Choice of mandatory prescribed drugs in Portugal: a consumers' perspective

Pedro Ferreira

Hugo Gomes da Costa Barbosa

Abstract

Purpose: This paper contributes to the understanding of what influences consumers' choice of mandatory prescribed drugs, by looking with more detail to the substitution of branded drugs by generics. Specifically, this research looks at three factors that can influence this decision, namely participative decision-making, perceived risk and price consciousness, within the recent changes introduced in the Portuguese pharmaceutical market by new legislation.

Design/methodology/approach: A cross-sectional study was conducted, using a self-administered questionnaire, to survey a sample of consumers/patients that visited a doctor and were prescribed some kind of drug. Data was treated using factor analysis for dimensionality reduction purposes and regression analysis to test the main hypothesis.

Findings: The results show that participative decision-making has no impact on purchase decision of generics, while perceived risk and price consciousness show a predictive power regarding purchase intention of generic drugs.

Research limitations/implications: Although the results are only applicable to the Portuguese context, it draws important conclusions regarding consumers' behaviour when choosing between branded and generic drugs.

Practical implications: Knowing what influences consumers' choices of generic drugs contributes to tune marketing strategies and actions. For public institutions, this paper offers insights on how to adapt public policies.

Originality/value: This paper is valuable because it is the first to look at the Portuguese pharmaceutical market from a consumer behaviour perspective since new legislation was set up.

Introduction

The Constitution of the Portuguese Republic establishes the National Health Service as being universal and tendentiously free. This has been one of the major drivers for a positive trend in the majority of the public health indicators (Serrão, 1998). However, the growing demand for healthcare and country's limited resources, led to the review of healthcare policies (Furtado and Mateus, 2008).

Health spending in Portugal has increased significantly in the last years, whether measured as a proportion of total health expenditure per capita, or as a proportion of GDP. In a report that assesses 10 years of drug policy in Portugal (2000-2009), Barros and Nunes (2011) show that the pharmaceutical expenditure has undergone a significant increase. This trend is confirmed by "OECD Health Data" showing an increase of 3.2 % on the total expenditure on health as a percentage of GDP between 2005 (10.4%) and 2010 (10.8%), significantly above the average of the European Union (9.4%). During the same period the out-of-pocket expenditure on health, rose from 23.9 % to 25.8 %, while the average of the European Union remained stable at 17.2 %, according to the OECD Health Data (2014).

The generic market is constantly growing since 2000. According to data from Infarmed, the Portuguese National Authority of Medicines and Health Products, in 2011 the market share of generics was about 22% and in 2014 was settled at 47%. From 2011 onwards, National Health Services expenditures, especially on drugs, became more pressured due to the 2011 economic crisis. As a consequence, the memorandum of understanding established between the Portuguese Government and the Troika (IMF, EC and ECB) sets the goal of

reducing the public health expenditure with hospital and ambulatory medicines from 1.55% of the gross domestic product (GDP) in 2010 to 1.25% of the GDP in 2012 and to 1% of the GDP in 2013 (Mendonca, 2011). Within this context authorities have been adopting several measures to contain expenditure, and one of the major strategies is the promotion of the generic drugs market (Barros and Nunes, 2011; Coelho, 2010; Mendonca, 2011).

Thus, between 2000 and 2012 more than 50 legislative measures were taken in order to rationalize the expenditure on health and encourage the use of generic drugs. Some of these measures are the mandatory prescription by International Nonproprietary Name (INN), new levels of state reimbursement, lower trade margins, setting incentives to professionals, obligation of healthcare professional to inform the patient about the existence of generic, increase state reimbursement for generic, resizing packaging, pricing and others (Barros and Nunes, 2011; Mendonca, 2011).

These measures have changed the way medicines are prescribed and purchased in Portugal. Traditionally, the purchasing process of prescribed drugs (i.e. drugs that can only be sold at pharmacies and with a prescription from a physician), rather than a purchase itself, was a set of sequential steps: the physician writes the drug prescription, the pharmacist dispenses the drug and finally the patient consumes (Merino-Castelló, 2003). This sequence – prescription-dispensation-consumption – apparently linear shows the physician as the only decision maker, reserving for the remaining players a passive role in the purchasing choice decision. In this context the marketing efforts of the pharmaceutical industry were traditionally directed to the prescriber, i.e. the physician.

However, in recent years the creation of the "generic market" as well as the introduction of legislative changes has introduced a second level of decision to be exercised at the pharmacy level. In fact, pharmacists were able to change (under certain circumstances) the

branded product prescribed by a similar generic with lower price. Nevertheless, physicians remained with the power to restrict this substitution preserving themselves as the most important decision maker in most cases. But in 2012, a new law (Law nr. 11/2012 from March 8) gave the patient, at the time of purchase, the opportunity to choose between the branded drug prescribed and three cheaper generic alternatives, empowering the consumer as the ultimate decider.

Following this recent changes and the impact they might have on patients' choices, the goal of this paper is to understand what factors influence the consumer choice under this specific and new pharmaceutical market circumstances, namely the choice between branded and generic drugs.

Besides the changes in the environment, the relevance of this study also finds support in the insufficiency of studies on the subject. Although this problem has been studied in several countries (Decollogny et al., 2011; Dunne et al., 2014; Frisk et al., 2011; Kjoenniksen et al., 2006; Kobayashi et al., 2011; Nardi and Ferraz, 2016; Rathe et al., 2013; Rozano Suplet et al., 2009), previous research is either too descriptive, lacking the explanatory power, or do not take a consumer behaviour perspective. Moreover, regarding the Portuguese reality, there are few studies (Dylst, 2012; Quintal and Mendes, 2012; Simoens and S., 2009; Vogler, 2012) that look at the choice process of mandatory prescribed drugs, and all of them prior to the most recent legislation change, with the exception of Duque et al. (2014). Despite its relevance, this study takes a descriptive approach, finding statistically relevant relationships between the consumption of generic drugs and several socio-demographic variables.

Thus, the lack of previous work on the purchase behaviour in the market of mandatory prescription drugs (Merino-Castelló, 2003), mainly in Portugal, justifies the need to understand what determinants of choice behaviour should be considered (Valeckova, 2012).

Thus, this paper starts by looking into the literature in order to identify the most relevant determinants of choice behaviour of generic drugs, following to the empirical study, namely to examine the influence of those factors in the purchase intention of mandatory prescribed drugs.

Literature Review

Dunne and Dunne (2015) conducted a review of literature about physicians, pharmacists and consumers perspectives on generic medicines and found only 31 papers published between January 2003 and November 2014 about consumers' opinions. The analysis of results of these papers revealed five main categories/themes and several sub-categories, that explain consumers'/patients' attitude towards generic medicines, namely: "patients' lack of confidence in generic medicines", "patients' actual experiences in using generic medicines", "factors influencing patient acceptance of generic medicines", and "provision of information and education regarding generic medicines". Finally, the authors highlight that although general opinions have improved, some mistrust remains, based on the belief that less expensive equals lower quality.

From a consumer behaviour perspective, several sub-categories are related with important aspects of the consumer decision process, such as provision of poor or poorly understood information, patient involvement in decision-making, and source of information, including physician versus pharmacist.

Several studies (Dunne and Dunne, 2015; Hassali et al., 2009; Kjoenniksen et al., 2006; Kobayashi et al., 2011; Manchanda et al., 2005; Quintal and Mendes, 2012; Shrank et al., 2009) about patients' perceptions of generic drugs reveal several important paths to be explored. First, physicians are still important prescribers since patients still rely on the specialists' advice for an opinion about which brand they recommend. Second, price is a very

important factor when it comes to choose a generic drug. Given the novelty of the law, the knowledge of generics by consumers is partially based on the idea that generics are cheaper than the branded drugs; then the economic incentive could be an important driver of choice.

Taking this framework into account, and since there are many factors that can influence the switch between branded and generic drugs, this paper focus on understanding the influence of physicians through participative decision-making, the role of price consciousness and the perceived risk of choosing a generic drug.

Participative Decision-Making

Traditionally, patients do not actively participate when interacting with physicians, a process that affects patients' health. This is mostly true for patients who believe that "doctors know best", although nowadays patients are more aware and informed about health issues, namely about diseases and medication (Manchanda et al., 2005).

Bissell et al. (2004) stated that interactions with patients should be used not only to give and reinforce instructions around treatment but as a space where patients and health professionals can interact, arriving at mutually agreed goals. This concept known as concordance is explained by Stevenson & Scambler (2005) as a concept based on the idea that patients and practitioners should work together towards an agreement on treatment choice.

Following prior evidence showing that physician-patient communication and participative decision-making may have a positive impact on patient compliance, Hausman (2001) demonstrated that open communication and participative decision making led to improved compliance.

A recent systematic review conducted by (Chewning et al., 2012) about patient decision role preferences regarding treatment and screening show that about 63% of studies

included in the review concluded that the majority of patients preferred sharing decisions with physicians, which is even more evident in studies after 2000.

Although most studies corroborate the idea that a good patient-physician communication may improve several outcomes, Gregory et al., (2011), using a decision science perspective, found that reality is far from this idealized form of patient-physician relation. In their own words, authors were "surprised" by the failure of the assumed decision-making models to explain much of what they heard and observed. Physicians usually engage in a "pattern recognition" looking for matches between patients' condition and familiar medication options, justifying this behaviour with the right (training) and the responsibility (experience) to simplify options. Patients revealed mixed feelings about this type of behaviour, ranging from frustration to acceptance.

Following these findings the following hypothesis is formulated:

H1: Participative decision-making (PDM) influences purchase intention of mandatory prescribed drugs

Price consciousness

Price consciousness is the degree to which consumers are willing to pay low prices (Lichtenstein et al., 1988). According to Su (2007), some consumers base their strategy on expected value (correlating price, brand and credibility expected); on the other hand price adverse consumers choose the lowest price retailer to minimize immediate costs.

Generic medicines are cheaper than their branded equivalents. Although consumers think this is an incentive associated with their use (Halme et al., 2009; Heikkilä et al., 2012; Kjoenniksen et al., 2006; Kohli and Buller, 2013; Quintal and Mendes, 2012; Sharrad and Hassali, 2011) it does not necessarily translate into an intention to use them (Heikkilä et al., 2012; Keenum et al., 2012). In fact, several studies show that low prices are identified with

low quality (Dunne et al., 2014; Himmel et al., 2005). This perception is translated in several

assumptions, such as poor quality, “second class” medicines (Dunne et al., 2014; Patel et al., 2010), and even the idea that generics are counterfeit medicines (Håkonsen and Toverud, 2011; Patel et al., 2012).

Despite this scenario, a few studies have shown that price may be an incentive. For example, generic medicines are considered a valid option for minor illnesses, leaving branded medicines for more serious health problems (Babar et al., 2010; Omojasola et al., 2013; Sewell et al., 2012). This may be understood as a process of matching the risk associated with the health problem to the price of the medicine: serious health problems demand better medicines, where “best” is equivalent to more expensive. Moreover, Shrank et al. (2009) found that only a minority of consumers believed that branded medicines are better than generics.

Regarding generic medicines there are still considerable knowledge gaps (Dunne et al., 2014; Kobayashi et al., 2011; Sewell et al., 2012; Sharrad and Hassali, 2011) that might feed misconceptions about price perception, namely the idea of lower price being equal to lower quality. In a study conducted in Ireland, Dunne et al. (2014) found that about one third of patients had no knowledge of generic medicines and about 40% of those exhibited confusion between “generic” and “genetic”. Nevertheless, price is seen as a positive factor for potential adoption of generics due to the potential economic savings (Håkonsen and Toverud, 2012; Heikkilä et al., 2007).

Taking into account the literature on perceptions about generics, especially those related with price, hypothesis 2 is raised as follows:

H2: Price consciousness (PC) influences purchase intention of mandatory prescribed drugs

Perceived Risk

Consumer choice behaviour involves risk in the sense that it produces consequences that cannot be anticipated. The factors that produce risk – uncertainty and something at stake – are virtually present in all buying situations (Cox and Rich, 1964). Thus many researchers have attempted to establish the relationship between perceived risk and purchase behaviour (Havlena and DeSarbo, 1991; Hawes and Lumpkin, 1986; Laroche et al., 2003; Mitchell, 1999).

Risk can be defined as an expectation of loss, and according to Mitchell (1999) the level of risk increases with the probability of loss. Similarly Cox & Rich (1964) explain the concept of perceived risk as being the amount of risk perceived by the consumer when taking a particular purchase decision. Consumers buy products it in order to attain one or various goals. The presence of risk is related with the fact that the consumer cannot be certain of achieving the goals with the purchase.

In the pharmaceutical market, specifically the case of generics, this is an important issue for researchers and for practitioners, since one of the main concerns is the perceived risk of substituting a branded by a generic drug. Since the 1970's consumer perceived risks of generics have been studied.

Bearden & Mason (1978) and Bearden et al. (1979) found that major concerns about generics are related with performance, financial savings, and safety. Nevertheless, recent studies found that consumers do not believe that generic medicines pose a safety risk (Dunne et al., 2014; Heikkilä et al., 2012; Shrank et al., 2009).

Ganther & Kreling (2015) examined consumer risk perceptions for generic prescription drugs used to treat different types of medical conditions. The main conclusion is that perceived risk vary according the medical condition being treated. Moreover, they also conclude that price should be taken into account when encouraging the use of generics,

because as the perceived level of risk increases, larger cost savings are required by consumers.

To reduce perceived risk consumers adopt strategies which can affect their buying behaviour Cox & Rich (1964), namely (1) increase the ability to predict the result of the decision, (2) do something to reduce the amount at stake. The first is the most commonly used strategy, and consumers do it either relying on past experiences or on information from other people (experience of others).

Taking into account that previous studies draw attention to the lack of information about generic drugs (Babar et al., 2010; Kjoenniksen et al., 2006; Kobayashi et al., 2011), and that perceived risk is an important measure to study consumer behaviour, the following hypothesis is raised:

H3: Perceived risk (PR) influences purchase intention of mandatory prescribed drugs

Methods

In order to analyse the influence of participative decision-making, price consciousness and perceived risk on patients' choice of branded and non-branded drugs, the empirical research was supported in a survey to patients who had a doctor's appointment in the last 12 months and were prescribed some kind of drug. The sample was not restricted to patients with any particular disease. Due to the lack of studies in Portugal after the last changes in the legislation it was considered more reasonable to take a more general approach at this stage.

The questionnaire was made of three sections. The first section was made of introductory questions about the last appointment with the doctor and the type of drug bought (branded or generic). The second section sought information about demographics (such as gender and age). The third section included questions about the three main constructs

(participative decision-making, price consciousness, perceived risk and purchase intention), assessed by a five-point Likert scale for all items.

The three main concepts were assessed using tested measurement scales found in the literature. Participative decision-making was based on the measure developed by Hausman (2001) containing five items (e.g. "My doctor asks my opinion regarding treatment options" or "My doctor encourages suggestions about appropriate treatment of my illness"). Perceived risk was measured by the Laroche et al. (2003) four item scale (e.g. "There is a good chance I will make a mistake if I purchase a generic" or "Generics are a very risky purchase"). Price consciousness used the three item scale proposed by Wakefield & Inman (2003) (e.g. "I'm willing to make an extra effort to find a low price for a prescribed drug" or "I am sensitive to differences in prices of drugs"). Finally, a single item measured purchase intention, namely "In the future, how likely are you to buy generic drugs when you get a prescription".

The questionnaire was made available online and invitations to respond were randomly sent by email to a list of patients and 263 responses were obtained (response rate of 5.26%). Quality control assessed each observation against criteria such as incomplete observations or patients' who did not comply with the criteria of having an appointment in the last 12 months. The final sample consisted of 218 adults from both sexes (49.55% male and 50.45% female) aging from 18 to 70 years old (M=37; S.D.=9.744).

In terms of statistical procedures, the analysis starts by describing data of the main independent variables – participative decision-making, perceived risk and price consciousness. Then, factor analysis with varimax rotation was performed for each of the concepts in order to reduce dimensionality of data and to confirm the robustness of each measurement scale used. Secondly, and following the conclusions of several studies (Babar et al., 2010; Kjoenniksen et al., 2006; Kobayashi et al., 2011; Patel et al., 2012; Rathe et al.,

2013; Shrank et al., 2009) about the impact of having or not previous experiences with generics, an independent samples *t* test was performed to assess the differences between users and non-users of generics regarding participative decision-making, perceived risk and price consciousness. Finally, a multiple regression analysis was used to test the influence of the independent variables on purchase intention.

Findings

Descriptive Analysis

Regarding participative decision-making, measuring the involvement of patients in their own health issues when in interaction with physicians, all items score below the scale midpoint. This result reveals a general low participation of patients, and that physicians do not promote or value patients' opinions.

Perceived risk was measured using the Laroche et al. (2003) four item scale. The risk perceived by respondents is generally very low. All items have homogeneous scores below 2. This means that respondents do not perceive that high risks are involved when choosing generics.

Price consciousness scores are a little over the scale midpoint, revealing a medium price consciousness. Respondents reveal that they are relatively sensitive to differences in prices (M=3.47; S.D.=1.278) but they are less sensitive to changes in their plans just to take advantage of a buy for a lower price (M=2.96; M=1.402).

Table 1 – Mean and standard deviation for main variables

	Mean	Std. Deviation
Participative decision making		
My doctor asks my advice and council regarding treatment options	2,09	1,248
I helped the doctor in planning my treatment	2,18	1,195
My doctor encourages suggestions about appropriate treatment of my illness	2,69	1,412
Both the doctor and I participated extensively in planning treatment of my illness	2,38	1,247
Together, my doctor and I set goals and discuss treatment options	2,38	1,276
Perceived risk		
There is a good chance I will make a mistake if I purchase generics	1,72	1,038
I have a feeling that purchasing generics will really cause me lots of trouble	1,66	1,089
I will incur some risk if I buy generics in the next twelve months	1,56	,940
Generics are a very risky purchase	1,58	,958
Price conciousness		
I'm willing to make an extra effort to find a low price for generics	3,42	1,290
I will change what I had planned to buy in order to take advantage of a lower price for generics	2,96	1,402
I am sensitive to differences in prices of generics	3,47	1,278
In the future, how likely are you to buy generics with mandatory prescription?	4,16	1,265

Note: respondents used a scale from 1 (disagree) to 5 (agree)

The 13 items that compose the three independent variables were subjected to a factor analysis in order to reduce the dimensionality of data. The Bartlett test of sphericity does not accept the null hypothesis that the correlation matrix is an identity matrix (Sig.=.000) and the test of Kaiser-Meyer-Olkin (KMO) with a value of .799, points to the presence of common factors. The study of the commonalities after extraction and the anti-image matrix indicated the suitability of all items. Thus, these results indicate that the sample is adequate for the principal component analysis.

The components were extracted and the items grouped in three components

corresponding to the three factors considered, namely participative decision-making, perceived risk and price consciousness. The total variance accounted for is 76.49%, with robust factor loadings (above .700). The reliability of each construct is also high, with values above .800.

Table 2 – Factor loadings for participative decision making, perceived risk and price consciousness items

	Factor loading		
Participative decision making			
My doctor asks my opinion regarding treatment options	,851		
I helped the doctor in planning my treatment	,845		
My doctor encourages suggestions about appropriate treatment of my illness	,755		
Both the doctor and I participated extensively in planning treatment of my illness	,911		
Together, my doctor and I set goals and discuss treatment options	,868		
PVAF	36.59%		
Internal consistency (cronbach alpha)	.898		
Perceived Risk			
There is a good chance I will make a mistake if I purchase generics		,878	
I have a feeling that purchasing generics will really cause me lots of trouble		,914	
I will incur some risk if I buy generics in the next twelve months		,888	
Generics are a very risky purchase		,914	
PVAF		24.49%	
Internal consistency (cronbach alpha)		.919	
Price Consciousness			
I'm willing to make an extra effort to find a low price for generics			,878
I will change what I had planned to buy in order to take advantage of a lower price for generics			,905
I am sensitive to differences in prices of generics			,847
PVAF			15.41%
Internal consistency (cronbach alpha)			.850

Extraction Method: Principal Component Analysis.

Users vs. Non-users

Respondents were asked if they ever bought generic prescribed drugs. The experience of taking generics may alter the attitude towards this kind of drug, which may condition the consumer decision process (Kobayashi et al., 2011). Thus we performed a *t*-test for independent samples in order to check if users and non-users had different perspectives. regarding the constructs involved in the conceptual model. The Levene's test for equality of variances was performed in order to test whether the variance of scores for the two groups is the same. The differences between users and non-users are not significant for participative decision-making (F=2.003; Sig.=.410), perceived risk (F=21.306; Sig.=.070) and price consciousness (F=.319; Sig.=.806) thus allowing treating the sample as a homogeneous group.

Regression Analysis

As stated before, the main goal was to test the influence of participative decision-making, perceived risk and price consciousness on purchase intention of mandatory prescribed drugs, namely the substitution of branded drugs by generics. To assess these relationships, a standard multiple regression analysis was performed.

The three factors confirmed by the factor analysis – participative decision-making, perceived risk and price consciousness – were computed as the independent variables, while purchase intention was computed as the dependent variable. In order to overcome potential problems of multicollinearity among the extracted factors, regression analysis was performed using the factor scores resulting from factor analysis, using the Anderson-Rubin method.

Results do not violate the assumptions of multicollinearity (correlations ($0.3< r >0.7$) and Tolerance>0.10) and VIF<10), normality distribution, outliers (standardised residual values above about 3.3 or less than –3.3) or unusual cases (Tabachnick and Fidell, 2001). There is, however, some slight evidence of violation in the scatterplot of regression

standardized residuals (homoscedasticity), since it's possible to see a slight pattern in the residuals (higher on one side than the other).

To assess the statistical significance of the result it is necessary to perform an ANOVA, which tests the null hypothesis that multiple R in the population equals 0. According to the scores (F=48.251; sig.=.000) the model is significant.

Table 3 - ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	140,165	3	46,722	48,251	,000[a]
	Residual	207,216	214	,968		
	Total	347,381	217			

a. Predictors: (Constant), Price Consciousness, Participative Decision-Making, Perceived Risk

b. Dependent Variable: Purchase Intention

The model explains 40.9% of the variance in Purchase Intention (R^2=.409). The greater contribution to explain the variance of Purchase Intention is made by Perceived Risk (ß=-.498; p<0.05), followed by Price Consciousness (ß=.367; p<0.05). Participative Decision-Making makes no significant contribution (ß=-.162; p>0.05). The unique contribution of Perceived Risk to the Purchase Intention variance is 18.2%, while Price Consciousness is 8.9%.

Table 4 – Regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	4,378	,281		15,585	,000	3,824	4,932
	Participative Decision Making	-,121	,064	-,103	-1,880	,061	-,248	,006
	Perceived Risk	-,638	,079	-,456	-8,091	,000	-,794	-,483
	Price Consciousness	,337	,059	,309	5,662	,000	,219	,454

According the results, the regression equation is as follows:

Purchase Intention = 4.378 – (.456*Perceived Risk) + (.309*Price Consciousness)

While Perceived Risk and Price Consciousness contribute to the explanation of Purchase Intention, Participative Decision-Making does not make a significant contribution at all. The next section discusses these results.

Discussion

Following the literature on the subject, mainly Kjoenniksen et al. (2006), Kobayashi et al. (2011), and (Dunne and Dunne, 2015), the factors selected for this study as possible influencers of patients' choice behaviour were participative decision making, perceived risk and price consciousness. The choice of these factors was also conditioned by their recent relevance within the new context of mandatory prescribed drugs in Portugal.

The results show that participative decision-making has no significant impact on purchase intention of generic drugs. Although at a first glance this may seem unforeseen, the lack of influence of PDM on purchase intention may be related to physicians' and patients' attitudes and to the poor quality of doctor-patient communication. Physicians are still not used to involve patients in their own health problem solving issues. On the other hand, patients are used to place the responsibility for the decisions in the doctors' hands. In fact, a study conducted in Portugal prior the last change in the law revealed that 7 out of 10 patients do not ask the physician to prescribe a generic medicine because they think the decision is up to the physician alone (Duque et al., 2014).

The low values of Participative Decision Making revealed in the present study may be also the result of poor communication processes. This gap was already addressed by Gregory et al. (2011) in a study about the quality of communication between doctors and patients, finding a huge gap between what is said and understood, differences in goals, knowledge gaps and risks associated with decisions. They found that doctors do not usually balance risks and benefits of a given drug. Instead they engage in a pattern recognition process and decide

based on a small set of familiar options. Patients and doctors were prompt in recognising the poor quality of treatment communications, but unable or unwilling to change it.

The importance of sources of information to the decision process as whole, and specifically to the choice between branded and generic drugs, is very important according to the literature (Dunne et al., 2014). However, according to Shrank et al. (2009), only about 20% of physicians and 25% of pharmacists talk to patients about generics substitution. This almost lack of communication (or poor communication) becomes very important to explain the results of Perceived Risk and Price Consciousness, since the lack of knowledge is considered as one of the major obstacles to generic adoption (Keenum et al., 2012; Kjoenniksen et al., 2006; Patel et al., 2012; Sewell et al., 2012; Shrank et al., 2009).

Perceived Risk shows a significant (negative) influence on purchase intention of generics. This means that the higher the risk perceived, the lower the intention to buy a generic. The literature supports this kind of relation between risk and purchase intention. Perceived risk levels may go up or down depending on the information available and the sources that convey the information.

Regarding knowledge and information Kobayashi et al. (2011) conducted a similar study in Japan and tried to evaluate the understanding and attitude of Japanese patients towards generic drug substitutions. They found that the large majority of respondents had limited knowledge about generics, namely that they are less expensive than the brand name drugs and generic drugs contain the same active ingredients as brand name drugs. This lack of knowledge combined with the fact that willingness to switch to generics is based on previous experience (which is also a source of information), makes the adoption of generics much more difficult.

In fact, some literature about patients' attitudes towards generics agrees on the need to provide further information about generic medicine (Kjoenniksen et al., 2006; Kobayashi et al., 2011). According to Duque et al. (2014), Portuguese patients still present some distrust regarding generic medicines. The authors argue that these results are mainly due to poor information, with 40% considering generic medicines either cheaper or lower quality.

Several studies (Dunne et al., 2014; Patel et al., 2010; Quintal and Mendes, 2012; Sharrad and Hassali, 2011) reveal that patients rely more on physicians and pharmacists than in any other source of information. In fact, patients who reported to have received information from their physician or the pharmacy about generic substitution were more likely to have switched from branded to generic (Kjoenniksen et al., 2006; Kobayashi et al., 2011).

Price consciousness also contributes, although in a lesser extent, to explain purchase intention. The lower contribution may be associated with the fact that individuals, although price sensitive, rank other factors higher when it comes to decide between branded and generic drugs. However, unlike perceived risk, price consciousness has a positive influence in purchase intention of generics. This means that the higher the price consciousness about drugs, the higher the intention to choose generics. According to the literature, this may be explained by several factors. One of them is some kind of contrast effect. In some cases, branded drugs have a very high price and the generic may be an appealing option (Shrank et al., 2009).

Another factor explaining this influence is well known in consumer behaviour, and it's again related with knowledge and information. Rao & Sieben (1992) studied the effect of prior knowledge on price acceptability and concluded that an upper and lower limit of acceptable price range varies with the level of knowledge. In fact, these authors observed that consumers' value perception influence their acceptable prices and therefore the information they use to form their quality and value perception will likely have an influence in the acceptable price range.

Price can also function as an incentive (Halme et al., 2009; Kjoenniksen et al., 2006; Kobayashi et al., 2011; Kohli and Buller, 2013; Quintal and Mendes, 2012). According to a study conducted in Norway, Kjoenniksen et al. (2006) found that almost half of the respondents stated that they would not have switched if they had no personal economic incentives.

Despite the fact that price may be seen as an important incentive for generic adoption, one should be careful in taking this incentive for granted. In the US, Shrank et al. (2009) and

Keenum et al. (2012) found that American patients agree that this drug is less expensive and a better value. Nevertheless, they are not willing to take generics instead of branded drugs. These conclusion was also found in Finland (Heikkilä et al., 2012).

After looking at the results and at the discussion of the impact of each of the elected factors, participative decision-making is not only the most unexpected result, but the lack of influence on purchase intention of generic drugs also seems to be related with price consciousness and perceived risk. In other words, it emerges from the results and the literature that the lack of participative decision-making may be conditioning the adoption of generic drugs. Thus, there is a need for public policies to stimulate patients' participation in their own health issues, but also to prepare doctors and other healthcare actors to better communicate with patients.

Following previous literature on the subject, two main course of action seem to emerge. On the one hand, it's important to reduce perceived risk and fear of change by informing patients about what really are generic drugs. In a study conducted by (Vallès et al., 2003) to examine patients' acceptability of brand drugs by generic drugs, concluded that 98.9% of patients who received verbal information and handout materials explaining the advantages a disadvantages of generic drugs agreed with the substitution. Despite these promising results, information to patients alone will probably not change patients' perceptions. In fact, the lack of knowledge about generic drugs combined with the high degree of trust in doctors (Dunne et al., 2014) may diminish patients' participation, relying solely on medical professionals decision.

Thus, the other course of action suggested is to inform and train healthcare professionals in order to change their mindset. Vallès et al. (2003) reported an experimental study conducted in Spain where a group of doctors, the intervention group, received monthly education seminars on generic drugs and computer-produced prescribing feedback, and the control group of doctors received no information or training. The results show that the prescription of generic drugs in the intervention group was significantly greater than in the control group. However, as (Rathe et al., 2013) point out, both courses of action should be

taken carefully, since attitudes towards generics are drug-specific, meaning that the resistance to and practical effects of generics may vary across drug classes and diseases.

Conclusion

In Portugal, the decision between a branded or a generic drug came to the fore, since new laws approved the possibility of patients decide whether they prefer a branded or a generic drug. This change gave more decision power to other actors involved in the process besides the physician, namely the patient. From a consumer behaviour perspective, a more empowered consumer became the new reality, raising questions regarding how patients decide and what influences their decision.

This study sought to understand this new context from a consumer behaviour perspective, namely by looking at the factors that may condition the patient (i.e. the consumer) to choose between the branded and the generic drug.

The changes of the Portuguese law regarding these issues were presented allowing the understanding of the specific context, followed by a literature review of the major factors influencing patients' attitudes and perceptions towards generics. From the information provided by previous studies on the subject, it was possible to identify participative decision-making, perceived risk and price consciousness as potential influencers of patients' choice of generic drugs.

The results of this study show that participative decision-making has no impact on purchase intention of generics. It is shown that this absence of impact may in fact be hiding other aspects of doctor-patient relationship and communication, leading to poor information and knowledge, misconceptions and resistance to change by patients, which in turn may be influencing other aspects, such as perceived risk. Some directions were discussed in order to promote a greater and better doctor-patient communication, namely stimulating a greater participation of patients.

On the other hand, perceived risk and price consciousness have a significant impact, but while the latter has a negative impact, the former has a positive impact on purchase

intention of generic drugs. These results are in line with previous literature, showing that the higher the perceived the risk, the lower the intention to buy; also, the higher the price consciousness, the higher the intention to buy.

Some limitations can be pointed out. The first one is related to the factors that may influence patients' choice. There are numerous factors besides participative decision-making, price consciousness and perceived risk that should be investigated. For example, aspects related with packaging and product physical characteristics (de Craen et al., 1996), but also aspects related with patients' experience of consumption, such as effects and/or side-effects or the adverse effect that is caused by drugs but is not a pharmacological effect, known as the nocebo effect (Weißenfeld et al., 2010).

This study adopted a patient' (consumer') perspective but it should be noticed that there are other stakeholders involved in the process of prescribing and dispensing. Taking into account the reality established by the Portuguese law, the role of the pharmacist, but also the physician, is an important topic to be further researched in order to offer a more complete perspective on the subject, as it was already done in other countries, such as Sweden (Olsson and Kälvemark Sporrong, 2012), USA (Bearden and Mason, 1979), Spain (Rodríguez-Calvillo et al., 2011), Australia (Chong et al., 2011), among others.

Another limitation is related to the context of the research. The meaning and relevance of the research question raised is associated with the Portuguese legal frame and conclusions should be understood as such. Thus, further research should be conducted in multi-country contexts in order to understand patients' decision behaviour in multiple market contexts. Also, the sample size limits the generalization of results.

Finally, this research study did not make a distinction between drugs for different pathologies. One can assume that the variables used in this study may have a different behaviour within different pathologies (Figueiras et al., 2008). To overcome this limitation, further research on specific group of medicines should be undertaken.

Nevertheless, the conclusions offered by this study are useful for practitioners since they improve the knowledge about patients' behaviour regarding the decision process. The

new context of prescribing and dispensing drugs empowers consumers in the moment of choosing, which may demand for a new marketing approach in order to adapt communication strategies and messages. Also, businesses specifically devoted to generics need to understand the kind of relation consumers develop with this category of drugs, namely their attitudes and decision process. The focus should be on reducing ambiguity and lack of information regarding generic drugs, while demonstrating a positive cost-benefit ratio. This will certainly contribute to more effective marketing strategies. Finally, if generic substitution is to be enhanced, public policies should reinforce the doctor-patient communication, by informing patients and training doctors and pharmacists about this option as a potential path to be followed.

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