling strategy was used to collect data. Three hundred and four people were recruited and their demographic data have also been reported. To ensure the quality of the survey, we set the response range of some items (e.g., age, marital state, academic qualification, and field of study). Finally, a total of 304 people who completed the questionnaires (which contained 37 questions as shown in Appendix Table 1) were included in the analysis (Al-Samydai *et al*., 2020).

Study model

Figure 1 shows the study model which contains the study research problem, objectives, and hypotheses (Al-Samydai *et al*., 2019; Yousif and Al-samydai, 2019). The hypothesis of this study is to investigate the impact of independent factors (the role of physician, the role of pharmacist, efficacy, price, experience, and confidence) on the dependent factor (choice of the drug).

Statistical analysis

The study aimed to document the impact of several factors affecting the choice of the drug. Therefore, bivariate correlation analysis, linear regression, two-sample *t*-test, and one-way analysis of variance (ANOVA) were conducted using Statistical Package for the Social Sciences® software, version 21 (Aburjai *et al*., 2019). Values of $p \leq 0.05$ are considered to be significant.

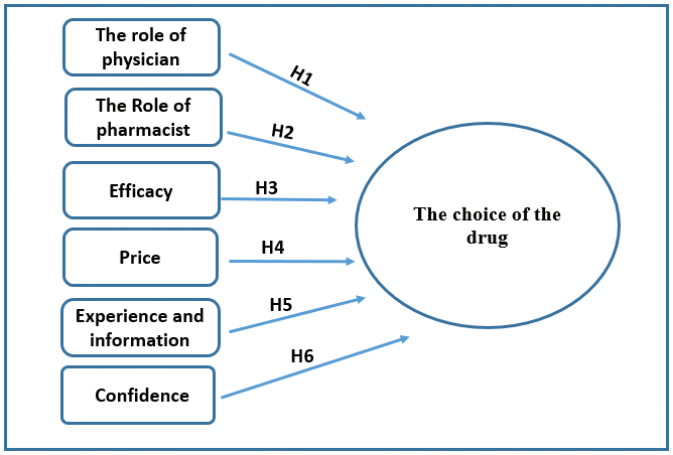

Figure 1. Study model; the factors affecting the choice of the originator drug versus generic drug. (H1): there is an impact of physician role on the choice of the drug, (H2): there is an impact of pharmacist role on the choice of the drug, (H3): there is an impact of efficacy on the choice of the drug, (H4): there is an impact of price on the choice of the drug, (H5): there is an impact of experience and information on the choice of drug, and (H6): there is an impact of confidence on the choice of the drug.

RESULTS AND DISCUSSION

Although the use of generic drugs has augmented promptly in the past two decades, many negative observations may lead patients to switch back to the branded product after generic substitution. Indeed, switching back to the branded product is highly prevalent and their role in educating the patients about drugs' safety, effectiveness, price, and quality may affect patients' perceptions (Desai *et al*., 2019; Kesselheim *et al*., 2016). Table 1 shows the demographic distribution of study samples.

The general drug purchasing patterns of Jordanian individuals and the factors affecting their drug choice were tested based on data collected from a random sample of the Jordanian population. Table 2 shows the multiple regression analyses between the role of physicians, the role of pharmacists, efficacy, price, experience and information, and confidence in the choice of medications. Table 2 also shows that the research-dependent variables (choice of medications) are significant because the p-value is 0.000 which is < 0.05, and the calculated F-value is 27.827, which is more than the table F-value (2.372). Therefore, we reject the null hypothesis and accept the alternative one which states that there is a statistically significant effect at the level of $\alpha \leq 0.05$ of the role of physicians, the role of pharmacists, efficacy, price, experience and information, and confidence on the choice of drugs. The relationship between dependent and independent variables is strong and positive. It is > 0.5 (Cohen, 1999), R = 0.600. Also, R^2 = 0.360, which means that the contribution of the independent variables strongly affects the dependent variables with a percentage of 36.0% since the value of the calculated t for the variables (the role of physician: 2.470; the role of the pharmacist: 5.834; price: 4.292; experience and information: 2.363; and confidence: 4.677) is more than the table t-value (1.96). This means that they have a statistically significant effect on the choice of medications, while the t-value of the efficacy was 0.435, which was less than the table t-value (1.96), which means that the efficacy does not have a statistically significant effect on the choice of medications. The role of a pharmacist is considered one of the main factors affecting drug choice, which plays a critical role in using generic or originator counterparts. Table 3 shows that the independent factors (effectiveness, experience and information, the role of physician, price, confidence, and role of the pharmacist) and dependent variable (the choice of medications) had significant positive linear relationships of 0.173, 0.288, 0.335, 0.360, 0.362, and 0.410, respectively.

Table 1. Demographic distribution of the study samples.

	Type	Frequency	Percent
Gender	Male	99	25.5
	Female	205	52.8
Age	<30 years	146	37.6
	30–35 years	93	24.0
	40–50 years	40	10.3
	>50 years and older	25	6.4
Marital status	Single	167	43.0
	Married	129	33.2
	Others	8	2.1
Educational level	High school	27	7
	Diploma	30	7.7
	Bachelor's degree	214	55.2
	Master degree	26	6.7
	PhD	7	1.8
Field of study	Medical sector	88	21.6
	Science, engineering, and technology sector	81	22.7
	Educational, linguistic, or social sciences or business	87	20.9
	Others	48	12.4

One-way ANOVA was carried out to test the effect of the field of study on the choice of medications. The results show that there was a significant difference, which means that the field of study has an impact on the choice of medications with p = 0.023. Science and humanity field respondents showed the highest positive correlations between dependent and independent variables, while medical field respondents showed a negative correlation. The main factors affecting the preference for purchasing generic drugs were the socioeconomic factor (Guttier *et al*., 2017) and this was compatible with several studies that suggested that generic competition affects branded- prices and market shares (Aronsson *et al*., 2001), and there is a strong dynamic relationship between consumer trust and product loyalty (Alhabeeb, 2007), where consumers' confidence in the product characteristics, especially those related to knowledge about generic drugs, plays an important role in choosing the product. Concerning age, there were no differences in the preference of generic and branded drugs. In terms of education, nine nonmedical field respondents or less educated individuals were more affected by the pharmacist and physician's opinions toward generic and branded- drugs. Information from pharmaceutical companies increases awareness of available medicines in the market (Davari *et al*., 2018). Also, Quintal and Mendes (2012) carried out a

Table 2. Results of multiple regressions of the first main hypothesis.

Dependent variable	*R*	R^2	*F*	Sig.	Independent variable	Beta	*t*	Sig.
The choice of medications	0.600	0.360	27.827	0.000	The role of physician	0.125	2.470	0.014
					The role of pharmacist	0.299	5.834	0.000
					Effectiveness	0.022	0.435	0.664
					Price	0.221	4.292	0.000
					Experience and information	0.120	2.363	0.019
					Confidence	0.236	4.677	0.000

R = correlation coefficient; R^2 = coefficient of determination; *F* = F-statistic; Sig. = s*ignificance probability (p*-value ≤ 0.05: statistically significant; *p*-value > 0.05 = not statistically significant); Beta = unstandardized coefficients; *and t* = test statistic for *t*-test.

Table 3. Correlations (Pearson's correlation) between independent factors and dependent factors.

	Role of physician	Role of pharmacist	Efficacy	Price	Experience and information	Confidence	
			Overall correlation with choice of drug				
	0.335	0.410	0.173	0.360	0.288	0.362	
			Impact of age status on choice of drug				Sig.
<30 years	0.414	0.418	0.172	0.320	0.402	0.460	
30–35 years	0.203	0.435	0.195	0.424	0.069	0.098	0.333
40–50 years	0.295	0.364	0.095	0.416	0.478	0.584	
>50 years and older	0.420	0.276	0.167	0217	0.010	0.465	
			Impact of field of study on choice drug				Sig.
Medical sector	0.359	0.348	0.094	0.291	0.316	0.451	
Science, engineering, and technology sector	0.417	0.454	0.268	0.439	0.375	0.503	0.023
Educational, linguistic, or social sciences or business	0.199	0.368	0.194	0.589	0.109	0.125	
Others	0.384	0.500	0.121	0.174	0.400	0.449	

research on medicine use and pharmacists' counseling; it was observed that the lack of information received by the user, lack of prescription, and absence of confidence in generic medicines were the main reasons for the underuse of generic drugs. However, after recognizing the specific knowledge about price and having better knowledge about generic drugs, users had a higher preference for purchasing them. A previous study conducted by Keenum *et al.* (2012), which has concluded that most respondents agreed that generic drugs were inexpensive (98%), was as effective as the branded medicine (77%), and had no problem in replacement with generic ones (80%), but only 45% preferred generic drugs over the originator counterparts. Nardi and Ferraz (2016) concluded that the price is an important factor that may contribute to the decision to purchase generic drugs. And those who showed a lower effect on the preference for generic drugs were efficacy and experience, in comparison to the healthcare system's role that showed a higher effect. Thus, raising awareness on the quality of generic drugs in healthcare professionals and consumers was the best approach, especially that a physician has no direct pecuniary incentives to choose less expensive products or overall to inform himself/herself about generic alternatives (Aronsson *et al*., 2001). Patient admittance to harmless and profitable treatment became a main priority in the healthcare system. The development of bioequivalent drugs in comparison to original drugs has become an interesting topic to both the industry and society to reduce healthcare costs, fulfill the needs of healthcare sponsors, possibly grow availability to patients, and patient and physician acceptance, with numerous patients choosing biologics and branded products. Also, physicians prescribing the same limits the use of generic medicine and bioequivalence. The growth of generic products depend on sponsors' decisions to provide or use these products safely and selflessly (Ibrahim and Awaisu, 2020). Known factors affecting people's behaviors toward purchasing generic drugs versus originators will play an impotent role for many companies to put strategies based on the market and help other companies to enter the marketplace.

CONCLUSION

The use of generic drugs is trending upward; their usage increases in several countries due to the lower price compared to their originator counterparts while maintaining the same efficacy. The results revealed that the most influential factor for participants when purchasing drugs was the pharmacist's role. On the contrary, lack of knowledge about the effectiveness of drugs has the lowest

effect on choosing the medication. Also, the price and confidence in branded drugs showed a statistically significant impact on selecting the medicines. It was concluded that generic medication seems to be the best option for patients. Still, progressive alteration is required in people's mentality to accept this fact, which may achieve by healthcare consumer education toward generic medication. In addition to this, the guidance of the healthcare system is essential for patients to switch to generic drugs from branded products.

PROSPECTS OF THE STUDY

The growth of the generic drug market depends on patients' understanding of their safety and efficacy. Thus, understanding various factors that affect people's behaviors toward generic drugs versus originator drugs will play an impotent role for many generic drug manufacturing companies. It will help them plan their policies for entering the market, combined with strategies to supply the generic drugs with the lowest prices. In addition to this, the guidance of physicians and raising medical awareness in the general public are required to increase patient and healthcare system confidence in the capability of generic medicines in fighting chronic diseases.

LIMITATIONS OF THE STUDY

A significant limitation of this study is the generalizability of the results since the sample included only respondents in Amman. Data showed that our surveyed population had a higher educational background than was initially hypothesized. Almost 80% of the participants reported having a college degree or higher (BCs degree 55.2%, MSc degree 6.7%, and PhD 1.8%). The lack of generalizability to the target population may bias the direction of our findings. Another limitation in our analyses was that our 50-question survey might have been too long for participants. However, the lack of definitions, examples, and images of both generic and branded- drugs in our survey may have led to misinterpretation by the respondents. Thus, responses may have varied based on which drug category the respondent believed he or she was addressing.

AUTHOR CONTRIBUTIONS

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; and agreed to be accountable for all aspects of the work.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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REFERENCES

Aburjai T, Yousif RO, AlSamydai MJ, Al-Samydai A, Al-Mamoori F, Azzam H. Protein supplements between consumer's opinion and quality control: an applied study in Jordan. Int J Res Pharm Sci, 2019; 10(3):1961–9.

Ahmed RR, Streimikiene D, Abrhám J, Streimikis J, Vveinhardt J. Social and behavioral theories and physician's prescription behavior. Sustainability, 2020; 12(8):3379.

Alhabeeb MJ. On consumer trust and product loyalty. Int J Consum Stud, 2007; 31(6):609–12.

Al-Samydai M, Al-Kholaifeh A, Al-Samydai A. The impact of social media in improving patient's mental image towards healthcare provided by private hospitals' in Amman/Jordan. Indian J Public Health Res Dev, 2019; 10(2):491–6.

Al-Samydai MJ, Qrimea IA, Yousif RO, Al-Samydai A, Aldin MK. The impact of social media on consumers' health behavior towards choosing herbal cosmetics. J Crit Rev, 2020; 7(9):1171–6.

Aronsson T, Bergman MA, Rudholm N. The impact of generic drug competition on brand name market shares–evidence from micro data. Rev Ind Organ, 2001; 19(4):423–33.

Cohen J. Statistical power analysis for the behavioral sciences. 2nd edition, Academic Press, Cambridge, MA, 1999.

Davari M, Khorasani E, Tigabu BM. Factors influencing prescribing decisions of physicians: a review. Ethiop J Health Sci, 2018; 28(6):795–804.

Desai RJ, Sarpatwari A, Dejene S, Khan NF, Lii J, Rogers JR, Dutcher SK, Raofi S, Bohn J, Connolly JG, Fischer MA. Comparative effectiveness of generic and brand-name medication use: a database study of US health insurance claims. PLoS Med, 2019; 16(3):e1002763.

Dunne S, Shannon B, Dunne C, Cullen W. A review of the differences and similarities between generic drugs and their originator counterparts, including economic benefits associated with usage of generic medicines, using Ireland as a case study. BMC Pharmacol Toxicol, 2013; 14(1):1–19.

Gallelli L, Palleria C, De Vuono A, Mumoli L, Vasapollo P, Piro B, Russo E. Safety and efficacy of generic drugs with respect to brand formulation. J Pharm Pharmacol, 2013; 4(Suppl1):S110.

Guttier MC, Silveira MP, Luiza VL, Bertoldi AD. Factors influencing the preference for purchasing generic drugs in a Southern Brazilian city. Rev Saude Publ, 2017; 26:51–9.

Haas JS, Phillips KA, Gerstenberger EP, Seger AC. Potential savings from substituting generic drugs for brand-name drugs: medical expenditure panel survey, 1997–2000. Ann Intern Med, 2005; 142(11):891–7.

Håkonsen H, Toverud EL. Generic Drug Policies. Encyclopedia of Pharmacy Practice and Clinical Pharmacy, 2019; 130-138.

Ibrahim MI, Awaisu A. Generic medicines and biosimilars: impact on global pharmaceutical policy. In: Babar Z (ed.). Global pharmaceutical policy. Palgrave Macmillan, Singapore, Singapore, pp. 53–72, 2020.

Johnston A, Stafylas P, Stergiou GS. Effectiveness, safety and cost of drug substitution in hypertension. Br J Clin Pharmacol, 2010; 70(3):320–34.

Keenum AJ, DeVoe JE, Chisolm DJ, Wallace LS. Generic medications for you, but brand-name medications for me. Res Social Adm Pharm, 2012; 8(6):574–8.

Kesselheim AS, Gagne JJ, Franklin JM, Eddings W, Fulchino LA, Avorn J, Campbell EG. Variations in patients' perceptions and use of generic drugs: results of a national survey. J Gen Intern Med, 2016; 31(6):609–14.

Kesselheim AS, Misono AS, Lee JL, Stedman MR, Brookhart MA, Choudhry NK, Shrank WH. Clinical equivalence of generic and brand-name drugs used in cardiovascular disease: a systematic review and meta-analysis. JAMA, 2008; 300(21):2514–26.

Kohli E, Buller A. Factors influencing consumer purchasing patterns of generic versus brand name over-the-counter drugs. South Med J, 2013; 106(2):155–60.

Mohammadshahi M, Alipouri Sakha M, Zarei L, Karimi M, Peiravian F. Factors affecting medicine-induced demand and preventive strategies: a scoping review. Shiraz E-Medical J, 2019; 20(10):e87079.

Nardi EP, Ferraz MB. Percepção de valor de medicamentos genéricos em São Paulo, Brasil. Cadernos de Saúde Pública, 2016; 32(2): e00038715.

Olsson E, Sporrong SK. Pharmacists' experiences and attitudes regarding generic drugs and generic substitution: two sides of the coin. Int J Pharm Pract, 2012; 20(6):377–83.

Quintal C, Mendes P. Underuse of generic medicines in Portugal: an empirical study on the perceptions and attitudes of patients and pharmacists. Health policy, 2012; 104(1):61–8.

Rizzo JA, Zeckhauser R. Generic script share and the price of brand-name drugs: the role of consumer choice. Int J Health Care Finance Econ, 2009; 9(3):291–316.

Schumock GT, Walton SM, Park HY, Nutescu EA, Blackburn JC, Finley JM, Lewis RK. Factors that influence prescribing decisions. Ann Pharmacother, 2004; 38(4):557–62.

Shamim-ul-Haq S, Ahmed RR, Ahmad N, Khoso I, Parmar V. Factors influencing prescription behavior of physicians. Pharm Innov J, 2014; 3(5):30–5.

Tian Y, Reichardt B, Dunkler D, Hronsky M, Winkelmayer WC, Bucsics A, Strohmaier S, Heinze G. Comparative effectiveness of branded vs. generic versions of antihypertensive, lipid-lowering and hypoglycemic substances: a population-wide cohort study. Sci Rep, 2020; 10(1):1–12.

US Food and Drug Administration. Guidance for industry. Bioequivalence studies with pharmacokinetic endpoints for drugs submitted under an ANDA. US Food and Drug Administration, Silver Spring, MD, 2013. Available via http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatory-Information/Guidanees/UCM377465.pdf

Vogler S. How large are the differences between originator and generic prices? Analysis of five molecules in 16 European countries. Farmeconomia, 2012; 13(3S):29–41.

Yousif RO, Al-samydai MJ. Factors influencing woman behavior to visit dental clinic to improve their smile. Indian J Public Health Res Dev, 2019; 10(2).

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APPENDIX

Table 1. The questionnaire used in this study.

Section One: Below are some questions related to general information. Please select the appropriate answer

The first part: General information for the study sample. Tick the appropriate answer:

1. Gender: Male Female

2. Age: <30 years From 30 to 40 years From 40 to 50 years >50 years and older

3. Marital Status: Single Married Other

4. Number of family members:

5. Educational level: High school Diploma Bachelor's degree Master's degree PhD Other

6. Field of study: Medical sector
Science, engineering, and technology sector
Educational, linguistic, or social sciences or business
Others

7. Place of residence Amman Other

Part two: The following are some questions related to medical and health education, please select the appropriate the answer

8. Does anyone of your family members or close acquaintances work in the health sector: Yes No

9. What is the source of your general information in the health field specifically?
- □ Friends or relatives working in the health sector
- □ Friends or relatives who are not working in the health sector
- □ Social Media
- □ General Internet search

10. Do you have chronic diseases that require permanent treatment (diabetes, hypertension, asthma, ...):
□ Yes □ No

11. Did you know that the generic drug contains the same pharmaceutical composition and has the same pharmaceutical form (syrups, capsules…...) as the originator drug, but the manufacturer and brand name for it is different?
□Yes □ No

12. Have you heard about bioequivalence studies: □ Yes □ No

13. Did you know that in Jordan there are seven centers licensed by the institutions to conduct drug studies to compare different alternatives for the same drug and make sure that they have the same efficiency? Several private and government hospitals that have obtained licenses to conduct such studies and their licenses are renewed every 3 years? □ Yes □ No

Section Two:

The following is a set of expressions regarding the factors affecting the choice of medicine, (a comparative study between a generic drug and an originator drug), please choose the appropriate answer after reading the following phrases:

Axes and paragraphs	Strongly agree	Agree	Neutral	Don't agree	Strongly don't agree
First category: the role of the physician					
1. Your doctor directs you toward using the originator drug due to its high quality					
2. You feel that the doctor is dealing with only a limited number of originator pharmaceutical companies exclusively					
3. You feel that there is an agreement between the doctor and the neighboring pharmacies about the medicine that is given to the patient					
4. You find that the prescription written by some doctors cannot be read by most pharmacists					
5. You find that the doctor is interested in the name of the active ingredient of the medicine and does not care about the country of origin, because both have the same effectiveness					
6. You feel that the doctor dispenses the generic drug because it is cheaper than the originator and to reduce the cost for the patient					
7. You feel that the doctor is dispensing the originator drug because it has a higher price so that the patient feels the extent of the efficiency and effectiveness of the medicine dispensed to him					

Axes and paragraphs	Strongly agree	Agree	Neutral	Don't agree	Strongly don't agree
Second category: the role of the pharmacist					
8.The pharmacist tells you that the originator drug is more effective than the generic drug					
9. The pharmacist gives you an alternative originator drug in case the drug prescribed by the doctor is not available without referring to the doctor					
10. When the originator drug prescribed by your doctor is not available, you accept the generic drug that the pharmacist suggests as an alternative					
11. You feel that the pharmacist is directing you to buy a specific originator drug instead of the generic medicine					
Third category: effectiveness					
12. You find that the originator drug does not generate unwanted side effects					
13. You find that the generic drug generates unwanted side effects					
14. You buy the generic drug in case the originator drug is not available in the pharmacy because you trust the effectiveness of the generic drug					
15. You find that the effectiveness of the generic drug product is high compared to the originator drug					
16. You find it difficult to distinguish the quality and efficacy of the generic drug from the originator because you got the same results from both products which treated the same disease					
Fourth category: price					
17. You find that the price of the generic drug is lower than the price of the originator drug					
18. You find that you have the willingness to pay a higher price to obtain an originator drug product because of its high quality					
19. You prefer to buy generic drugs because their prices are reasonable					
20. You prefer to buy generic drugs even if their prices are high					
Fifth category: information					
21. You have good information about the effectiveness of generic drugs as a result of previous experience					
22. You review the medical leaflet attached to the drug, which gave you the conviction that the quality and effectiveness of the originator drug is more than the generic drug					
23. You see that medical leaflet which comes with the originator drug gives you all warnings before using it					
24. You see that medical leaflet which comes with the generic drug gives you all warnings before using it					
Sixth category: the confidence					
25. You trust the brand of the generic drug					
26. You trust the brand of the originator drug					
27. You trust f originator drug-producing companies more than generic drug-producing companies					
28. You seek to search for originator drugs because your confidence in them is higher than the generic drug					
Seventh category: choose a medication					
29. The doctor has the primary role in determining the type of drug I use					
30. You find that the doctor makes you feel that using the originator drug is more effective					
31. You feel that the pharmacist motivates you to choose the originator drug					

Axes and paragraphs	Strongly agree	Agree	Neutral	Don't agree	Strongly don't agree
32. You feel that the generic drug is more available in pharmacies than the originator drug					
33. You choose the generic drug because you think it is more effective than the originator drug					
34. You want to get the generic drug because its price is low compared to the price of the originator drug					
35. You have enough information about the originator drug to make you choose it					
36. You have enough information about the generic drug to make you choose it					
37. You trust the originator drug more than the generic drug, which makes you feel comfortable when it is prescribed to you					