

THE PERCEIVED BENEFITS OF GENERIC **VERSUS BRANDED MEDICINES**

Matthew Esosasere Igbinovia

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Abstract

People increasingly face the choice of branded or generic medicines and the decision sometimes is a difficult one. This research work was designed to determine the perceived benefits of generic versus branded medicines. People's perception of things, does affect their choices.

It is almost a decade since generics were introduced to the healthcare system in South Africa and very few studies have been done to assess whether the idea of having generic medicines is working.

A survey was carried out and the results were analysed using a logistic regression. The results showed that females knew more about generic medicines than males. The variables of cost, safety and quality of medicines still remain a determining factor for the purchase of medicines either generic or branded.

In addition, people's income was seen to influence the type of medicines that they buy. It was seen that there was a direct relationship between the income of respondents and their preferences when it came to the purchase of medicine.

Access to medical aid was confirmed to predispose people to opt for branded medicine against the cheaper generics since they are not paying directly.

Declaration

I declare that this project is my own, unaided work. It is submitted in the partial fulfilment of the requirements of the degree of Masters of Business Administration for the Gordon Institute of business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University.

Matthew Esosasere Igbinovia

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Chapter 1: Introduction

1.1 Objectives of Research

The main objectives of the research were:

- To determine the perception that consumers have of generic medicines compared to branded ones.
- In this research report, attempt was made to determine the impact that race, income, educational level, age, availability of medical aid, cost, and safety of medicines have on the use of generic or branded medicine.
- The finding of this study may serve as a guide to both consumers and policy makers and others, to provide a better healthcare intervention programme.
- The academic work may serve as a guide to pharmaceutical companies involved in both branded and generic medicines at various levels. That is, Research and Development (R&D) of medicines, production and distributions, and finally marketing and sales of these medicine.
- The data obtained may serve as clarification of the assumptions that were made to a large extent for introducing generic medicines into South Africa.

1.2 The research problem

South African economy has a marked duality, with a sophisticated financial and industrial economy having developed alongside an underdeveloped informal economy (www.southafrica.info). This duality in the economy is as a result of the apartheid regime that was in power for more than forty years of the history of the country. This meant however, that access to healthcare and of course medicines did not really equate to the same thing for all the citizens of South Africa since there was a great divide between the haves and the have-nots.

Due to the obvious economic reality among the people of South Africa, the understanding or the perception that people have of the role that medicine plays whether branded or generic in the whole healthcare delivery system were influenced by a number of factors. These are factors such as the level of education, income bracket, availability of medical aid, race, and cost of medicines, age, gender and quality of the houses that people live in. This could easily be attributed to a large extent to the legacy of the past.

In 2001, the Government of South Africa passed the law which allowed the substitution of branded medicines with generics (Government Gazette, Vol. 432, 2001). This was met with mixed feeling by different stakeholders both in the pharmaceutical industry and among individuals who have to deal with medicines either as a service provider or as an end user. These changes in the

healthcare policy offered a new opportunity for companies with medium sized budgets to enter into the pharmaceutical business since the barrier to entry was dramatically reduced. The approval of the use of generic medicines in a large scale meant that new firms, specialising mainly in the production of generic medicines, could now produce any medicine whose patent rights had elapsed. Thus, these companies producing generic medicines would not have to spend money on the Research and Development (R&D) of new products (medicines), a cost that is characteristic of the pharmaceutical business.

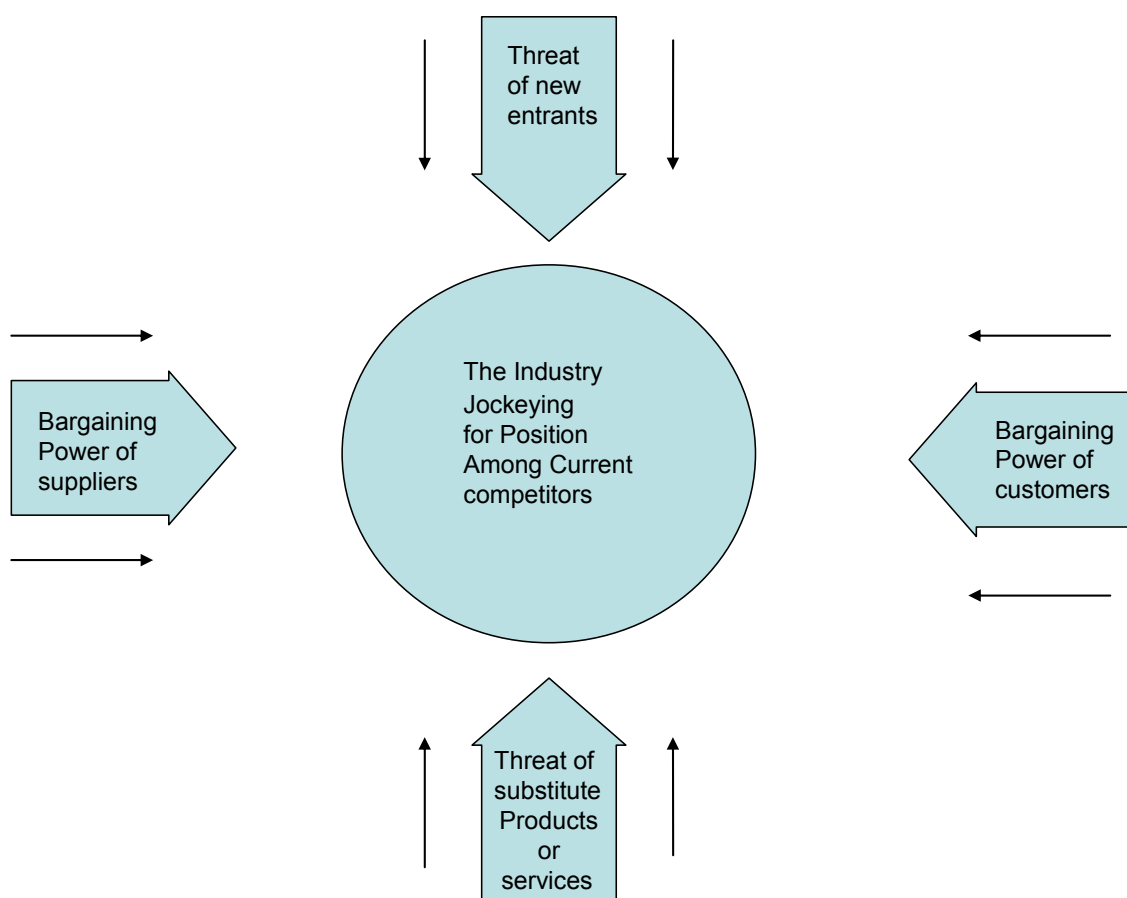
However, for those companies whose business model was geared towards the production of blockbuster medicines or branded medicines for the treatment of particular illness, the news to allow the registration of generic medicine in South Africa, was not pleasant. This meant that they were going to be faced with more intense competition and a possible loss of market share to the generic companies. Consequently, the life span and increased revenue from the sale of their invention, after their patent elapses, would now be shorter and smaller respectively because of the presence of a cheaper generic substitute in the market.

In order for these companies not to completely lose their market share because of the threat of new entrants (Porter, 1998) in the market, some of these previously branded medicine companies have now decided to play in the generic medicine sphere and there exist several business models that they have used this approach accomplish this.

Some have decided to start their own generic medicine division as a way to compete in that market. Pfizer Pharmaceutical, for example, now has its own

generic company called Pharmacia, which has enabled it to compete with other generic companies in likes of Sandoz, Adcock-Ingram's generic division, Ranbaxy and Arrow pharmaceutical. Through Pharmacia, they have managed to prolong the life span of their blockbuster drug, Lipitor, which is used for the treatment of high blood levels of Cholesterol. Pharmacia introduced Aspavor as a generic for Lipitor as soon as Lipitor's patent elapsed. In actual fact, Aspavor is produced under the same manufacturing condition as Lipitor. So it is identical to Lipitor; however it is cheaper since it is marketed as a generic.

Figure 1.1 Forcers governing competition in an Industry (Porter, 1996)



Lipitor is still being marketed as a branded medicine while Aspavor, is available for that segment of the population who cannot afford to pay a premium for Lipitor but wants a quality medicine.

Another pharmaceutical company which has managed to make itself relevant in the generic medicine industry is Novartis. In order to play in the generic medicines market, they went about it through acquisition. In 2005 Novartis acquired two generics companies, Hexal (Germany) and Eon (US), and merged them into its generics arm, Sandoz, catapulting it temporarily into the top position in the generics industry. (Khanna T, Palepu K, and Madras C, 2006). Sandoz now produces generic medicines which are keeping Novartis relevant in the new market.

The list of consolidation in the industry goes on, and all in an attempt for these companies to compete in the generic sphere where the trend seems to be moving in the pharmaceutical industry and also to ensure that they continue to control a sizeable portion of the market share in the industry.

An obvious benefit of this new competition among pharmaceutical companies is that healthcare providers like doctors and pharmacists, companies providing medical aid and the general population can now have access to less expensive medicine of equal quality and safety standards as the branded medicines. These generics in principle should be able to satisfy the same needs as the branded medicines.

With the cost of medicines reduced, the total cost of healthcare delivery will be decreased. Several surveys that have been carried out in many parts of the

world have shown that the cost of prescription medicines is one of the major contributors to any government expenditure on healthcare delivery (Kreling D, Mott D, Wiederholt J, et al, 2001, Henry J. Kaiser Family Foundation, 2003) and South Africa cannot be an exception.

Introduction of generics therefore should enable the South African government to be able to finance an almost free medical healthcare service for all her citizens. This is in particular those that are in need who cannot afford to go to private hospitals and also for individuals whose medical insurance cover is limited or are used up before the end of the year due to the high cost of medical fees and medicines.

Broad dispensing of generic products would achieve savings without compromising safety. Generic drugs are believed to provide therapeutic effects similar to those of their brand-name alternatives (Nightingale SL, 1998).

Findings from other studies that have been done and literature available seem to show that, generic drugs are typically less expensive than brand-name drugs, and prices for generics have historically increased less than those for brand-name drugs (Henry J. Kaiser Family Foundation, 2001).

It is nearly a decade now since the process of changing the generic substitution law and the actual laws allowing generic substitution were passed and no study has been done to confirm some of the assumptions that drove the whole process of generic substitution laws. Assumptions which were based essentially on the fact that if generic medicines were introduced in the healthcare delivery system, this would make good healthcare services cheaper

and affordable for government and individuals. Government would then be able to provide healthcare services with its limited budget to a larger population of the society who were previously disadvantaged and neglected during the apartheid regime. However these assumptions had never been substantiated with any research work or data.

This study would thus be one of the first that was carried out to establish these claims because the contrary view could well be true. That is, the introduction of generic medicine may have been a big mistake by the government. It is thus possible that due to failed treatment through the use of generic medicines, the cost of healthcare has actually gone up. This can be confirmed by the reduced number of people that were actually treated and the number of deaths that may have resulted because some generic medicines were substandard.

One of the contentious issues with the substitution of branded medicines with generic has always been the issue of quality and safety. The U.S. Food and Drug Administration (FDA) examine generic formulations and approve them as bioequivalent to brand-name drugs in safety, strength, and quality (Nightingale SL, 1998) and one can also assume that similar responsibility lies on the Medicines and Control Council (MCC) in South Africa. However, it was important to be able to confirm the perceptions that people have of the quality and safety of generic medicines and why some people insist on getting branded medicines no matter the cost or the trouble they have to go through to get them.

The reality is that sometimes a generic may have satisfied the stipulated quality standard but the bioavailability of the active ingredient may be substandard in the blood after been ingested and this could lead a failure of the generic

medicine to bring about the desired effect.

There is an obvious need for this study which has been designed to determine the perceived benefits of generic versus branded medicines among South Blacks, by testing how several variables affect either the purchase of medicines or their consumption. Variables such as level of education, income bracket, availability of medical insurance, race, cost of medicines, age and gender, served as reference points for the study. At the moment, the scope of the study was limited to the gathering of primary data to access the perception that people have of generic medicines whether generic or branded.

The research work also covered the factor that, inherent perceptions do influenced consumer buying behaviour when it comes to the purchase of medicines. Why do people insist on buying a brand name medicine when the benefits of generics are glaring? No doubt consumer purchases are influenced strongly by certain factors such as cultural, social, personal, and psychological characteristics. In South Africa there is a great divide between the wealthy people, who are in a minority and the greater majority that are poor. This legacy of the past does affect and influence people's buying pattern.

Chapter 2: Theory and literature review

2.1 What are brand-name medicines?

Brand-name medicines are originator products or medicines that have been discovered by a company and are patented to maximise any economic gain that may result from being the sole company producing a new drug treatment for a particular illness or disease condition. This is the avenue for the company to recoup their expenditure in the area of Research and Development (R&D) of the drug.

One cannot rule out the fact that, there is always a continuous need for brand-name drugs as they always improve the frontiers of good health care delivery. Many of the world's industrialized countries have in place policies encouraging the use of generic medicines, alongside policies that encourage innovation and lead to the fast uptake and use of newer therapies (King and Kanavos, 2002).

Innovative brand-name medicines will always be the response to challenges that healthcare delivery face and it is of utmost importance that intellectual property continues to be protected by government and the relevant institutions tasked with this responsibility.

Some of the big Pharmaceutical companies that are known for their competence in producing branded medicines are Pfizer, Roche, Eli Lilly Co., AstraZeneca and Merck & Co.

When one considers the concept of a brand, there is a tendency to want to know whether there is an existing brand loyalty. Just as one sees in the case of ordinary commodities such as cosmetics and foods. One cannot rule out the influence that loyalty to a particular manufacturer's product plays in determining which specific medicine a patient decides to buy. Pharmaceutical companies making branded medicines spend a lot of money building their brands, that is, that of the corporate image and those of their individual lines of products. Usually they do this through detailing to doctors, pharmacists and other health professions. Through the giving out of promotion samples and articles related to the medicines, and advertising on Health care journals and magazines which are targeted at the health professionals. Advertising of ethical or prescription medicines, directly to the general public is still unethical and illegal for pharmaceutical firms to do (Government Gazette, vol. 432, 2001) since they may not be well prepared to understand the nature of the advertisement. These adverts could actually influence people's decisions about a particular medicine and could lead to self diagnosis. However, those that promote over-the-counter (OTC) medicines can advertise to the general public because OTC medicines are relatively safe and are very common medicines.

2.2 What are generic medicines?

A generic drug is identical to a brand name drug in dosage form and strength, safety, route of administration, quality, performance characteristics and

intended use. In principle, generic medicines are bioequivalent to branded medicines. What this means is that when a generic medicine is taken by a patient, the quantity of active ingredient that eventually gets absorbed into the blood of the patient, is similar to the absorption profile of the branded medicines. This will be within the accepted range allowed by the British Pharmacopoeia (BP) or the British Pharmacopoeia Commission (BPC), both of which are official documents which guide the standard of pharmaceutical practice for the production of medicines.

On expiration of the originator product's patent term protection, other manufacturing companies may file submissions to regulatory authorities for approval to market generic versions of the originator medicines. Generic drugs may be marketed under the non-propriety name or as a branded generic (King and Kanavos, 2002). Although generic drugs are chemically identical to their branded counterparts, they are typically sold at discounted price compared to the branded price.

It is a common knowledge that, generic drugs are typically less expensive than brand-name drugs, and prices for generics have historically increased less than those for brand-name drugs (Henry J. Kaiser Family Foundation, 2001). Obviously, pharmaceutical companies producing generic medicines do not have to spend heavily on research and development of a new drug; they just copy the patented formula of the originator brand-name drug. Thus their production cost is reduced and are able to price their finished product at a much reduced price compared to the branded medicine.

Lewin (1987) notes that many generic drug versions are sold at forty to fifty

percent of the brand name drug costs, while some sell for as little as twenty percent of the brand name. This leads to a serious competition against the branded medicines which are more expensive.

Following Porter's force of the, "bargaining power of customers" as a force governing competition in an industry (1998), South Blacks, especially the previously disadvantaged, can now have access to cheaper medicines which in principle have the same properties as the branded ones. This will eventually compel the companies producing the branded medicines to reduce the price of their product if they want to be competitive in the industry.

In most countries, spending for prescription drugs has been one of the fastest growing components of health care expenditures since 1990. The average annual percent increase in prescription drug expenditures averaged 12.2% between 1990 and 1999 (Kreling, Mott , Wiederholt, *et al.*, 2001). Available data shows that, slowing the rate of growth in prescription drug expenditures could be accomplished by increasing the use of generic drugs because of the large cost difference between brand name and generic drugs. In 1999 the average retail price of a prescription dispensed with a generic drug in the US, was \$18.16 compared with \$60.66 for a prescription dispensed with a brand name drug. The amount spent annually by using branded medicine to fill prescriptions would have to reduce tremendously and that spent on generic medicine increased in order to benefit from the low cost that generic medicine offers.

2.2.1 Generic Substitution Law in South Africa

In South Africa, in order to make health care delivery affordable, the Medicines and Related Substances Control Act 101 of 1965 was amended by the Medicines and Related Substances Control Amendment Act (Act 90 of 1997) under Section 22F quoted below, which made provision for Pharmacists to substitute brand-name medicines without seeking the doctors consent. In this way, the patient is given an opportunity to decide whether to take a generic substitute for a medication if it is available in the case of that particular medicine and if it is cheaper.

“Generic substitution

(1) Subject to subsections (2), (3) and (4), a pharmacist shall-

(a) inform all members of the public who visit his or her pharmacy with a prescription for dispensing, of the benefits of the substitution for a branded medicine of an interchangeable multi-source medicine; and (b) dispense an interchangeable multi-source medicine instead of the medicine prescribed by a medical practitioner, dentist, practitioner, nurse or other person registered under the Health Professions Act, 1974, unless expressly forbidden by the patient to do so.

(2) If a pharmacist is forbidden as contemplated in subsection (1) (b), that fact shall be noted by the pharmacist on the prescription.

(3) When an interchangeable multi-source medicine is dispensed by a pharmacist he or she shall note the brand name or where no such brand name exists, the name of the manufacturer of that interchangeable multi-source medicine in the prescription book.

(4) A pharmacist shall not sell an interchangeable multi-source medicine-

(a) if the person prescribing the medicine has written in his or her own hand

on the prescription the words 'no substitution' next to the item prescribed;

(b) if the retail price of the interchangeable multi-source medicine is higher

than that of the prescribed medicine; or (c) where the product has been declared not substitutable by the council”.

The nature and level of generic substitution allowed, varies from country to country. For example, as of 1990, all U.S. States, with the sole exception of Oklahoma, have repealed anti-substitution laws. This allowed Pharmacists to substitute branded medicines when prescribed with generics ones. However, the detail of the changes in the law varies from one state to another (Gumbhir and Rodowskas, 1974). In Great Britain, generic substitution is not permitted (Massam, 1989). However, in Canada, all provinces except British Columbia allow generic drug substitution based on a regulated list. Pharmacists may make substitutions without informing the consumer, and no province requires generic substitution (Kendall, Ng, and Schoner, 1991).

Based on recent information, fifty-six percent of all prescriptions are filled with

generics medications (Generic Pharmaceutical Association
www.gphaonline.org, 2007)

2.3 Consumer buying behaviour

Consumer behaviour may be defined as: “the mental, physical, and emotional activities that people engage in when selecting, purchasing, using and disposing of products and services so as to satisfy needs and desires” (Wilkie, 1994). This includes all the activities that culminate in a consumer deciding to buy a particular product instead of another. This is how people go about buying anything that they need. Depending at times on certain factors, such as the cost of the item, people may behave differently. For example, the makers of Harley-Davidson, heavyweight motorcycle, understand very well their consumer behaviour and have managed to capitalise on that to boost their business. Although people have to pay a premium price for the bikes, Harley’s “Hogs” still managed to capture twenty-two percent of all U.S. bike sales and fifty-six percent of the heavyweight segment (Speros, 2004; Palmer, 2004; www.Harley-Davidson.com).

Consumer buyer behaviour refers to the buying behaviour of final consumers—individuals and households who buy goods and services for personal consumption. All of these final consumers combine to make up the consumer market (Kotler and Armstrong, 2006).

Normally, purchase decisions are based on predictions of product performance.

Consumers base their predictions in part on product cues and are accurate to the extent that they have properly learned the relationship between the cues and performance. Consumer research has devoted little attention to this learning process despite its fundamental importance (Hutchinson and Alba, 1991; Meyer, 1987).

Consumer decision-making processes are characterized by successive refinements in the number of brands evaluated (Roberts, 1989). Past research shows that the level of self-assessed knowledge is positively related to the amount of product-related experience (Park et al., 1994). With medicines, one sees that there is very little knowledge about generics and this has a way of conditioning the consumers' attitude towards generics. For example, people are not sure whether all generics are of the same quality as the branded medicines and they do not have the expertise to know. This fact alone makes it impossible for them to make an informed decision on which type of generic medicine to buy if they do not want to buy a branded medicine for whatever reason.

Recent conceptual work in consumer knowledge postulates that consumers typically are overconfident, i.e. they think they know more than they actually do (Alba and Hutchinson, 2000). Brucks (1985), for example, showed that increase levels of subjective knowledge lead to a greater reliance on one's own evaluation skills. The enhanced confidence in one's own ability to make correct choices combined with high encoding and learning effort lead to lower external information, search (Alba and Hutchinson, 2000; Mattila and wortz, 2001, 2002; Srinivasan and Ratchford, 1991). Due to lower motivation and effort to search

for new information, consumers high in subjective knowledge should have less well-developed category structures stored in memory than consumers high in objective knowledge who tend to keep themselves updated about market conditions (Park and Lessig, 1981).

Another important consideration in accessing consumer buying attitude is that, consumers are more educated and informed than ever, and they have the tools to verify companies' claims and seek out superior alternatives (Urban, 2004). This is very true in the case of medicines since most people use medicines and after some years of using the same medicine, either for acute or chronic indications. Though survey data will throw more light to this, generally the comment one hears from patients who have tried several generics in an attempt to stop using their branded one is, "some generic are not as effective as the original". This is a conclusion they have arrived at through experience. Also you have others who have had positive experiences with generics and are full of praises for them. Whether one desires it or not, the conclusion that some patients arrive at because of the experience with a particular generic whether good or bad, through word-of-mouth, go a long way to affect other peoples buying decisions of the generic.

Customer perceived value (CPV) is the difference between the prospective customer's evaluation of all the benefits and all the costs of an offering and the perceived alternatives (Kotler and Armstrong, 2006).

Consumer purchases are influenced strongly by cultural, social, personal, and psychological characteristics, as shown in Figure 2.1. (Kotler and Armstrong,

2006).

For example, if we consider age, due to the fact that the older generation were not exposed to generic medicines while they were growing up, one would expect them to be less receptive to generic medicines. These are the sort of people that would say, 'the old is good' and they will be more reluctant to switch to generics either for their acute or chronic medication out of pure habit. The survey data will certainly throw more light to this conclusion.

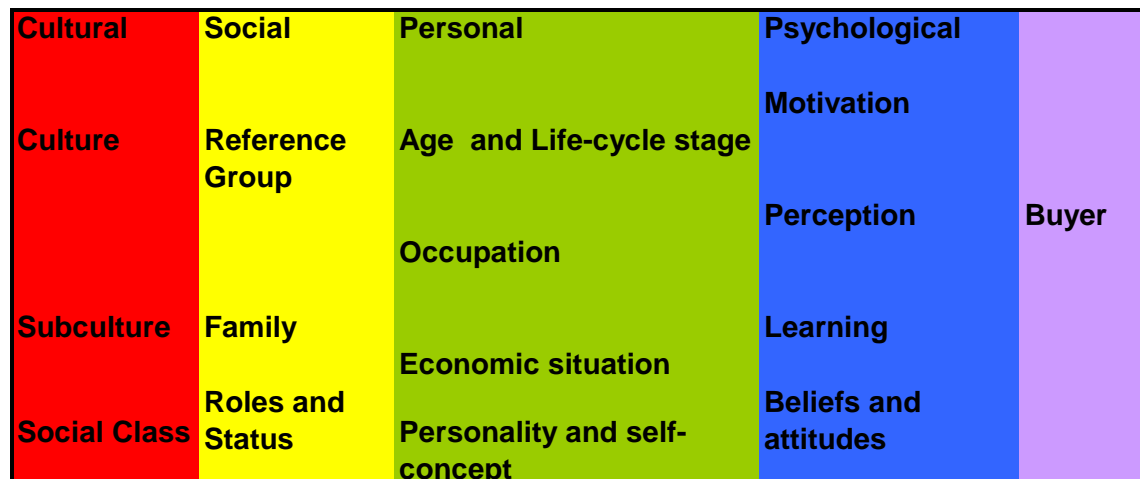


Figure 2.1 Factors influencing consumer behaviour

Social status does come into play when people purchase medicine. Some people who have means to buy branded medicine would not want to be seen buying generics, the cheaper stuff. They see it as belittling of their social status and ego.

2.3.1 Personal Factors

A buyer's decisions are also influenced by personal characteristics such as the buyer's age and life-cycle stage, occupation, economic situation, lifestyle, and personality and self-concept (Kotler and Armstrong, 2006).

With respect to medicines, one expects personal characteristics to affect the way people buy medicines and the type they buy. One expects for example in South Africa owing to the legacy of the past, that people will buy commodities either medicines or otherwise, based on some of the following factors, total family income, race, educational level, gender, cost of the item and perhaps the age bracket. The reality is that many people are poor (www.southafrica.info) and would be more willing to try out generics since that is what they can afford instead of trying nothing.

2.3.2 Psychological Factors

A person's buying choices are further influenced by four major psychological factors: motivation, perception, learning, beliefs and attitudes (Kotler and Armstrong, 2006).

2.3.2.1 Perception

Perception is the process by which people select, organise, and interpret information to form a meaningful picture of the world (Kotler and Armstrong, 2006).

People can form different perceptions of the same stimulus because of three perceptual processes: selective attention, selective distortion, and selective retention (Kotler and Armstrong, 2006).

When perception is applied to the medicines either generic or branded and viewed within the frame of South Africa, several ideas come to the fore. Due to the peculiar history of South Africa, which had a great focus on racial divide, it is expected that people's perception of things, medicines included, will differ across the different racial groups.

Generic substitution is common in many countries, but is in general met with scepticism by health professionals. (Aarseth, 2001; Husom , 2004; Meredith, 2003; Tilyard ,1986.)

The patient and/or the doctor can refuse generic substitution, but the patient may as a result pay a higher price in some cases.

2.3.2.2 Attitude

Krech, Cruthfield and Ballachey (1962) define attitude as “a person's enduring favourable or unfavourable evaluations, emotional feelings and actions

tendencies toward some object or idea”. People’s attitude defines to a large extent the way they react to things and events. If you have an individual whose attitude about a generic from a particular company was informed by a bad experience in using a generic medicine from that company, no matter what that company does, they may never recover the good opinion of that person. A very extreme example would be, if a family lost a child because of an isolated case of a substandard generic from a particular company, the memory of such event would not easily be erased from their minds. This will certainly go a long way to inform the attitude the members of that family have of generic medicine in general and of the company that produced that medicine in particular. The company would be lucky if they are not sued for damages. However, it would be clear that they would be very sceptical of all generics. Any marketer would be out of their mind to try to change that attitude, because he would be faces with utmost resistance. This is why Kotler (2000) recommends that marketers should fit products into existing attitudes rather than change them. A smart marketer would try to market only branded medicines to this family and to all with a negative attitude towards any product.

2.4 The impact of race on generic versus branded medicines

Currently, no study has been carried out to establish the impact of race on the use of generic or branded medicines. However, in this study, attempt was made to explore the effect of race on the use of generic and branded medicines.

However, in South Africa because the apartheid regime favoured the white race more than the people of colour, the variable of race seemed an interesting one to test since the assumption would be that people who were previously disadvantaged i.e. people of colour, in South Africa would behave differently towards medicines either branded or generic. This research will thus be one of the pioneer studies on the impact that race has on peoples attitude towards the use of generics versus branded medicines.

Segregation laws in South Africa during the apartheid era meant that all other races except the White race were discriminated against when it came to opportunity for education. As a result, the Blacks (Negros), Coloureds (people with one parent of their parent of the White race) and Asians, did not enjoy the privileges that Whites had. Generally, the Whites were able to study through very good schools which made them more prepared for white collar jobs. Thus they had a better standard of living. Though the data would give the proof for this assumption, however one would expect that the attitudes of Whites to medicines in general to be different from those of the other races. Availability of finance would not necessarily be an issue as they earn very well to be able to afford either Branded or generic medicine. It would not be surprising if most of

the White population prefer branded medicine compared to generic medicines because of these reasons.

Due to the growth of the economy after apartheid, with the development of the black Diamond i.e. people of colour who are moving up in the rank of very educated and rich people, it would not be a thing of surprise to find a couple of people of colour whether Blacks, Coloureds and Asians, choosing branded medicines to generic medicines either because they also can afford it or they can afford to take on a medical aid option that pays for branded medicines. The converse is also true. The Whites and the Black Diamonds, because of their level of education, may decide to buy generic medicines because they know that they are of the same quality as the Branded medicines.

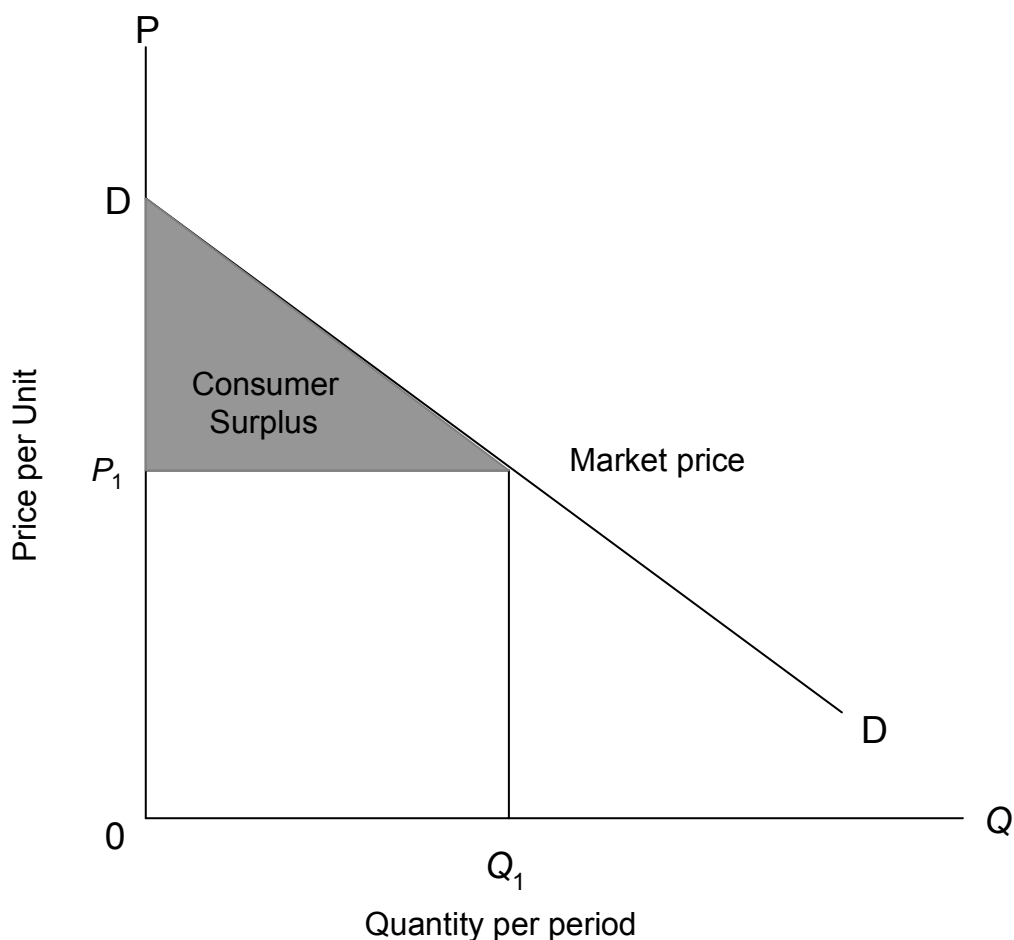
2.5 The impact of income on the use of generic and branded medicines

Generic drugs are typically less expensive than brand-name drugs, and the prices for generics have historically increased less than those for brand-name drugs (Prescription Drug Trend, 2001). This is because generic products often have lower prices (Brooke 1975; Gumbir and Rodowskas, 1974).

From the economic principle of demand and supply, a downward-sloping demand curve as shown below and a uniform market price imply that consumers actually receive more than their money's worth. The reason is that

the market price is usually lower than the highest prices consumers are willing to pay for all but the last (or marginal) unit of the product concerned. The difference between what consumers pay and the value that they receive, indicated by the maximum amount they are willing to pay, is called the consumer surplus (Mohr and Fourie, 2004). What this implies is that, by buying generic medicines, patients do save on their budget for medicines for the year and it makes economic sense to continue buying generic medicines as long as they have equal efficacy as the branded medicines.

Figure 2.2 The Consumer Surplus

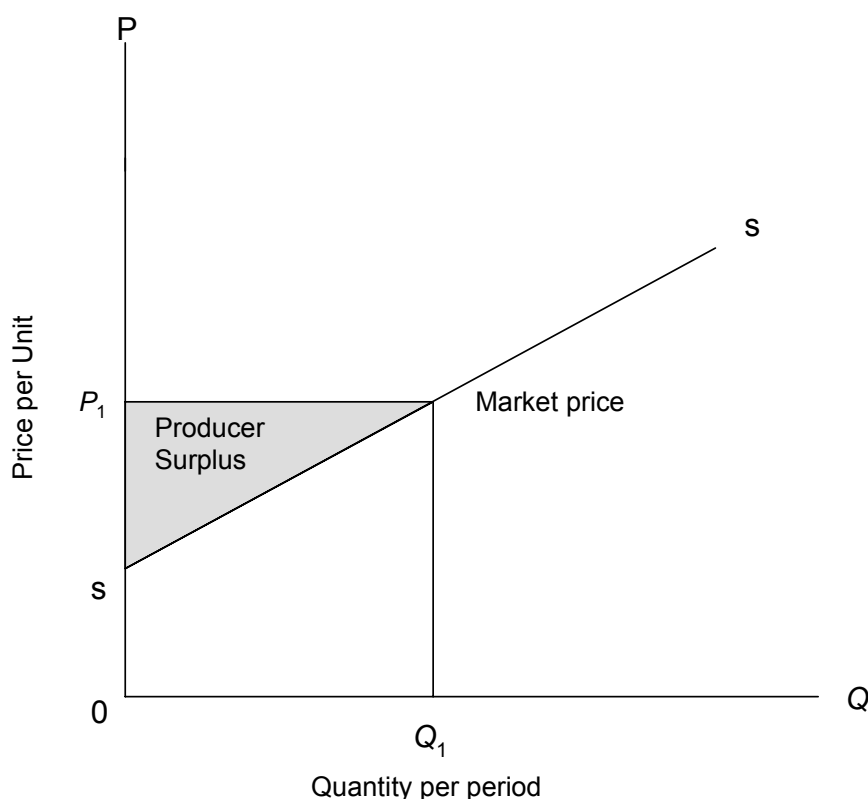


In Figure 2-2 *DD* is the demand curve and P_1 the market price. The demand curve indicates the highest prices that consumers are willing and able to pay

for different quantities of medicines. If the market price is P_1 the consumers pay that price for each of the units purchased. This is less than the highest prices they are prepared to pay for all of the units purchased except the last one and in the case of medicines, these are branded medicines. For every quantity between zero and Q_1 consumers therefore pay less than they are prepared to pay. The total amount gained in this way by the consumers is indicated by the shaded triangle in Figure 2.2 and this is called the consumer surplus.

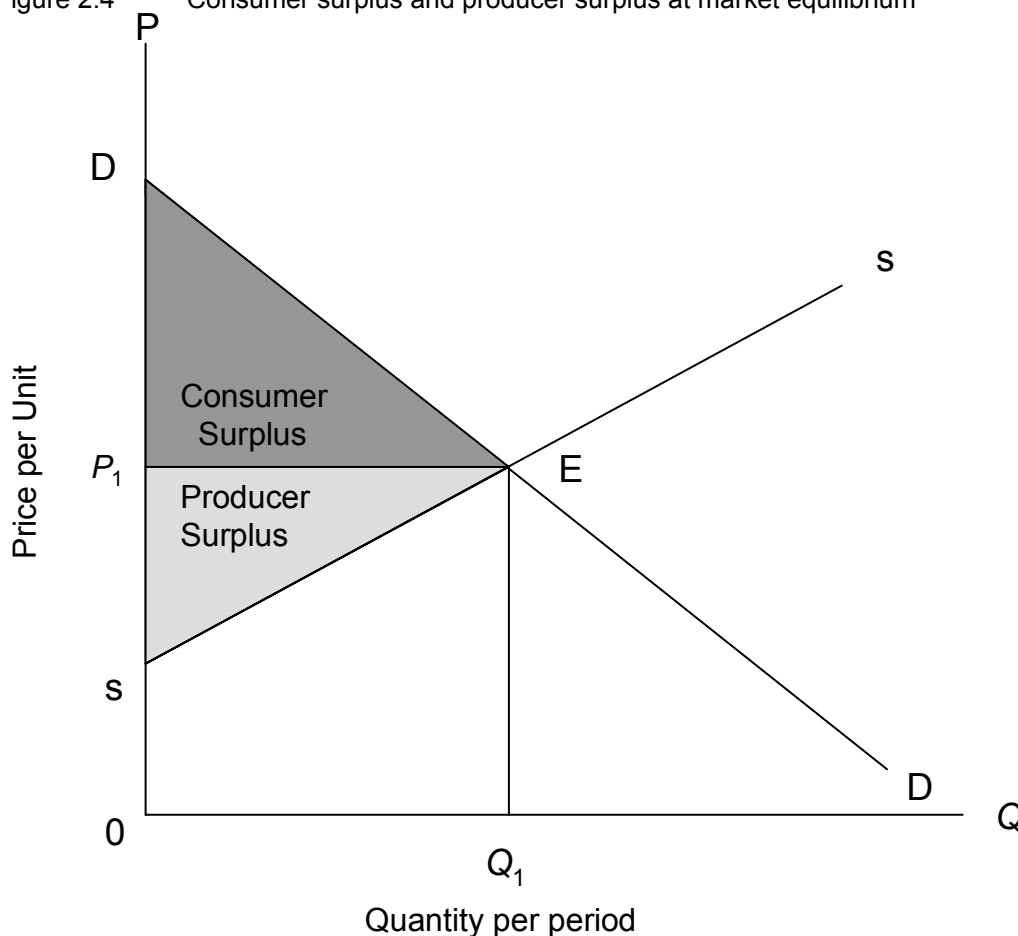
However, the situation where patients can only buy branded medicines either due to the fact that the patent rights of the branded medicine have not expired or there is no generic version available for the patient to buy, this is shown by the producer surplus in the economics curve, and is parallel to the consumer surplus. In this case, the producer is willing to supply units of the product at less than the market price (Mohr and Fourie, 2004).

Figure 2.3 The Producer surplus



Relating Figure 2.3 to the production of generic medicines, the supply curve SS indicates the different quantities that Pharmaceutical companies producing branded medicines are willing to supply their medicines at different prices. With a uniform market price P_1 and an equilibrium quantity Q_1 there is a positive difference between the lowest prices at which producers are willing to supply the different quantities and the price they actually receive. This is indicated by the shaded area in Figure 2.3. This total gain to producers is called the producer surplus (Mohr and Fourie, 2004). This will happen if there are not generics in the market and the pharmaceutical companies, with their branded medicine by raising their price are able to deprive the patient of its consumer surplus.

Figure 2.4 Consumer surplus and producer surplus at market equilibrium



As shown in Figure 2.4 above, at equilibrium price and quantity, there is both a consumer surplus and producer surplus. However, if only a branded medicine is available, the company will sell at a premium and force the consumer to give up some of their surplus and there will be a dead weight loss to the society.

The US Congressional Budget Office confirmed that generic drugs save consumers an estimated \$8 to \$10 billion a year at retail pharmacies. Even more billions are saved when hospitals use generics (US FDA, 2002).

Due to the price difference between the generic and branded medicines, the trend would be for patients to try to keep most of the consumer surplus that will accrue to them if they buy generic medicines.

So it is expected that people with lower income or no income at all, like the previously disadvantaged population, would buy more of generic medicines were it possible instead of branded medicines, while it would be expected that people with better means would buy more of branded medicines compared to generics.

2.6 The impact of age on the use of generic and branded medicines

Zarrel, Paul, Eric, and William (1980) carried out a study to examine consumer predispositions, including those of the elderly, toward exploiting opportunities to save money by substituting lower priced generic drugs for brand-name products

prescribed by their physicians. Contrary to the thoughts expressed above, their findings suggested that many older persons, especially those with low incomes, may tend not to take advantage of liberalized statutes permitting substitution of generic products for prescribed brand name drugs.

With regard to this variable, the goal of the research is to find out the role that age plays in consumer's decision to buy medicines whether branded or generic. What would have to be done would be an attempt to confirm this finding or arrive at something different.

Drugs prescribed to treat chronic disease states are less likely to be generically substituted possibly because consumers are less likely to want to use generic drugs when treating chronic conditions (Podulka, krautkramer, Amerson, et al, 1989; Mott, and Kreling, 1997).

The results of the survey will throw more light on this theory, however the reason one can suggest for this behaviour is that, people are creatures of habits. Once we start doing something, it is difficult for us to change as it becomes a habit. This can also manifest in the use of medicine. Once we are convinced of the benefit of a particular medicine, it is very difficult for us to change. This sometimes may be against reason. That is, the alternative may either have the same quality as the current one or it may even be cheaper. However, due to habit, the person in question may find it difficult to switch to the new drug. Sometimes it will take the withdrawal of the old medicine by the manufacturer to force the patient to switch to an alternative. Even at that, they will complain for a while before they get used to the new drug.

Aside from a few consistent findings that generic purchasers tend to be younger and better educated, relatively few strong patterns have emerged (Bellizzi and Warren, 1982; Wilkes and Valencia, 1985). Though this finding will be substantiated by data, but the assumption is that younger people and more educated people tend to find it easier to switch to generic medicines. Youth and level of education do contribute immensely to this posture and frame of mind. They do not have special ties to the old branded medicines since they do not know them.

2.7 Impact of educational level on the attitude towards generic and branded medicines

It is expected that the educational level of an individual will affect his/her spend on generic or branded medicines because the perception he/she has will be different. According to Aslam (1990), the effect of lower prices would be greater when consumers are aware that cheaper products are available and when they benefit from lower prices. They found out that a deductible leads to lower generic use whereas greater consumer awareness has the opposite effect (Aslam, 1990).

According to the official web page of US FDA, Generic drugs are safe, effective and FDA approved. Generic drugs account for about 50 percent of all prescription drug purchases in the United States; therefore, consumers should

be well informed and confident when taking generic drug products (US FDA, 2007).

It would not be out of order to assume that people's option in life increases after acquiring a certain level of education. The more educated people are, the more they would be more opened to try new ideas especially when it bothers on health. It is possible that the more educated people would be more willing to try out new medicines, such as generic medicines, of the ones they are already taking, if they are convinced that it is of equal efficacy as the branded one.

The conclusion that could be drawn from this is that, the more educated people are the easier it will be for them to buy generic medicines. Also the contrary view would be true. That the less educated people are the fewer generic medicines they will buy.

2.8 The impact of cost implication on health care delivery due to the use of either generic or branded medicines

Previous study that was carried out shows that, brand name drugs are typically more expensive than generic versions of the same drug, which in general have identical therapeutic effects. The Food and Drug Administration (FDA) evaluates and approves the bioequivalence of generic drugs. Controversy persists about the bioequivalence of a handful of medications, but nearly all other generic

drugs provide identical therapeutic benefit (Fischer and Avorn, 2003)

As a result of data obtained from similar research work on the variable cost of health care, there is a general perception with substantiated facts that, broad dispensing of generic products would achieve savings without compromising safety. Generic drugs are believed to provide therapeutic effects similar to those of their brand-name alternatives (Nightingale, 1998). Haas J.S et al (2005) carried out a survey to examine the potential savings associated with generic substitution through 2000. They arrived at the conclusion that greater use of generic medications could result in important health care savings in the United States while maintaining quality of care.

Currently, prescription drug spending is increasing at a rate of over 10% per year and currently represents 11% of all health care expenditures (Prescription Drug Trends, 2003). In 2001, expenditures for prescription drugs in the United States were \$141 billion. (Henry J. Kaiser Family Foundation, 2003).

There is no question that substitution of generic drugs can be extremely cost-effective (Strom, Stolley, and Brown 1974; Bloom, Wierz, and Pauley, 1986; Lasagna, 1986). This is because the production of generic medicines does not attract the extra cost of R&D that the production of new medicines requires.

However, it is not always the case that generics are cost-effective compared to brand name drugs (Bloom et al. 1986; Lasagna, 1986; Weaver, 1989) because if a generic medicine fails, it becomes more expensive to salvage the situation. Thus there is a certain risk attached to the use of generic medicines if there is an issue of lack of consistency in quality among generics.

In 1989 approximately 1.5 million drug prescriptions were written in the United States, with sales exceeding \$25 billion in 1990. Since the repeal of the anti-substitution laws in all states but one, the substitution of generic drugs has climbed relatively slowly to the 30 percent figure, where it now stands (Winslow, 1989). Most of this increase has come since the enactment of the 1984 Waxman Act (Drug Price competition and Patent Term Restoration Act)

A savings realised by the use of a generic drug can become a higher cost if switching from the brand to the generic results in a “change in clinical course” of the illness being treated. However, in terms of purchase price alone, generics are less expensive in the vast majority of cases (Kendall; Ng; and Schoner, 1991).

For some (Fryklof, 1989), generic substitution is not the crux of the argument; the argument is that the big savings potential lies in a more rational (conservative) prescribing and use of drugs.

Therefore the proposition would be that wide use of generic medicines will reduce the cost of medicines in the healthcare delivery system while the more use of branded medicines will increase the cost of healthcare.

2.9 The effect that availability of medical aid has on consumer behaviour to generic or branded medicines

The presence of insurance (which lowers the patient's share of price) promotes the choice of a more expensive treatment among alternatives than would have been selected if the patient did not have insurance (Zweifel and Breyer, 1997). This attitude of patients is not surprising since they are paying the medical insurance companies to provide these services and would want to get the full benefit of what they are paying for. So you would find cases were, physicians will be influenced by their patient's attitude towards brand name and generic products and the patient's willingness to pay if the prescription will be less than fully covered by insurance (Aslam, 1990). Many years of dealing with the same doctor could lead to a good relationship developing between doctors and patients and of course influence by patients on their prescription.

Even if the physician acts as a perfect agent for his or her patients, there may still be agency problems associated with prescription decisions if the physician is acting as perfect agent for the patient but not for the patient's insurer. This type of agency problem has been called "moral hazard" in the market for insurance. This use of the term "moral hazard" follows Pauly, (1968) and the definition often used in the health economics literature.

Moral hazard, refers to the fact that patients may demand (and receive) too much care relative to the social optimum because the existence of insurance means they do not directly bear the full marginal cost of care. This definition of

moral hazard in insurance contrasts with the more commonly used definition, which suggests that the existence of health insurance leads patients to engage in more risky behaviour.

While this latter type of moral hazard certainly may exist, Pauly (1968) points out that even with totally risk-averse patients, the existence of insurance may lead to over consumption of health care just because the marginal cost of treatment is not borne by the patient. Generally, when patients have medical insurance, the medical practitioner feels more comfortable to ask for several diagnostic procedures, that would have been optional and for “the best medicines” or branded medicines because the patient is not directly bearing the full cost of the treatment. However, the same medical practitioner would choose a cheaper course of treatment, which is also effective, perhaps longer, when they know that the patient is poor and has no medical insurance. This way of acting is very common in medical practice since it completely depends on the discretion of the doctors in most cases. Also some patients who are very educated may request to be treated with expensive medications, in those situations where they are in a hurry to get well, or could ask for cheaper medicines from their pharmacists if they cannot afford the medicines that the doctor has prescribed for them.

However, looking at the public institutions, in an effort to reduce the rate of increase in health care and insurance costs, substantive changes have been made in Medicare and other federally funded programs, state health care programs, and insurance contracts. One of the most significant means of cost reduction is to switch from the use of name brand to generic prescription drugs.

(Tootelian, Goadeke, and Schlacter, 1988)

Usually, a prescription drug is consumed by people who do not decide upon which product or how much to consume (Aslam, 1990). The decision is made by the prescribing physician who does not have to pay for the chosen product (Aslam, 1990). Often the consumer also does not pay, instead third-party insurers pay for the drug (Medical Aid). A final complication of this unusual transaction is that the pharmacist sometimes can be the person who selects the actual product dispensed (Aslam, 1990).

In the case of prescription drugs, moral hazard in insurance may mean that the insured patient does not have the incentive to induce the physician to invest in collecting information on low-cost treatments for patients with insurance (Hellerstein, 1998).

Aslam (1990) carried out a study to examine the role of various policies (drug product substitution laws) that are usually motivated by cost containment objectives of insurers in facilitating entry by generic firms. As such many third-party payers, state Medicaid programs, and Medicare Part D plans require the use of generic products when available and promote adherence to formularies (Manolakis, 2007). Medical aid providers prefer the use of generics because it reduces their burden of covering all the claims of their clients.

For example, to treat an infection, doctors have to start with the first line of treatment first before gradually progressing to the most advanced drugs which are usually more expensive. When they see a patient with medical aid they may decide to go straight to the life saving drugs and skip the first line of drugs even

if they are also very effective for that particular illness and cheaper, simply because the individual is not directly paying. The same doctor would be very careful not to start with the last resort medicines if the patient is the one paying because the person or his family members may decide to seek a second opinion due to cost.

Increasingly, patients are incentivised to comply through tiered co-payment systems and strict coverage guidelines that prohibit payment for brand-name products when generics are available (Manolakis, 2007). Often, substituting brand-name prescription drugs with equivalent generic products decreases costs to patients, employer, health plans, and the health care system through reduced prescription drug costs and lower co-payments (Manolakis, 2007).

In final analysis, increased dispensing and use of generics would be beneficial to consumers, insurance companies, and government health care agencies if the cost savings were passed on (Kendall; Ng; and Schoner, 1991).

This research will assist in confirming the perception that when people have a medical aid cover, their attitude to generic and branded medicines changes. There is usually an increase in the tendency to go for expensive medicines (branded) compared to generic medicines simply because they are not directly bearing the full cost of the medicine.

2.10 The impact of safety on the use of generic or branded medicines

In many countries, the perception of the safety and effectiveness of generic medicines is not good. This may be partly due to cultural norms that will require time to reverse. In the Netherlands, the government has run an information campaigns with the aim of increasing their knowledge of enrich medicines alternatives to originator medicines (King and Kanavos, 2002).

The U.S. Food and Drug Administration examine generic formulations and approve them as bioequivalent to brand-name drugs in safety, strength, and quality (Nightingale, 1998).

Therapeutic and safety equivalence between drug products is assumed, from a regulatory perspective, on the basis of quality equivalence. This is evidenced from bioequivalence and chemical data. Products are considered to be bioequivalent if their rates and extent of absorption do not show a significant difference (King, and Kanavos, 2002).

If consumers harbour doubts, regarding the standards of generic drugs, they are often in a position to refuse them. Thus ensuring the quality, safety, and efficacy of generic medicines is an important policy imperative. Generics have in the past been criticized for being substandard or suffering from major quality problems. Part of the problem related to poor compliance with Good manufacturing practice guidelines, or gaps in site inspections (King and Kanavos 2002).

The interests of some of the other principals are clear. Physicians, as an expert

system, make initial prescription decisions but do not bear the economic costs of the drug purchase. Hence, they have little incentive to prescribe generic drugs (Kendall; Ng; and Schoner, 1991).

When an approved generic drug is available, another expert system, pharmacists, can generally substitute such a drug for a branded one. Pharmacists do not bear the economic costs of the drug purchase either, so they may not have an incentive to substitute (Kendall; Ng; and Schoner, 1991).

Finally, consumers who generally have an economic incentive to use generic drugs are not in a position to judge their safety and efficacy. Presumably, consumers' major concern is the improvement or continued enhancement of their health (Kendall; Ng; and Schoner, 1991) and they are not particularly bothered if branded or generic medicines brings this about as long as they are healthy.

2.11 The impact of perceived quality the use of generic and branded medicines

Generic drugs are believed to provide therapeutic effects similar to those of their brand-name alternative (Nightingale, 1998)

Health professionals and consumers can be assured that FDA approved generic drugs have met the same rigid standards as the innovator drug. To gain FDA approval, a generic drug must:

- contain the same active ingredients as the innovator drug (inactive ingredients may vary)
- be identical in strength, dosage form, and route of administration
- have the same use indications
- be bioequivalent
- meet the same batch requirements for identity, strength, purity, and quality
- be manufactured under the same strict standards of FDA's good manufacturing practice regulations required for innovator products

(US FDA, 2007)

Although some people may argue that some cases generic medicines do fail to give desirable results. However, since they as well as the branded medicines are approved by the official institutions tasked with this responsibility, the probability of error should be very minimal. One expects the regulatory body as

well as the pharmaceutical companies that make these medicines to continue carrying out post market monitoring of the medicines. In the advent of the manifestation of negative feed back on the standard of the medicine, to withdraw such medicine from the market immediately.

Already we have seen cases where medicines that were previously approved by FDA or other regulatory body for circulation to the people have had to be withdrawn from the market. A classical case was Vioxx, a Cox-2 inhibitor, and a part of the class of the Non-steroidal anti-inflammatory drug (NSAID). Vioxx, which was supposed to be Merck's pharmaceutical blockbuster drug for arthritis, has been shown by post market monitoring that it could lead to increased risk of heart attack and stroke in patients taking the drug (O'Rourke IV, 2006). When Vioxx was approved, these cardiac side effects were not manifest, but as soon as it became clear that it is a cardiac risk to give Vioxx to patients, it was withdrawn. The reality is that this is a branded medicine that had to be withdrawn. Perhaps this will never be the case of generics as they are made from the formula of branded medicines of which post market monitoring has been done. Perhaps the issue with generics may be to find that a generic company has a substandard product but not a dangerous one like newly produced branded medicine. Also, recently we have seen a similar case with Novartis' Prexige, another Cox-2, NSAID, where the 200 milligram formulation has been withdrawn from circulation in some countries, such as Australia, because of increased cardiac risk as well. This situation continues to repeat itself very often during the post registration phase of some medicines. With the vigilant eye of regulatory bodies, such branded medicines that are found to be

dangerous after being approved of being safe for consumption, will always been withdrawn.

2.12 The impact of perceived gender on the use of generic and branded medicines

No literature has been found yet on the role that gender plays with respect to the choice of the type of medicines that are purchased by people. It would be interesting to see what the data from the survey will show. However, the general perception is that women in general do not have a problem of ego, when it comes to the consumption of medicines, and generic medicine for that matter. They would buy any medicine that is effective and would usually prefer to by the cheaper one as long as it is effective. However, when it comes to buying medicines for sick children, especially the very young ones, it is a general belief that women will rather pay more for the branded medicines, say antibiotics, than buy a cheaper generic. They see any situation that requires the use of antibiotics as a life threatening situation that does not allow too much room for experimentation and mistakes or the ineffectiveness of a generic medicine. Their tendency is to stick to the tested branded medicine in those critical situations. Usually, their choices are influenced by the opinion of their doctors.

Men on the other hand, generally suffer from egoism, that desire to show off their wealth. One may find that most men would go for branded medicines either because they can afford it or simply because they are too reluctant to try

new medicines when it comes to their well being. Generally they don't like taking tablets as it shows weakness, and if they have to, they would rather buy the best in their opinion, which will be the branded ones, so as to take them for the shortest possible time.

Chapter 3: Research Hypotheses

Considering the nature of the research that was done, it was important that different variables be used to determine the perception that people had of the benefit of generic medicines versus branded ones.

These were able to give a good indication of what perceptions people have in South Africa of generic medicines against the branded ones.

The specific research hypotheses that were made are described below.

Hypothesis 1:

The null hypothesis states that there is no significant difference between race and the use of medicines (either generics or branded).

H_0 : Race = Use of medicines (either generics or branded)

H_A : Race \neq Use of medicines (either generics or branded)

Hypothesis 2:

The null hypothesis states that there is no significant difference between income and the use of medicines (either generics or branded).

H_0 : Income = Use of medicines (either generics or branded)

H_A : Income \neq Use of medicines (either generics or branded)

Hypothesis 3:

The null hypothesis states that there is no significant difference between Age and the use of medicines (either generics or branded).

H_0 : Age = Use of medicines (either generics or branded)

H_A : Age \neq Use of medicines (either generics or branded)

Hypothesis 4:

The null hypothesis states that there is no significant difference between Educational level and the use of medicines (either generics or branded).

H_0 : Educational level = Use of medicines (either generics or branded)

H_A : Educational level \neq Use of medicines (either generics or branded)

Hypothesis 5:

The null hypothesis states that there is no significant difference between cost and the use of medicines (either generics or branded).

H_0 : Cost = Use of medicines (either generics or branded)

H_A : Cost \neq Use of medicines (either generics or branded)

Hypothesis 6:

The null hypothesis states that there is no significant difference between access to Medical Aid and the use of medicines (either generics or branded).

H_0 : Access to Medical Aid = Use of medicines (either generics or branded)

H_A : Access to Medical Aid \neq Use of medicines (either generics or branded)

Hypothesis 7:

The null hypothesis states that there is no significant difference between safety and the use of medicines (either generics or branded).

H_0 : Safety = Use of medicines (either generics or branded)

H_A : Safety \neq Use of medicines (either generics or branded)

Hypothesis 8:

The null hypothesis states that there is no significant difference between quality and the use of medicines (either generics or branded).

H_0 : Quality = Use of medicines (either generics or branded)

H_A : Quality \neq Use of medicines (either generics or branded)

Hypothesis 9:

The null hypothesis states that there is no significant difference between Gender and the use of medicines (either generics or branded).

H_0 : Gender = Use of medicines (either generics or branded)

H_A : Gender \neq Use of medicines (either generics or branded)

Chapter 4: Research Methodology

4.1 Introduction

This study was a quantitative one which was based on the data that were collected from patients that frequented, on a regular basis, the randomly selected pharmacies in Gauteng province.

The research was targeted at patients and anyone who visited these pharmacies in Gauteng Province for medicines whether for acute or chronic cases. People were administered questionnaire without any discrimination based either on gender or race.

4.2 Research Design

A cross sectional study was carried out using questionnaire to collect data from patients who are getting all kinds of prescription medication from private pharmacies and pharmacies situated in both public and private hospitals in the Province of Gauteng.

For the study, names of respondents were not included, and as such the anonymity of respondents was preserved.

The questionnaires were left at the thirty randomly selected pharmacies and in some of the cases where the patient could not understand what to do, the pharmacists in those pharmacies helped to guide the patients while they completed the questionnaire, without influencing the options they choose. The data obtained was analyzed quantitatively using STATA statistical software.

In this study, the dependent variables were the use of generic or branded medicines, while the explanatory variable (independent variables) were race, income, age, educational level, cost of medicines, access to medical aid, safety, quality and Gender.

4.3 Pilot Survey

A pilot study was conducted with 20 samples to pretest the instrument that was used to collect the data from patients for the research. This led to the redesign of some of the questions so as to remove ambiguity and include the various observations or changes that were noticed during the testing of the questionnaires. Some of the changes that were made were done in those areas which need to capture completely all the variables of the research.

4.4 Population of relevance

The target population for the survey was the people of Gauteng Province from 18 years of age and above which is about 7.1 million people (Stats SA, 2007). The sampling frame for this research was the 1478 pharmacies obtained from the South African Pharmacy Council (SAPC), which comprised of both private and government owned pharmacies, in the Province of Gauteng from which 30 pharmacies were chosen to make the sample size. To each of these pharmacies, 30 questionnaires were given to make a total of 900 samples.

The data of the list of pharmacies in Gauteng which was made available by the South African Pharmacy Council (SAPC) for the study was accurate since SAPC had this information on their database being the institution responsible for the registration and accreditation of pharmacies in South Africa. They work in close collaboration with Medicines Control Council (MCC), the institution which is tasked with the regulation of Medicines Food and cosmetics in South Africa. The particular data that was used for the survey, had a list of all the Pharmacies in Gauteng province as at July 2007 and provided information about the name of the Pharmacy, business address, contact phone numbers and faxes.

4.5 Sampling method

The sample size was randomly selected from the total population of pharmacies using systematic random sampling technique. This was done by listing all the 1478 pharmacies in Gauteng, the first one was randomly selected and then using our nth term which is 49 (N/n ; $1478/30$), the subsequent pharmacies were selected. This was done in such a way that every pharmacy in Gauteng Province was given an equal chance of being selected. The sample frame therefore consisted of 30 pharmacies in total, which represented both government owned pharmacies and privately owned pharmacies.

4.6 Sample size determination

The sample size was obtained statistically using the following formula:

$$n = z^2 pq / d^2$$

where, n is the desired sample size; z is the standard normal deviate usually set to be 1.96 or 2.0; p is the proportion in the target population estimated to have a particular characteristic but with no reasonable estimate 50% or 0.5 can be used; $q = 1 - p$; d is the degree of accuracy desired usually set at 0.05 or occasionally at 0.02.

Note: This formula is applicable if the total population size is greater than 10,000.

Based on the above formula, the sample size for this research was arrived at as follows:

$$n = (1.96)^2 (0.5) (0.5) / (0.05)^2$$

$$n = (3.8416) (0.25) / 0.0025$$

$$n = 384.16$$

For the study, a total of nine hundred (900) questionnaires were distributed to allow for those that may be lost and out of the total questionnaires given out, 391 questionnaires were retrieved from the respondents.

4.7 Data Analysis

The analysis was done in three phases consisting of univariate, bivariate and multivariate. The univariate analysis described the data collected. Bivariate analysis was done using a chi-square test, to test the hypothesis for relationship between the dependent and independent variables. The chi-square indicated the significant level, which will determine whether to reject or not to reject the null hypothesis.

Finally, the multivariate analysis was carried out using logistic regression. These included all the independent variables in the model, and thus determine causal relationship between the dependent variable i.e. out come (use of either generic or branded medicines) and independent variables or explanatory

variables. A plot will be done to check for multicollinearity between the explanatory variables.

4.8 Research Limitations

Due to the fact that the questionnaires were only in English Language, there was a limitation that some people who did not have English Language as their first language had a problem understanding and filling in the questions. Also in some cases the concepts of generic medicine and branded medicines were not familiar to them so they needed some assistance in filling the questionnaires. This may have introduced an interpreter's error since some of them start changing their answers once they knew what generics were.

The data were collected within the duration of four weeks to give everyone visiting a particular pharmacy an opportunity of being sampled. This meant however, that not all the patients visiting the selected pharmacy had an opportunity of being sampled if for some reason they did not have any need to go to those pharmacies within that period. Also people, who do not usually visit pharmacies were excluded since the questionnaires were left at the pharmacies.

Other biases that are inherent to primary data collection may have persisted in this survey. For example, some respondent's failed to respond to some

questions, which resulted in missing data on some of the questions. Also some patients did not return questionnaires to pharmacy. While some others refused to participate in the survey for various reasons. In addition, some pharmacies blatantly refused to administer the questionnaires to their customers.

4.9 Conclusion

The data obtained using this research method was received on time to carry out the analysis and was satisfactory for the purpose of the study that was carried out.

Indeed, it has helped to confirm the general perception that several patients had of medicines and thus was useful in ascertaining the variables that have been identified for testing in this study and confirming or disputing some of the assumptions from the literature review.

Chapter 5: Results

In this section, several relevant tests were carried out on the 391 samples that were obtained from the survey to draw out the findings from the research. Univariate analysis was used to give the descriptive statistics, Bivariate to test the hypothesis and the multivariate model was used determine the multicollinearity among the variables.

5.1 Descriptive Statistical Analysis

Univariate analysis was run on the data from the survey using Stata software and the following results were obtained.

5.1.1 Race

Figure 5.1 shows the distribution of respondents according to their race. It shows that 45 percent of the respondents were Whites, the highest group of respondents. Followed by Blacks with 39 percent, Asians with 11 percent and the Coloured race was only represented by 6 percent of all the respondents.

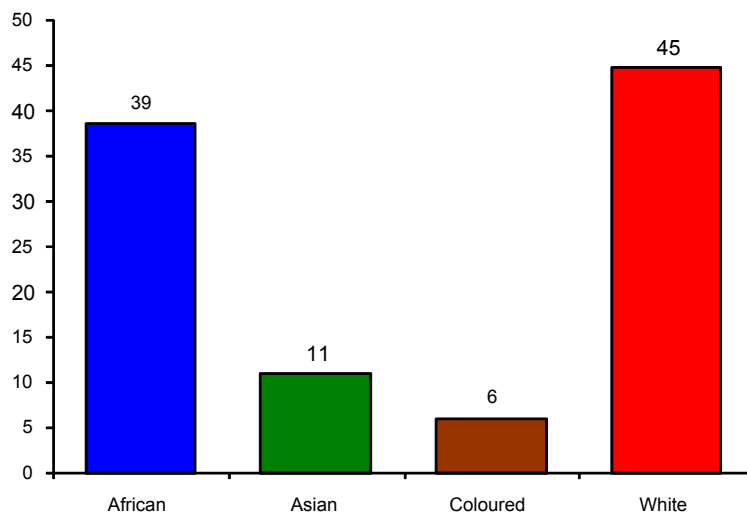


Figure 5.1 Race

5.1.2 Income distribution

The representation of the category of income is shown in Figure 5.2 below. It shows that more people were in the category of income level that is less than R5, 000.00.

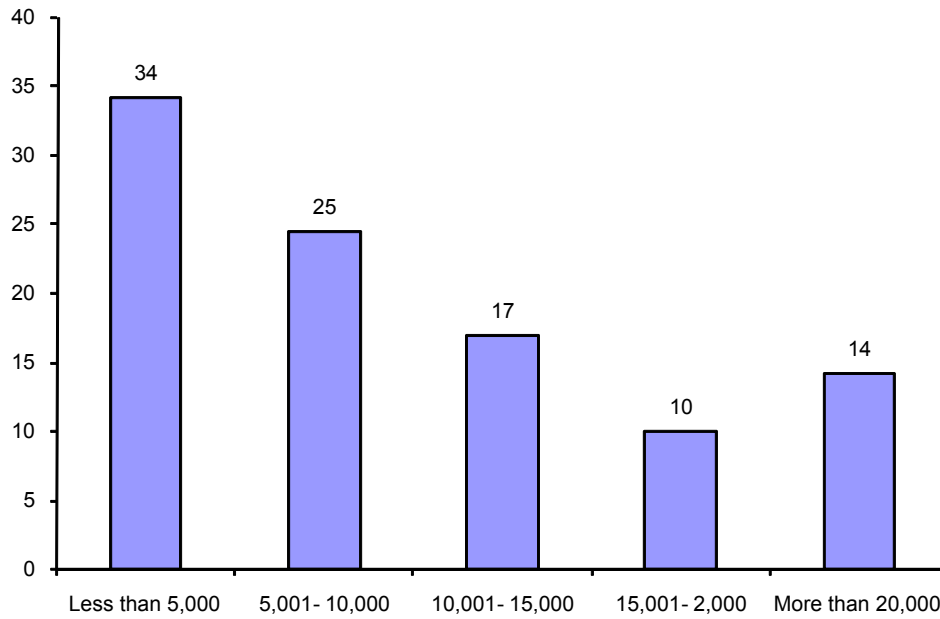


Figure 5.2 Income

Figure 5.3 below shows the place of residence of respondents.

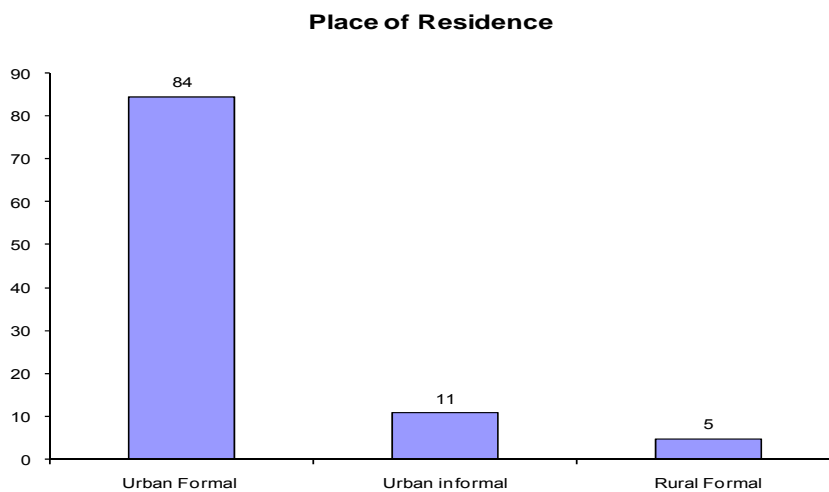


Figure 3.3 Place of residence of respondents

5.1.3 Age Distribution

Table 5.1 Age Distribution

Variable	Number of Observations	Mean	Std. Dev.	Min	Max
Age	380	39.47	13.66	19	87

Table 5.1 above shows that the number of respondents that indicated their age in the survey was 380 out a total of 391 respondents that filled out the questionnaire.

The mean age of the respondent was about 40 years where minimum and maximum ages were 19 years and 87 years respectively.

5.1.4 Educational Level Distribution

In the data the various educational levels selected but response is shown in Figure 5.4 below. Most of the respondents have attended a tertiary institution.

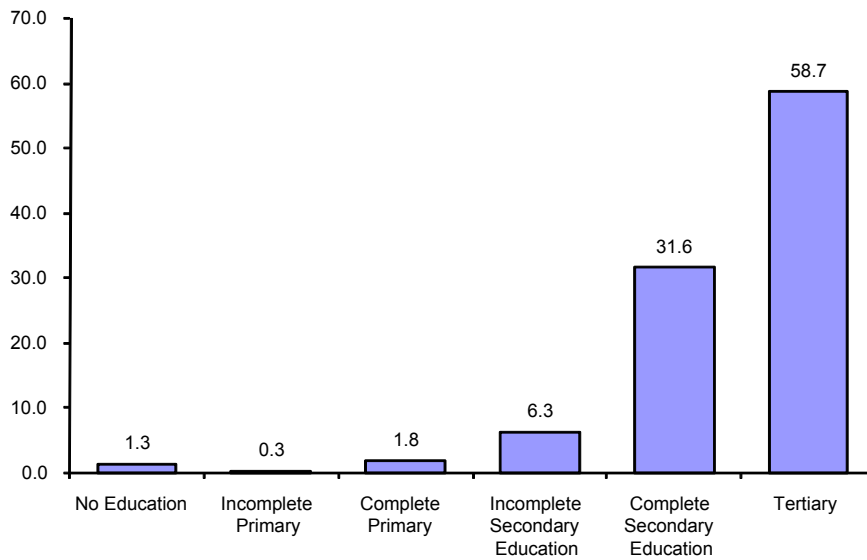


Figure 5.4 Educational Level among respondents

5.1.5 Why respondents buy their own type of Medicines

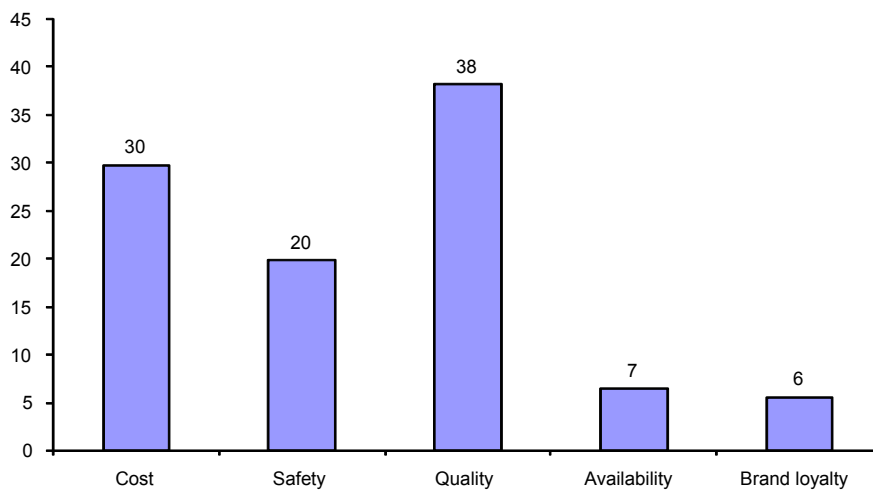


Figure 5.5 Respondents reason for buying Medicines

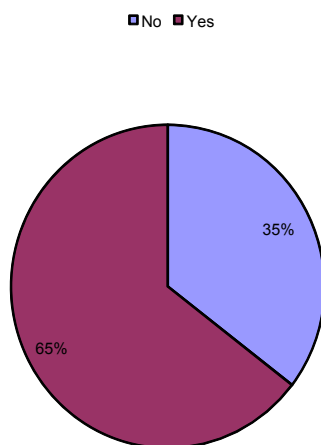
Figure 5.5 above indicates that 38 percent of the respondents preferred the type

of medicine they use because of their quality. 30 percent of respondent buy medicine because of their cost while only 6 percent consider brand loyalty when they buy medicines.

5.1.6 Respondents who are have Medical Aid

The pie chart below shows the number of respondents who responded to the question, “Are you on a Medical aid?” in the questionnaire. From the result obtained 65 percent of the respondents reported being on medical aid.

Figure 5.6 Responses to the question, are you on Medical aid?



5.1.7 Gender representation among respondents

Figure 5.7 below shows the gender distribution of the respondents which indicates that 67 percent of the respondents were females while the remaining 33 percent were males.

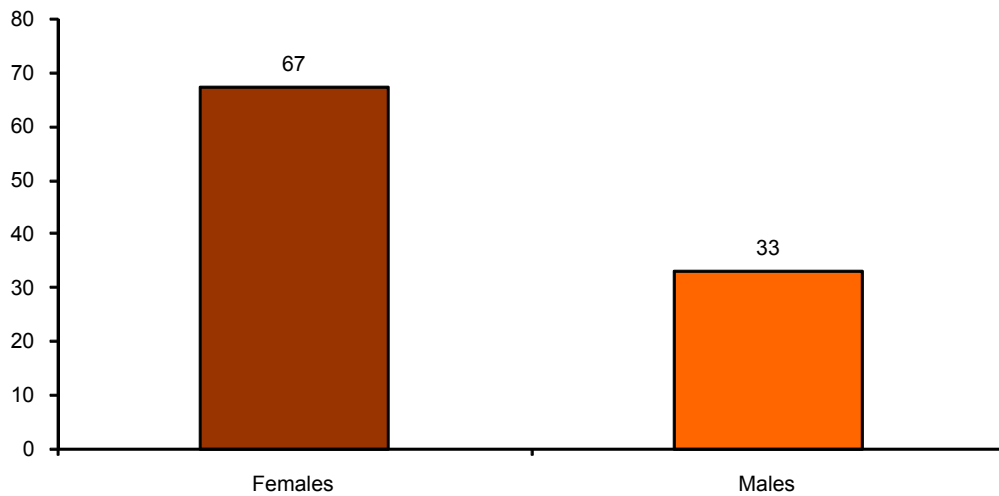


Figure 5.7 Gender Distribution among respondents

5.1.8 Marital Status of respondents

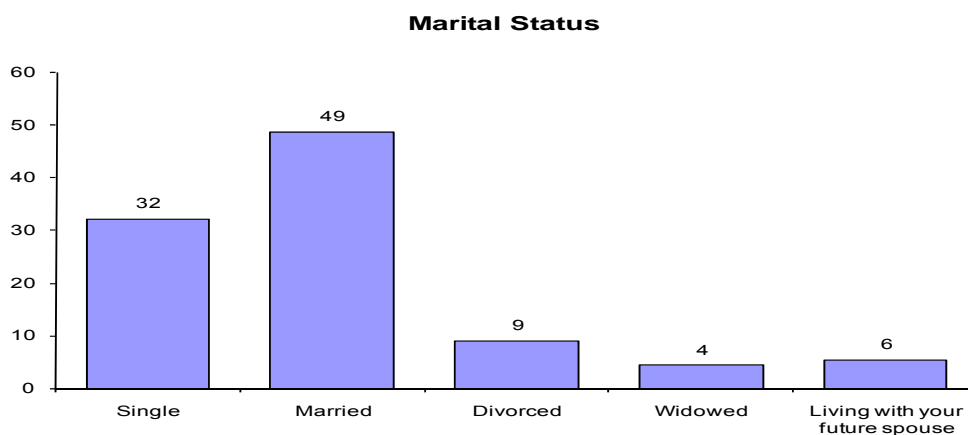


Figure 5.8 Marital Statuses of Respondents

Figure 5.8 above shows the marital status of respondents. The results indicate that 49 percent of the respondents were married people, 32 percent single while the least reported were the widows (4 percent).

5.1.9 Respondents using either Generic or Branded Medicines

Figure 5.9 depicts the number of respondents using branded medicines only. This was reported as 14 percent of the total respondents.

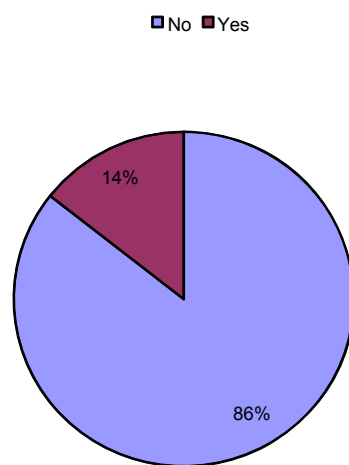


Figure 5.9 Percentages of people who are using Branded Medicines only

Figure 5.10 depicts the number of respondents using generic medicines only. In this however, 19 percent of the respondents reported that they prefer to use generic medicines.

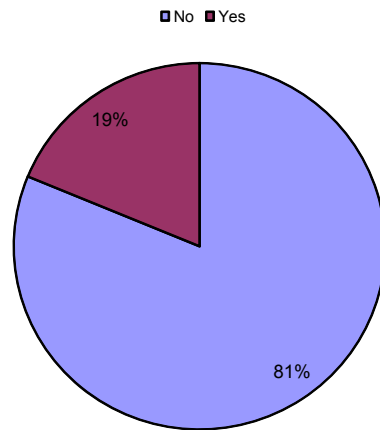


Figure 5.10 Percentages of people who use Generic Medicines

Figure 5.11 shows the response of people to the question, “Generic medicines are as effective as branded medicines?” 55 percent of the respondents agree with the statement that generic medicines have the same effectiveness as branded.

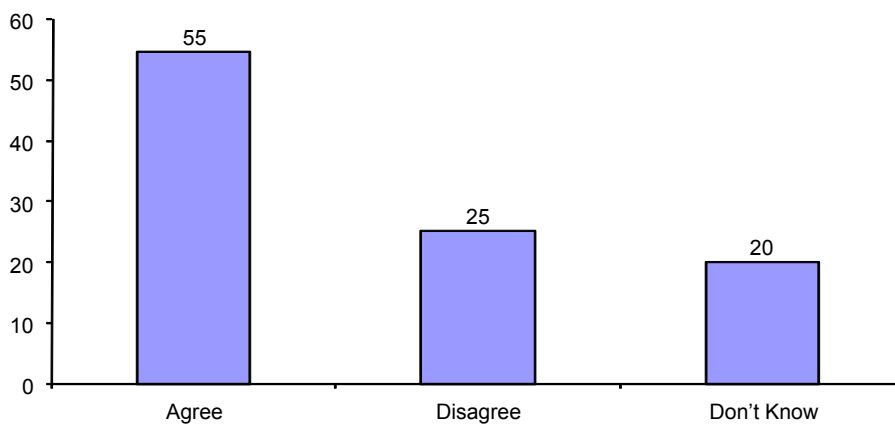


Figure 5.11 Generic are as effective as Branded medicines

5.2 Bivariate Analysis of Data

5.2.1 Analysis of Generic medicines against Race

Table 5.2 Use of Generic Medicines against Race

Use of Generic Medicines	Odds Ratio	P-Value
Coloured	1.05	0.917
White	0.79	0.717
Asian	1.43	0.219

Table 5.2, indicates that there is no significant difference between the use of generic medicines and race (testing at 5 percent level it gave a P-Value of 0.54 or 54 percent). Hence we do not reject the null hypothesis.

In addition, Asians and Coloured are more likely to use generic drugs than Blacks (1.43 and 1.05 respectively), while Whites are less likely to use generic drugs than Blacks (0.79).

However the P-values show that there is no significant difference between all the races.

5.2.2 Analysis of Generic medicines against income

Table 5.3 Use of generic against income

Use of Generic Medicines	Odds Ratio	P-Value
5,0001 - 10,000	1.09	0.800
10,001 - 15,000	1.29	0.492
15,001 - 20,000	0.95	0.925
More than 20,000	0.07	0.014

Table 5.3 indicates that there is a significant difference between the use of generic medicines and income (testing at 5 percent level it gave a P-Value of 0.003 or 0.3 percent. Hence we reject the null hypothesis.

In addition, it can be seen also that those who earn more than R20, 000.00 are less likely to use generic drugs than those who earn more than R20, 000.00. (0.0792). The P-value of 0.014 indicates that there is a significant difference between those who earn more than R20,000.00 and a those who earn less than R5,000.00.

Respondents who earn from R5, 000.00 to R15, 000.00 are more likely to use

generic medicines than those who earn less than R5, 000.00 (1.09 and 1.29 respectively).

5.2.3 Analysis of Generic medicines against Age

Table 5.4 Use of generic against Age

Use of Generic Medicines	Odds Ratio	P-Value
Age	1.02	0.030

Table 5.4, indicates that there is a significant difference between the use of generic medicines and Age (testing at 5 percent level it gave a P-Value of 0.02 or 0.2 percent). Hence we reject the null hypothesis.

In addition, it could be seen that the older the respondents are, the more likely it is that they will use generic medicines (1.02) and a P-value of 0.03 indicates that there is a significant difference between the older respondent and the younger respondents.

5.2.4 Analysis of Generic medicines against Educational level

Table 5.5 Use of generic against Educational Level

Use of Generic Medicines	Odds Ratio	P-Value
Complete Primary	1.13	0.000
Incomplete secondary	4.75	
Complete secondary	4.36	0.000
Tertiary	2.61	0.000

Table 5.5, indicates that there is no significant difference between the use of generic medicines and educational level (testing at 5 percent level it gave a P-Value of 0.08 or 8 percent). Hence we reject the null hypothesis.

However, those respondents with incomplete secondary education and those who completed their Secondary education are about four times more likely to use generics than those with no education.

In this test, there were not enough samples to give a conclusion analysis.

In case of the respondents who have tertiary education, there is a significant difference between those who have tertiary education and those without education (testing at 5 percent level, it gave a P-Value of 0.000). This means

that it there is a high statistical significant.

5.2.5 Use of Generic medicines against Access to Medical Aid

Table 5.6 Use of generic against Access to Medical Aid

Use of Generic Medicines	Odds Ratio	P-Value
Yes	0.77	0.323

Table 5.6 above, indicates that there is no significant difference between the use of generic medicines and access to medical aid (testing at 5 percent level it gave a P-Value of 0.37 or 37 percent). Hence we do not reject the null hypothesis.

Although those respondents, who have access to medical aid, are less likely to use generic medicines (0.77), but a P-value of 0.32, indicates that there is no significant difference between those who have access to medical aid and those who do not have access to medical aid.

5.2.6 Analysis of Generic medicines against Gender

Table 5.7 Use of Generic against Gender

Use of Generic Medicines	Odds Ratio	P-Value
Male	0.64	0.136

Table 5.7, indicates that there is no significant difference between the use of generic medicines and gender (testing at 5 percent level it gave a P-Value of 0.12 or 12 percent). Hence we do not reject the null hypothesis.

Although, Males are less likely to use generic medicines than Females (0.64) but the P-Value of 0.136, indicates that there is no significant difference between the males and females

5.2.7 Analysis of the use of Generic medicines against Cost

Table 5.8 Use of generic against Cost

Use of Generic Medicine	Odds Ratio	P-Value
Yes	3.07	0.000

Table 5.8 indicates that there is a significant difference between the use of generic medicines and cost (testing at 5 percent level it gave a P-Value of 0.001 or 0.1 percent). Hence we reject the null hypothesis.

In addition, those who prefer cost as a reason for buying medicine are three times more likely to buy generic medicines than those who chose other options (3.07). A P-Value of 0.000 indicates that there is a significant difference between those who chose cost as opposed to those who chose other options.

5.2.8 Analysis of the use of Generic medicines against Safety

Table 5.9 Use of Generic Medicines against Safety

Use of Generic Medicines	Odds Ratio	P-Value
Safety	0.77	0.482

Table 5.9 indicates that there no significant difference between the use of generic medicines and safety (testing at 5 percent level it gave a P-Value of 0.47 or 47 percent). Hence we do not reject the null hypothesis.

In addition, those who prefer safety as a reason for buying medicine are less likely to buy generic medicines than those who chose other options (0.77). A P-Value of 0.482 indicates that there is no significant difference between those

who chose safety as opposed to those who chose other options.

5.2.9 Analysis of the use of Generic medicines against Quality

Table 5.10 Use of Generic Medicines against

Use of Generic Medicines	Odds Ratio	P-Values
Quality	0.36	0.003

Table 5.10 indicates that there is a significant difference between the use of generic medicines and quality (testing at 5 percent level it gave a P-Value of 0.0012 or 0.12 percent). Hence we reject the null hypothesis.

In addition, those who prefer quality as a reason for buying medicine less likely to buy generic medicines than those who chose other options (0.363). A P-Value of 0.003 indicates that there is a significant difference between those who chose quality as opposed to those who chose other options.

5.3 Multivariate Analysis of Data

Table 5.11 Use of Generic Medicines against all other variables in a Multivariate Analysis

Use of Generic Medicine	Odds Ratio	P-Value
Quality	0.34	0.033
Safety	0.99	0.985
Cost	2.18	0.051
Male	0.70	0.299
5001-10000	1.53	0.294
10001-15000	1.56	0.336
15001-20000	1.23	0.713
More than 20000	0.11	0.043
Completed Primary Education	2.43	-
Incomplete Secondary Education	5.39	0.000
Completed Secondary Education	1.01	0.000
Tertiary	9.07	0.000

Coloured	1.33	0.603
White	0.69	0.596
Asian	1.05	0.901
age	1.01	0.313
Have Medical aid	0.94	0.856

Table 5.11 shows that the model is statistically significant when testing at 5 percent and 1 percent respectively (P-value of 0.007).

Looking at the independent variable in the model, it can be seen that, quality (0.033); those who earn more than R20, 000.00 (0.043); those with incomplete Secondary education (0.000); those with complete secondary education(0.000); and those with tertiary education(0.000); are statistically significant at 5 percent level.

However, a P-value of 0.051 for cost is slightly significant at 5 percent level.

Those with complete Primary Education are not statistically significant at any level.

Chapter 6: Discussion of Research Results

6.1 Introduction

The study was carried out to determine consumer's perception of the benefits of generic versus branded medicine considering the impact that several factors such as race, income, age, educational level, and cost, quality and safety will have on the use of medicines, either generics or branded medicines.

The findings reported in Chapter 5 shows that there is a strong relationship between these variables and the perception and their use of medicines.

Medicine is an essential commodity but at the same time wrong use of it may be dangerous. So people tend to be very careful of its use and since it relates to health they want the best for themselves and their family. It is important to view the results with this understanding in mind.

6.2 Race

Inclusion of race as one of the variables is a necessity if one is going to carry out any meaningful studies in South Africa. Race has been a contentious issue and one would expect the use of medicine would not be left out.

The study indicated that the White population, judging from the respondent in the survey, are less disposed to use generic medicines compared to Blacks.

Table E3, showed that generally Whites earn more than Blacks in all the various income categories. This chi square test for association between race and income showed that 52.9 percent of Whites earn more than 20,001 while 25.5 percent of Blacks earn more than 20,001. However, in the income category of less than R5, 000 Blacks were 49.2 percent while Whites 36.7 percent.

This result confirms the fact that the income distribution between both races is really uneven perhaps because of the legacy of the country and a chi square P-Value of 0.044 shows that there is a strong association between income and race at 5% significant level.

On the other hand, Asians and Coloureds are more likely to use generics than Blacks. However, considering the few number of respondent for both Asians and Coloureds that was obtained from the survey (i.e. n=42 and n=23 respectively), one cannot conclude convincingly that this statement is true giving that the probability Value (P-Value) is not significant.

It was observed that some people refused to fill the questionnaires and most of these people came from the pharmacies in the areas where there were people of colour. Also some Whites did not fill the questionnaire because they could not understand English Language. However, the results of the survey shows that race do affected what kind of medicines people buy.

6.3 Income

The research result indicates that income is a determining factor in the purchase of medicines. The higher the income of people as shown by the respondents, the less likely they will buy generics and the lower the income the more likely they will purchase generics. The converse is also true, which is, the higher the income the more likely people will buy branded medicine and the lower the income the less likely they will buy branded medicine. This supports the finding from the literature that people who earn very little would go for generic medicines while those that earn a lot would most likely go for generic medicines.

The variable of income is always a contentious one in any study since people always find a reason not to report accurately the amount they earn. Fig. 5.2 shows that 34 percent of the respondents were in the income bracket of less than R5, 000.00. Fig. 5.1 on the other hand shows that 84 percent of the respondents live in urban formal location, while Fig. 5.4 indicated that 58.7 percent people reported that they have been to a tertiary institution. There seem to be a discrepancy between what some of these people earn and what they can afford, if one compares all the figures.

When one considering compared the results obtained from the Bivariate analysis and that of the Multivariate analysis, Tables C2 and D1 respectively, it is seen that when income was included in the model, those who earn between R15, 000.00 and R20, 000.00, were more likely to use generic medicines

compared to those who earn less than R5, 000.00.

6.4 Age

There is a tendency according to the results from the study, for older people to buy generics instead of branded medicines. The maximum age for respondents according to table 5, is 87 years. This may be due to the fact that many of the older respondents were retired and as a result had to live within their limited pension fund or retirement benefit. This finding contradicts some of the previous findings on the relationship of age as a variable to the purchase of medicines. What this thus shows is that awareness of generics medicines among the older generation is growing. Perhaps the older generation have had enough time to try out generic medicines and realised that they are an effective substitutes for branded ones.

One can also include here the fact that many of the medical aids providers are forcing people to go on generics medicines with co-payments penalty for taking branded medicines.

Another interesting result from the survey was that, 14 percent of the respondents use branded medicines, 19 percent reported using generics, and 53 percent of respondents use both generics and branded medicines. The remaining 14 percent of respondents reported that they did not know. This shows that more people are using generics perhaps due to increase awareness and developing more confidence on them.

6.5 Educational level

The study confirms that the higher the educational level of people, the more likely they will use generics. Table E1, shows that there were more females with a tertiary education among the respondents than males.

Although this category of tertiary education included university graduates, technicians, nurses, and people who graduated from colleges of Education, however, this results goes to supports the findings that more females are better disposed to use generic medicines because they are better educated about generics as shown in Table E2.

There was a correlation between those who completed their primary education and those that did not complete their primary education. Since only one respondent reported not completing the primary education, the analytic package dropped the responses for those that did not complete their primary education.

6.6 Medical aid

The results of the study shows that people with medical aid are less likely to use generic medicines compared to those that do not have medical aid. This confirms previous studies that have been carried on this field. Generally, when people do not have to bear the burden of paying directly for their medicines, they tend to go for branded ones.

However, with the current trend of medical aid company refusing to pay for branded medicines, which means the patient will have to pay the levies or co-payment, we are going to see in the near future many more people going for generics.

For those who have the means, once generics become widely known for their effectiveness and as a genuine substitute for branded medicines, cost may gradually become an issue for them because they would be losing their consumer surplus to the drug companies if they continue to buy branded medicines.

6.7 Cost

The research was designed essentially to capture the perception that people have of the benefits of generic versus branded medicines.

Cost was seen as a determining factor in people's choice of medicine. The research shows that, people are three times more likely to use generics than branded medicines because of the cost of the medicine.

Multivariate analysis on Table D1 shows that, those who chose cost as a determining factor for buying generic medicines are two times more likely to buy generic medicine compared to other respondents who chose other option. This is slightly different from the result on Table C7, which was obtained using the bivariate analysis. However, there is slight multi-co linearity but this does not

pose a problem in the model.

6.8 Safety

Safety is one of those variables that have been written extensively as determining factor for people to purchase medicines. Most patients do not have the proficiency to determine the safety of any medicine lying on the shelf as long as the medicines have not expired. Therefore safety really becomes a thing of the perception that people have of a particular medicine. This may have been formed from a bad experience in the past.

The study showed on Table C6, that those respondents, who are more concern about the safety of the medicines they use, are less likely to buy generic medicines (Odds Ratio of 0.77). The opposite conclusion is also possible which states that people who are concerned about the safety of medicine are more likely to buy branded medicines.

6.9 Quality

The quality of any medicine is a clear indication of the efficacy of that medicines and this is enforce and monitored by the relevant institutions tasked with this responsibility. Most of the pharmaceutical companies have systems in place to check the quality of medicines on an on-going basis during the manufacture of

medicines and this in principle is true for both branded and generic medicines.

The results of the research as can be seen in Table C8 showed that those respondents, who are more concerned about the quality of the medicines they use, are less likely to buy generic medicines (Odds Ratio of 0.36). This goes to confirm the available data the either generic companies have to ensure the consistency of their medicines or patients needs to be educated more about generics.

6.10 Gender

Apart from the ego issue commented on in the literature, males generally tend to be less educated about medicines which make them more vulnerable to being easily convinced to use branded medicines instead of a generic which is as good as the branded medicine.

The result of the study confirms the fact that males are less likely to use generic compared to females. According to Table E2 (cross tabulation), more females use generic medicines more than males.

6.11 Conclusion

It has been shown by the results that the research successfully tested the entire hypothesis that were proposed for this study.

There is still a gap between the benefits that pharmaceutical companies try to offer to the general population compared to the benefits that people perceive as such. This gap will take time to bridge but with all the pressure from the stakeholders to deliver good healthcare at a reasonable price more people would come to benefit from the offering.

Chapter 7: Conclusion

7.1 Education of Stakeholders

The research showed that a medicine whether branded or generic is poorly known by the people that need to know (the patients), because they use them. Government needs to communicate accurately the benefits of generic medicines to the people using them and to emphasise what is being done or what they are doing to ensure that the current perception that people have of generic medicines is gradually changed. People need to be reassured that the quality and safety of generic medicines are up to standard in addition to the cost benefit.

The generic companies also need to make themselves accountable for the quality of the medicines that they produce. Reported cases of poor standards in the production of medicines should be properly dealt with to keep the manufactures vigilant. For example, any company that is known for producing substandard generics should be closed down and if found guilty should be made to pay the aggrieved parties some compensation in terms of damages.

Effort should be made by the generic companies to educate pharmacists and doctors on the available generics. This will make substitution easier.

7.2 Role of Pharmacists

The new substitution law confers an enormous duty as well as responsibility on the Pharmacists and there is no way the plan to reduce healthcare spend will come to fruition if they are not brought on board. There is an urgent need for government to resolve the single exit price saga that is apparently making owners of pharmacies very agitated. If government wants to achieve any cost reduction through the help of pharmacists, they have to keep the lines of communication with this professional bodies opened and also well managed.

Also the pharmaceutical companies producing generic medicines have to make sure they keep informing and educating pharmacists about new launches of generic medicines and to make these medicines available once they are launched at the several distribution companies.

7.3 Brand Awareness and Loyalty

The findings of the research showed that people do not know the name of the manufacturer that makes the medicines they take. This means that pharmaceutical companies create awareness about their brands so as to make their presence known to their patients. Although the advertisement of prescription medicine is illegal, they should use other means, for example, through their over-the-counter product to build a corporate image that will make

it easy for patients to know them. Also the can carry out value add projects so as the force patients to have memories of the companies.

This also applies to generic companies since it is important that they differentiate themselves from the faceless pack of generic companies by the branding themselves. This will make patients to ask for their product by the name of the company.

7.4 Role of Women in Healthcare delivery

The research report shows that females are more likely to use generic medicines compared to males. Pharmaceutical companies producing generic medicines should try to direct adverts to the females in the society so as to harness this predisposition to the full.

Meanwhile, they should find a way to also educate the males in the society about generic medicines since in most cases they may be the ones paying for the medicines in the long run.

7.5 Conclusion

The desire of South African government to drive down the cost of medicine is going to take a while for it to translate into monetary gain, both for the government and individuals, because the perception that people have of the quality and safety of generic medicines is still needs to improve. There is a great need to educate the people of the benefits of generics and to win their confidence that the quality is the same as those as that of branded medicines.

The research findings showed that educational level affects the use of generics. It will therefore be in the interest of government to provide education to her citizens so as to facilitate their compliance to the use of generic medicines.

Due to the perception that people have of the safety and quality of generics, MCC should be very diligent in ensuring that any company that intends to register a new generic fulfils all the requirements rigorously so as reduced any more negative comments about generic medicines. One would say that life saving drugs such as antibiotics; anti- retroviral; etc have to be excellent before they can be registered for use by patients.

Finally, a toll free number should to be set to be used to lodge complains from patients and all, about medicines especially generics medicines.

7.6 Areas for future research

Due to the relevance of this topic, the population size could be expanded to other parts of the country while maintaining the use of the same instrument. This will enable a more accurate generalisation of the results for the whole country. The findings should be of great interest to pharmaceutical companies and especially to the government as it will enable the department of Health to know whether the generic substitution policy is really effective.

It would be interesting to find out the perception that doctors, pharmacists and other health professionals have of generic medicines in South Africa, since they have so much influence on the end users of medicines.

Finally, a study could be carried on the brand awareness of people for both the branded medicines and the generic medicine. This may help to correct wrong perception about a particular company.

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Appendix A: Questionnaire

A SURVEY ON THE PERCEIVED BENEFIT OF GENERIC VERSUS BRANDED MEDICINES

2007

41 Multiple-Choice Questions and Questions that require own answers

Name of pharmacy: _____

INFORMATION LEAFLET:

Thank you for taking part in this survey. The survey aims to measure the perceived benefits of generic versus branded medicines.

Branded medicines are original products; produced by companies through research and development while generic medicines are medicines produced from the formula of branded medicines once the patent right on the branded medicines has expired.

The results may inform healthcare policies that will be rolled out in the near future. Your identity will be kept anonymous. The survey should take you roughly 15 minutes to complete.

INSTRUCTIONS:

On this survey form, please tick the correct or most appropriate answer for each question or write your answers in the space provided. Choose only ONE answer for each question and answer all questions on all pages of this form. It is advisable to use a pen to complete this questionnaire. Please hand in your completed questionnaire form when you have finished, to the person that you got it from in the designated pharmacy.

Thank you for your anticipated co-operation.

1. Gender: Male Female

2. How old are you?

3. What is your date of birth? Day..... Month..... Year.....

4. How would you define your marital status?
 - a. Single
 - b. Married
 - c. Divorced
 - d. Widowed
 - e. Living with your future spouse (Cohabiting)
 - f. Others (specify)

5. How would you describe your race?
 - a. African
 - b. Coloured
 - c. White
 - d. Asian
 - e. Others (specify)

6. Type of Residence?
- a. Brick house
 - b. Zinc house or squatter camp (informal settlement)
 - c. Town house
 - d. Others (specify)
7. How would you describe your place of residence?
- a. Urban formal
 - b. Urban Informal
 - c. Rural Informal
 - d. Others (specify).....
8. What is your educational level?
- a. No education
 - b. Incomplete Primary education
 - c. Complete Primary education
 - d. Incomplete Secondary education (High School)
 - e. Complete Secondary education (High School)
 - f. Tertiary (University, Technical University, Nursing School, College of Education, etc)
9. What is your income range per month?
- a. Less than R5,000
 - b. R5,001 - R10,000
 - c. R10,001 - R15,000
 - d. R15,001 - R20,000
 - e. More than R20,001

10. Do you know what Generic medicines are?
- a. Yes
 - b. No
 - c. I don't know
11. Do you know what Branded medicines are?
- a. Yes
 - b. No
 - c. I don't know
12. Do you use Generic or Branded medicines?
- a. Branded
 - b. Generic
 - c. Both generic and Branded
 - d. I don't know
13. Generic or Branded Medicines, which do you prefer?
- a. Generic Medicine
 - b. Branded Medicine
 - c. I don't know
14. What is the reason behind your choice (Generic or Branded Medicines?)
-
15. Generic medicines are as effective as Branded medicines.
- a. I agree
 - b. I disagree
 - c. I don't know

16. How do you pay for your medicines?
- a. Medical Aid
 - b. Private/Self
 - c. Company
 - d. Government
 - e. Others (specify).....
17. If you were paying yourself, which type of medicines would you prefer?
- a. Generic Medicine
 - b. Branded Medicine
 - c. I don't know
18. Are you on medical Aid?
- a. Yes
 - b. No
 - c. Others (specify)
19. Does your medical aid pay when you choose to take branded medicines?
- a. Yes
 - b. No, only if there is no generic substitute
 - c. No
 - d. I don't know
20. If No, would you be willing to pay the co- payment (levy) for taking a Branded medicine?
- a. Yes
 - b. No
 - c. I don't know

21. Would your Medical Aid premium increase if you decide to take a Branded medicine?
- a. Yes
- b. No
- c. I don't know
22. What type of prescription do you get from your doctor?
- a. Generic medicine
- b. Branded Medicine
- c. Generic and Branded Medicine
- d. I don't know
23. Have you ever asked your doctor if there was a Generic alternative for a Branded medicine that he or she had prescribed for you?
- a. Yes
- b. No
- c. I don't know
24. Have you ever asked your pharmacist if there was a Generic alternative for a Branded medicine that you were taking?
- a. Yes
- b. No
- c. I don't know

25. Choose from below why you prefer the type of medicine you buy.
- a. Cost
 - b. Safety
 - c. Quality
 - d. Availability
 - e. Brand Loyalty
26. What other reason(s) would make you choose any of the other alternatives?
27. Generic medicines are as safe (i.e. has similar side effects) as Branded medicines.
- a. I agree
 - b. I disagree
 - c. I don't know
28. Generic medicines are approved by Medicines Control Council (MCC), just like Branded medicines in South Africa.
- a. I agree
 - b. I disagree
 - c. I don't know
29. Do you think that Branded Medicines are more expensive than Generic medicines?
- a. Yes
 - b. No
 - c. I don't know

30. Do you think that expensive medicines (Branded) are more effective than cheaper medicines (Generic)?
- a. Yes
 - b. No
 - c. I don't know
31. What additional amount are you ready to pay for each medicine in order to buy the Branded medicine instead of taking the Generic one?
- a. R1 - R20
 - b. R21 - R40
 - c. R41 - R60
 - d. R61 - R80
 - e. R81 - R100
 - f. R101 and above
32. Do any of your Branded prescription medicines have a lower-cost Generic medicine alternative available?
- a. Yes
 - b. No
 - c. I don't know

33. Approximately how much do you think you would save per month in out-of-pocket costs by using the Generic alternative?
- a. R0
 - b. R1-R150
 - c. R151-R300
 - d. R301-R450
 - e. R451-R600
 - f. R601-R750
 - g. R751-R900
 - h. R901-R1050
 - i. R1051 and above
34. The quality of Generic medicines is better than those of Branded medicine?
- a. I agree
 - b. I disagree
 - c. I don't know
35. If Generic alternative for your Branded medicines were available, would you switch to the Generic alternative?
- a. Yes
 - b. No
 - c. If my doctor recommended it
 - d. Depends on how much I would save
 - e. I don't know
 - f. Others (specify).....

36. Have you ever taken a Generic drug after using the Branded version?

- a. Yes
- b. No
- c. I don't know

37. Were you satisfied with the Generic alternative?

- a. Yes
- b. Sometimes
- c. No
- d. I don't know

38. Has a doctor or pharmacist ever recommended that you switch from a Branded medicine to a Generic alternative?

- a. Yes
- b. No
- c. I don't know

39. Did you follow their advice?

- a. Yes
- b. Sometimes
- c. No
- d. I don't remember

40. Of which of the companies below do you prefer their Branded medicines?

- a. Johnson & Johnson
- b. Pfizer
- c. GlaxoSmithKline
- d. Novartis
- e. Roche
- f. Eli Lilly and Co.
- g. AstraZeneca
- h. Merck & Co.
- i. Others (specify).....
- j. I don't know

41. Why do you prefer the Branded medicines from this company?

.....

Appendix B: Demographics of Sample

Table B1

Gender	Percentage
Females	67
Males	33

Race	Percentage
African	39
Asian	11
Coloured	6
White	45

Educational Level	Percentage
No Education	1.3
Incomplete primary	0.3
complete Primary	1.8
Incomplete Secondary education	6.3
Complete Secondary education	31.6
Tertiary	58.7

Income	Percentage
Less than 5,000	34
5,001- 10,000	25
10,001- 15,000	17
15,001- 2,000	10
More than 20,000	14

Generics are as Effective as Branded	Percentage
Agree	55
Disagree	25
Don't Know	20

Reason why People buy the type of medicine they buy	Percentage
Cost	30
Safety	20
Quality	38
Availability	7
Brand loyalty	6

Table B2

Percentage of respondents on Medical aid	Percentage
No	35
Yes	65

Percentage of respondents who use Branded medicines	Percentage
No	86
Yes	14

Percentage of respondents who use Generic medicines	Percentage
No	81
Yes	19

Marital Status of Respondents	Percentage
Single	32
Married	49
Divorced	9
Widowed	4
Living with your future spouse	6

Respondents Place of Residence	Percentage
Urban Formal	84
Urban informal	11
Rural Formal	5

Cost as a determinant for buying medicines	Percentage
No	75
Yes	25

Safety as a determinant for buying medicines	Percentage
No	84
Yes	16

Quality as a determinant for buying medicines	Percentage
No	68
Yes	32

Appendix C: Results of Bivariate Analysis

Table C1 Use of Generic medicines against Race

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Coloured	1.05	0.493647	0.1	0.917	0.417836	2.638598
White	0.7875	0.518159	-0.36	0.717	0.216859	2.859719
Asian	1.428309	0.413922	1.23	0.219	0.809367	2.520571

Table C2 Use of generic against income

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
5,0001 - 10,000	1.090435	0.373345	0.25	0.8	0.5573958	2.13322
10,001 - 15,000	1.291304	0.480578	0.69	0.492	0.622646	2.678034
15,001 - 20,000	0.955862	0.455858	-0.09	0.925	0.3753623	2.434108
More than 20,000	0.0792	0.081928	-2.45	0.014	0.0104281	0.6015152

Table C3 Use of generic against Age

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
age	1.020079	0.009348	2.17	0.03	1.001922	1.038566

Table C4 Use of generic against Education Level

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Complete Primary	1.13	1.01	20.69	0.000	1.95E+07	6.53E+08
Incomplete Secondary	4.75					
Complete Secondary	4.36	2.26	34.04	0.000	1.58E+07	1.20E+08
Tertiary	2.61	1.32	33.83	0.000	9705940	7.02E+07

Table C5 Reason why Respondents buy medicines

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Safety	0.3703704	0.150624	-2.44	0.015	0.1669031	0.8218792
Quality	0.2162162	0.080672	-4.1	0	0.1040631	0.4492414
Availability	1	0.511039	0	1	0.3672849	2.722682

Table C6 Safety as the Reason why you buy your preferred medicine

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Safety	0.7701352	0.286308	-0.7	0.482	0.3716388	1.595927

Table C7 Cost as the Reason why you buy your preferred medicine

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Yes	3.073171	0.842931	4.09	0.000	1.795201	5.260903

Table C8 Quality as the Reason why you buy your preferred medicine

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Yes	0.363314	0.122459	-3	0.003	0.187661	0.703379

Table C9 Use of Generic medicines against Medical aid

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Yes	0.7669441	0.206061	-0.99	0.323	0.4529649	1.298563

Table C10 Use of Generic Medicine against Gender

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Male	0.6418556	0.190894	-1.49	0.136	0.3583293	1.149721

Table C11 Use of Generic Medicine against Marital Status

Use of Generics	Odds Ratio	Std. Err.	z	P-Value	95% Conf.	Interval
Married	1.961284	0.682816	1.93	0.053	0.9912814	3.880466
Divorced	6.346154	2.857033	4.1	0	2.626034	15.33631
Widowed	3.525641	2.142667	2.07	0.038	1.071347	11.60235
Living with future Spouse	2.644231	1.56102	1.65	0.1	0.8313673	8.41019

Appendix D: Results of Multivariate Analysis

Table D1 The use of Generic medicine against all the other variables

Use of Generics	Odds Ratio	Std. Err.	z	P>z	95% Conf.	Interval
Quality	0.345702	0.1723842	-2.13	0.033	0.130092	0.918656
Safety	0.991484	0.4590347	-0.02	0.985	0.400127	2.456817
Cost	2.177975	0.8679847	1.95	0.051	0.997297	4.756427
Male	0.700857	0.2401109	-1.04	0.299	0.358105	1.371664
5001-10000	1.527371	0.6162347	1.05	0.294	0.692656	3.367993
10001-15000	1.563387	0.7256317	0.96	0.336	0.629490	3.88279
15001-20000	1.234306	0.7070442	0.37	0.713	0.401634	3.793275
More than 20000	0.113605	0.1222578	-2.02	0.043	0.013784	0.9363262
Completed Primary Education	2.43E+08					
Incomplete Secondary Education	5.39E+07	6.06E+07	15.84	0	5955778	4.88E+08
Completed Secondary Education	1.01E+08	9.50E+07	19.63	0	1.61E+07	6.37E+08
Tertiary	9.07E+07	8.63E+07	19.26	0	1.41E+07	5.86E+08
Coloured	1.334976	0.742531	0.52	0.603	0.448770	3.97121
White	0.688199	0.485320	-0.53	0.596	0.172760	2.741473
Asian	1.045816	0.378226	0.12	0.901	0.514768	2.124702
Age	1.011947	0.011914	1.01	0.313	0.988862	1.03557
Have Medical aid	0.936128	0.341409	-0.18	0.856	0.458036	1.913249

Appendix E: Cross Tabulation Analysis

Table E1 Gender against Educational Level

Gender	No Education	Incomplete Primary	Complete Primary	Incomplete Secondary	Complete Secondary	Tertiary	Total
Female	3	1	4	15	77	150	250
	60	100	57.14	71.43	65.25	67.57	66.84
Male	2	0	3	6	41	72	124
	40	0	42.86	28.57	34.75	32.43	33.16
Total	5	1	7	21	118	222	374
	100	100	100	100	100	100	100

Table E2 Use of Generic against Gender

Use of Generic Medicines	Females	Males	Total
No	203	109	312
	65.06	34.94	100
Yes	53	18	71
	74.65	25.35	100
Total	256	127	383
	66.84	33.16	100

Table E3 Race against different income group

Race	Less than 5,000	R5,001 - R10,000	R10,001 – R15,000	15,001 – 20,000	More Than 20,001	Total
African	59	35	17	12	13	136
	49.17	39.77	28.33	33.33	25.49	38.31
Asian	10	9	4	5	10	38
	8.33	10.23	6.67	13.89	19.61	10.7
Coloured	7	8	4	2	1	22
	5.83	9.09	6.67	5.56	1.96	6.2
White	44	36	35	17	27	159
	36.67	40.91	58.33	47.22	52.94	44.79
Total	120	88	60	36	51	355
	100	100	100	100	100	100

7. How would you describe your place of residence?
- a. Urban formal (1)
 - b. Urban Informal (2)
 - c. Rural Informal (Was Changed to Rural Formal) (3)
 - d. Others (specify)..... (3)
8. What is your educational level?
- a. No education (1)
 - b. Incomplete Primary education (2)
 - c. Complete Primary education (3)
 - d. Incomplete Secondary education (High School) (4)
 - e. Complete Secondary education (High School) (5)
 - f. Tertiary (University, Technical University, Nursing School, College of Education, etc).. (6)
9. What is your income range per month?
- a. Less than R5,000 (1)
 - b. R5,001 - R10,000 (2)
 - c. R10,001 - R15,000 (3)
 - d. R15,001 - R20,000 (4)
 - e. More than R20,001 (5)
10. Do you know what Generic medicines are?
- a. Yes (1)
 - b. No (0)
 - c. I don't know (2)
11. Do you know what Branded medicines are?
- a. Yes (1)
 - b. No (0)
 - c. I don't know (2)
12. Do you use Generic or Branded medicines?
- a. Branded (1)
 - b. Generic (2)
 - c. Both generic and Branded (3)
 - d. I don't know (4)

Recoding of Q12	Dependent Variable	No	Yes
	Use of Generics	(a & d) (0)	(d & c) (1)
	Use of Branded	(b & d) (0)	(a & c) (1)
13.	Generic or Branded Medicines, which do you prefer?		
	a. <input type="checkbox"/> Generic Medicine		(1)
	b. <input type="checkbox"/> Branded Medicine		(2)
	c. <input type="checkbox"/> I don't know		(3)
14.	What is the reason behind your choice (Generic or Branded Medicines).....		
15.	Generic medicines are as effective as Branded medicines.		
	a. <input type="checkbox"/> I agree		(1)
	b. <input type="checkbox"/> I disagree		(2)
	c. <input type="checkbox"/> I don't know		(3)
16.	How do you pay for your medicines?		
	a. <input type="checkbox"/> Medical Aid		(1)
	b. <input type="checkbox"/> Private/Self		(2)
	c. <input type="checkbox"/> Company		(3)
	d. <input type="checkbox"/> Government		(4)
	e. <input type="checkbox"/> Others (specify).....		
17.	If you were paying yourself, which type of medicines would you prefer?		
	d. <input type="checkbox"/> Generic Medicine		(1)
	e. <input type="checkbox"/> Branded Medicine		(2)
	f. <input type="checkbox"/> I don't know		(3)
18.	Are you on medical Aid?		
	a. <input type="checkbox"/> Yes		(1)
	b. <input type="checkbox"/> No		(0)
	c. <input type="checkbox"/> Others (specify)		
19.	Does your medical aid pay when you choose to take branded medicines?		
	a. <input type="checkbox"/> Yes		(1)
	b. <input type="checkbox"/> No, only if there is no generic substitute		(2)
	c. <input type="checkbox"/> No		(0)
	d. <input type="checkbox"/> I don't know		(3)

20. If No, would you be willing to pay the co- payment (levy) for taking a Branded medicine?
- a. Yes (1)
b. No (0)
c. I don't know (2)
21. Would your Medical Aid premium increase if you decide to take a Branded medicine?
- a. Yes (1)
b. No (0)
c. I don't know (2)
22. What type of prescription do you get from your doctor?
- a. Generic medicine (1)
b. Branded Medicine (2)
c. Generic and Branded Medicine (3)
d. I don't know (4)
23. Have you ever asked your doctor if there was a Generic alternative for a Branded medicine that he or she had prescribed for you?
- a. Yes (1)
b. No (0)
c. I don't know (2)
24. Have you ever asked your pharmacist if there was a Generic alternative for a Branded medicine that you were taking?
- a. Yes (1)
b. No (0)
c. I don't know (2)
25. Choose from below why you prefer the type of medicine you buy.
- a. Cost (1)
b. Safety (2)
c. Quality (3)
d. Availability (4)
e. Brand Loyalty (5)
26. What other reason(s) would make you choose any of the other alternatives?.....
27. Generic medicines are as safe (i.e. has similar side effects) as Branded medicines.
- a. I agree (1)
b. I disagree (2)
c. I don't know (3)

28. Generic medicines are approved by Medicines Control Council (MCC), just like Branded medicines in South Africa.
- a. I agree (1)
- b. I disagree (2)
- c. I don't know (3)
29. Do you think that Branded Medicines are more expensive than Generic medicine?
- a. Yes (1)
- b. No (0)
- c. I don't know (2)
30. Do you think that expensive medicines (Branded) are more effective than cheaper medicines (Generic)?
- a. Yes (1)
- b. No (0)
- c. I don't know (2)
31. What additional amount are you ready to pay for each medicine in order to buy the Branded instead of taking the Generic one?
- a. R1 - R20 (1)
- b. R21 - R40 (2)
- c. R41 - R60 (3)
- d. R61 - R80 (4)
- e. R81 - R100 (5)
- f. R101 and above (6)
32. Do any of your Branded prescription medicines have a lower-cost Generic medicine alternative available?
- a. Yes (1)
- b. No (0)
- c. I don't know (2)

33. Approximately how much do you think you would save per month in out-of-pocket costs by using the Generic alternative?
- a. R0 (0)
 - b. R1-R150 (1)
 - c. R151-R300 (2)
 - d. R301-R450 (3)
 - e. R451-R600 (4)
 - f. R601-R750 (5)
 - g. R751-R900 (6)
 - h. R901-R1050 (7)
 - i. R1051 and above (8)
34. The quality of Generic medicines is better than those of Branded medicine?
- a. I agree (1)
 - b. I disagree (2)
 - c. I don't know (3)
35. If Generic alternative for your Branded medicines were available, would you switch to the Generic alternative?
- a. Yes (1)
 - b. No (0)
 - c. If my doctor recommended it (2)
 - d. Depends on how much I would save (3)
 - e. I don't know (4)
 - f. Others (specify).....
36. Have you ever taken a Generic drug after using the Branded version?
- a. Yes (1)
 - b. No (0)
 - c. I don't know (2)
37. Were you satisfied with the Generic alternative?
- a. Yes (1)
 - b. Sometimes (2)
 - c. No (0)
 - d. I don't know (3)

38. Has a doctor or pharmacist ever recommended that you switch from a Branded medicine to a Generic alternative?

- a. Yes (1)
- b. No (0)
- c. I don't know (2)

39. Did you follow their advice?

- a. Yes (1)
- b. Sometimes (2)
- c. No (0)
- d. I don't remember (3)

40. Of which of the companies below do you prefer their Branded medicines?

- a. Johnson & Johnson (1)
- b. Pfizer (2)
- c. GlaxoSmithKline (3)
- d. Novartis (4)
- e. Roche (5)
- f. Eli Lilly and Co. (6)
- g. AstraZeneca (7)
- h. Merck & Co. (8)
- i. Others (specify).....
- j. I don't know (9)

41. Why do you prefer the Branded medicines from this company?

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