

Pharmaceutical Representatives and Prescription Decisions by Physicians in Saudi Arabia

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Abstract

Purpose: This research aims to identify key factors that influence physicians' drug selection decisions as well as the main sources of information for physicians about new drugs and the most effective "reminder methods" used by pharmaceutical sales representatives. This study fills a gap within the existing literature by identifying the most important factors that affect physicians' drug selection decisions in Saudi Arabia. **Design/methodology/approach:** A survey was conducted in the Western region of Saudi Arabia using a convenience sample. A total of 106 physicians who met with pharmaceutical sales representatives filled out a questionnaire identifying the factors that influenced their prescribing decisions, as well as determining their main sources of information about new drugs, and the most effective "reminder methods" used by pharmaceutical representatives. Data were analyzed using SPSS. **Findings:** The results indicate that pharmaceutical sales representatives are the most commonly mentioned main source of new drugs information. Moreover, the factors identified as most impacting physicians' drug selection decisions include in order, the patient's financial situation and prevailing hospital policies, followed by media advertising and frequent visits from pharmaceutical sales representatives. Finally, leaflets were identified as the most effective 'reminder method' used by pharmaceutical sales representatives. **Originality/value:** The study findings are relevant because they can help pharmaceutical sales representatives to focus their efforts on the most effective marketing methods to boost their sales revenue, increase their market share, reduce marketing expenses, and potentially pass on the savings to patients.

Key Words: Pharmaceutical marketing techniques, sales representatives, drug selection, prescription decisions, Saudi physicians, source of drug information.

Introduction

It is well established in the literature that pharmaceutical companies commonly employ a wide range of marketing strategies to increase their drug sales (Parker & Pettijohn, 2005). Most pharmaceutical companies commit a great deal of time and money to marketing in hopes of convincing physicians and pharmacists of the merits of their products (Al-Haddad, Hamam, & Al-Shakhshir, 2014). Indeed, the role of physicians and pharmacists in the pharmaceutical industry cannot be understated, as physicians prescribe drugs and non-prescription medication dispensed by pharmacists.

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Nowadays, pharmaceutical companies use many marketing and promotional tools, including sales representatives, product samples, print advertisements, as well as medical event and symposium sponsorships (P.Norris, 2004). In the United States, pharmaceutical companies spent approximately US\$300 billion on prescription drugs in 2009 (Alssageer & Kowalski, 2012). Most of the money was channeled into promotional items such as pens, pencils, mugs and calendars bearing the company's name or logo (Parker & Pettijohn, 2005). In the developing world, however, such advertising initiatives are much less common, with the majority of drug information for physicians and pharmacists being obtained from pharmaceutical sales representatives (P.Norris, 2004). It stands to reason that sales representatives can impact prescribing habits for a particular brand by visiting physicians and pharmacists to promote their products (Zaki, 2014).

2. Problem statement

Pharmaceutical companies employ many methods to influence the prescribing habits of physicians and, in doing so; they spend billions on marketing annually in hopes of increasing their revenue and market share. The success of a marketing strategy depends on a number of factors, with some strategies generating far superior outcomes than others. A more focused understanding of the most effective marketing approaches could save pharmaceutical companies billions in advertising and increase their sales.

3.0 Research objectives

The main objectives of this research are as follows:

- To identify methods that influence prescribing habits among physicians in Saudi Arabia
- To determine the most effective reminder strategy to sway physicians to prescribe particular brands
- To identify factors that affect physicians' drug selection decisions
- To determine the main source of information for physicians about new drugs
- To determine the most effective "reminder methods" used by pharmaceutical sales representatives.

4. Review of literature

The available literature includes many studies on the relationship between pharmaceutical sales representatives and health care professionals. Though most researchers agree that pharmaceutical marketing and promotion efforts affect health care professionals' habits, our research uncovered very little information about which marketing techniques or methods best influence drug selection. Certainly, behaviours and habits can depend on many variables, such as age, income, gender and subspecialty (Kisa, 2006).

4.1 Pharmaceutical companies

From an economic and social-welfare perspective, marketing pharmaceuticals cannot be underestimated (Campo, De Staebel, Gijshrechts, & van Waterschoot, 2005). Among the factors that play a major role in the success of pharmaceutical companies are drug promotion and drug marketing (Hoffman, 2012). Moreover, sales in the pharmaceutical industry were estimated to reach US\$880 billion in 2011 (Hoffman, 2012). Meanwhile, expenditures on detailing (i.e., sales representatives providing product details to physicians in their offices) increased from \$8 billion in 1995 to only about \$9 billion in 2000 (Narayanan, Desiraju, & Chintagunta, 2004).

According to Hoffman (2012), pharmaceutical marketing can be divided into two steps. The first involves gathering the information needed by marketing managers and pharmaceutical sales representatives; the second consists in using the collected data to detail targeted health care professionals (Hoffman, 2012).

4.2 Pharmaceutical sales representatives

Over the years, pharmaceutical firms have grown more sophisticated in their efforts to influence prescribing habits by training sales representatives known as medical detailers, who meet with physicians, tell them about new drugs and pitch company products (Rodwin, 2010). Currently, one of the most used techniques is detailing by pharmaceutical sales representatives (Hoffman, 2012), who communicate directly with physicians about the virtues of a particular product (Sung J. Shim, 2004).

Saito Sayaka *et al.* (2010) studied the relationship between pharmaceutical sales representatives and Japanese physicians. The physicians were asked to answer a survey with five main questions, including the extent of their involvement in marketing activities, personal characteristics that predict their involvement and their attitudes toward their relationship with pharmaceutical sales representatives.

In addition, the study looked at the link between physicians' involvement and attitudes, as well as the differences between their involvement and attitudes. Saito's *et al.* findings (2010) showed that the Japanese physicians' attitudes and behaviours were at risk of being altered by pharmaceutical marketing.

4.3 Health care system

In its public and private sectors combined, Saudi Arabia has 55,000 physicians, 386 hospitals and 54,724 hospital beds (Khan & Alam, 2014). Health care professionals like physicians have developed formal methods to meet with pharmaceutical sales representatives (Westfall, 2000). Given the controversy surrounding the relationships between doctors and drug companies, it is not surprising to observe that researchers, ethicists, professional bodies and legislators have scrutinized this interaction considerably (Henry, 2011).

4.4 Pharmaceutical marketing techniques

The pharmaceutical sector is a prime example of an industry that combines both "push" and "pull" strategies in its promotional efforts. The "push" strategy relies primarily on personal selling and promotion directly to health professionals as a means to drive a product through marketing channels; one study revealed that pharma invested \$13.2 billion dollars in these direct marketing efforts by their sales people (Parker & Pettijohn, 2005). The "pull" strategy, on the other hand, depends on advertising and promotion to *consumers* (Parker & Pettijohn, 2005). Although the general public is somewhat unaware of the "coziness" between physicians and the pharmaceutical industry, these ties remain controversial among doctors (Saito, Mukohara, & Bito, 2010).

Pharmaceutical companies have been using a range of marketing techniques to inform and convince healthcare professionals about their products. Sales representatives are considered the most expensive and widely used of these (Schramm *et al.*, 2007). One of the most important consequences of the relationship between physicians and pharma sales representatives relates to conflicts of interest, which can lead to over-prescribing of a particular brand or a company's products (Abdullah Al-Areefi, Azmi Hassali, & Izham b. Mohamed Ibrahim, 2013). This can in turn undermine patients' well-being and finances. Furthermore, physicians are not completely aware of the influence of pharmaceutical marketing on their own prescription patterns, but they seem to recognize other physicians' prescribing patterns (De Ferrari, Gentile, Davalos, Huayanay, & Malaga, 2014). As reported by Kisa (2006), there is a balance to be struck between maximizing effectiveness, minimizing risks and costs and prescribing appropriately while respecting patients' choices.

Al-Haddad *et al.*'s (2014) study found that pharmaceutical advertisements strongly influence patient-doctor relationships. Furthermore, a literature review shows that doctors' prescribing habits change based on the marketing techniques of pharmaceutical sales representatives, such as gifts, meals, symposium sponsorships, recreational outings and other incentives (Ahmad, Akhtar, Awan, & Murtaza, 2011; Berger, 2003; Burashnikova, Ziganshin, & Ziganshina, 2008; Westfall, 2000).

According to Abdullah Al-Areefi *et al.* (2013), physicians in Yemen knew that visits from pharmaceutical sales representatives could influence their prescribing habits. In addition, they received free product samples and giveaways, as well as many kinds of support in their daily practice (Abdullah Al-Areefi *et al.*, 2013). Schramm *et al.* (2007) identified and examined the marketing techniques used by pharmaceutical sales representatives with a focus on product sampling in relation to product aging. The study concluded that companies use many promotional techniques, including giveaways and drug samples. Leaflets were used the most, while the tendency to give samples decreased with product aging (Schramm *et al.*, 2007).

Kisa (2006) studied factors that influenced physicians' drug selection in Turkey and examined if these factors differed based on the physician's specialty. Physicians from a general hospital were surveyed. The results were similar to previous studies in that drug promotion was seen to influence prescribing behaviours (Kisa, 2006).

Burashnikova *et al.* (2008) found that pen gifting is the marketing technique used the most by pharmaceutical sales representatives, as 93.3% of physicians received pens at least once a year. Furthermore, 63.3% of physicians were invited to a symposium and to a dinner once in the previous year (Burashnikova *et al.*, 2008).

Zaki (2014) discussed drug promotion in Saudi Arabia and its effect on pharmacists' and physicians' behaviour with patients. Zaki's study aimed to determine whether drug-promotion activities could negatively influence pharmacists' dispensing decisions and physicians' prescribing habits. Most of the healthcare professionals who participated in the study reported receiving gifts from pharmaceutical sales representatives. Product brochures and product samples were the most-accepted giveaways (Zaki, 2014). In summary, previous research indicates that pharmaceutical marketing techniques and pharmaceutical promotion strongly affect health care professionals' behaviours and habits. By contrast, earlier research has been rather silent on which established marketing methods have the most effective impact on health care professionals.

5. Methodology

The objective of this research is to identify the factors that influence physicians' prescribing decisions, physicians' main source of information about new drugs, and the most effective "reminder methods." To this end, a specially designed questionnaire was distributed to a cross-section of physicians in Saudi Arabia.

5.1 Sample and Sampling

The target population included physicians who a) were residents of Saudi Arabia, b) worked in the country's private and government hospitals, and c) met with pharmaceutical sales representatives (required). Given that physicians are very difficult to reach, a convenience-sampling approach was used.

5.2 Questionnaire

The questionnaires, which were delivered to the participants in person, included short-answer, multiple-choice and Likert-style questions. The Likert-question answers ranged from "strongly disagree" to "strongly agree," with a "neutral" or "uncertain" mid-point. The questionnaire also consisted of demographic questions (gender, place of work and income level).

5.3 Data Treatment

The data collected were analyzed using IBM SPSS, and the results served to determine the factors that influence physicians' prescribing decisions, physicians' main source of information about new drugs, and the most effective "reminder methods." Descriptive statistical tools were used to drive the main focus of this research, which was to establish the most effective "reminder methods" used by pharma sales representatives.

6. Results

Questionnaires were made available to physicians in various specialties from 20 private and governmental Saudi hospitals located mostly in the western region. A total of 110 physicians replied to the survey, with four questionnaires discarded because of incomplete responses, for a final count of 106 usable questionnaires. The socio-demographic data (Table 1) showed that 59.4% of physicians were above 40 years of age, 37.7% ranged from 30 to 40, while 2.8% were below 30.

Table 1: Socio-Demographic Characteristics: Gender, Age, Income and Work place. (N=106)

Character	Category	Frequency	Percentage
Gender	Male	87	82.1
	Female	19	17.9
Age category	Below 30	3	2.8
	30 to 40	40	37.7
	Above 40	63	59.4
Income	Below 15,000 SAR	13	12.3
	15,000 to 30,000 SAR	54	50.9
	Above 30,000 SAR	39	36.8
Work Place	Private Hospital	25	23.6
	Government Hospital	81	76.4

Gender breakdown was 87 males and 19 females. Also, 36.8% of physicians earned an income above 30,000 SAR (1 US dollar = 3.10 SAR), 50.9% of physicians earned between SAR15,000 to 30,000, while 12.3% had an income below 15,000 SAR. The majority of the physicians (81) were working at government hospitals, whereas 25 were at private hospitals (Table 1). Table 2 shows the distribution of the sub-specialties, with cardiology, surgery and family medicine leading the way.

Table2: Sub-specialties (N=106)

Subspecialty	Frequency	Percentage	Subspecialty	Frequency	Percentage
Surgeon	17	16%	Gastroenterology	4	4%
Cardiologist	15	14%	Urology	4	4%
Family medicine	12	11%	Paediatrician	4	4%
Gynaecologist	6	6%	Orthopaedics	3	3%
Dermatologist	6	6%	ENT	2	2%
Anaesthesia	6	6%	ICU	2	2%
Internal medicine	5	5%	Ophthalmologist	2	2%
Dentist	5	5%	Other	13	12%

6.1 Main Source of Information on New Drugs

Results from Table 3 reveal that physicians working in SA receive information on new drugs from a few select sources: pharmaceutical sales representatives (28.4%), symposiums / seminars (23.0%), medical magazines or journals (22.4%), Internet (19.7%), media advertisements (4.4%), and others (2.2%), such as the British National Formulary (BNF), hospital pharmacies and medical books.

Table3: Main Source of New Drugs Information (N=106)

Category	Frequency	Percentage
Pharmaceutical Sales Representatives	52	28.4
Symposiums/ Seminars	42	23
Medical Magazines or Journals	41	22.4
Internet	36	19.7
Media Advertisements	8	4.4
Others	4	2.2

6.2 Most Effective "Reminder Methods"

In this study, "most effective reminder methods" refers to what best makes a physician think of a particular brand when he or she prescribes. Based on physicians' experience, findings (Table 4) point to the following: leaflets (24.5%), pharmaceutical sales representatives' frequent visits (19.8%), drug (product) samples (17.9%), brochures (10.4%), other tactics like entertainment, education support, email follow-ups and medical symposium sponsorships (5.7%), pens with a company logo (5.7%), notebooks with a company logo (5.7%), prescription pads with a company logo (3.8%), sales representatives' trustworthiness, honesty and commitment to full disclosure about the drug (2.8%), and mugs with a company logo (1.9%).

Table 4: Most Effective "Reminder Methods" (N=106)

Category	Frequency	Percentage
Leaflets	26	24.5
Pharmaceutical sales representatives frequent visit	21	19.8
Drug (product) Samples	19	17.9
Brochures	11	10.4
Pens with a company logo	6	5.7
Note books with a company logo	6	5.7
Prescription pads with a company logo	4	3.8
Pharmaceutical sales representatives acceptance of trustworthiness	3	2.8
Mugs with a company logo	2	1.9
Calendars with a company logo	2	1.9
Others	6	5.7

6.3 Factors That Affect Physicians' Drug Selection Decision.

Table 5 shows that physicians do select drugs for patients according to the following criteria: 79.2% (agree/strongly agree) based on the patient's financial situation, 64.2% (agree/strongly agree) based on hospital policy, 57% (agree/strongly agree) based on advertising in the media. In the same vein, 29.2% (disagree/strongly disagree) and 56.6% (agree/strongly agree) revealed that frequent visits from pharmaceutical sales representatives affected physicians' drug selection, while 22.6 % were uncertain; finally, 53.8% (agree/strongly agree) indicated that hospital management affected physicians' drug selection decisions, while 27.4% (disagree/strongly disagree) thought otherwise.

Table 5: Factors That Affect Physicians' Drug Selection Decisions (N=106)

	DISAGREE+STRONGLY DISAGREE		UNCERTAIN		AGREE+STRONGLY AGREE	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
A PATIENT'S FINANCIAL SITUATION	16	15.1	6	5.7	84	79.2
HOSPITAL POLICY	21	19.8	17	16	68	64.2
ADVERTISING IN THE MEDIA	31	29.2	14	13.2	61	57.5
FREQUENT VISITS FROM PHARMACEUTICAL SALES REPRESENTATIVES	22	20.8	24	22.6	60	56.6
HOSPITAL'S MANAGEMENT	29	27.4	20	18.9	57	53.8
PRODUCT PRICE	35	33	14	13.2	57	53.8
COMPANY THAT PRODUCES THE DRUG	35	33	22	20.8	49	46.2
PHYSICIAN'S COLLEAGUES	42	39.6	24	22.6	40	37.7

Furthermore, 37.78% (agree/strongly agree) opined that colleagues affected physicians' drug selection, while 39.6% did not agree (disagree/strongly disagree); 53.2% (agree/strongly agree) said that product price affected physicians' drug selection, compared with 33 % who disagreed (disagree/strongly disagree); finally, 46.2% (agree/strongly agree) affirmed that the drug manufacturer affects physicians' drug selection, as opposed to 33 % who rejected that idea (disagree/strongly disagree).

7. Discussion and Analysis

7.1 Main Source of Information on New Drugs

The findings of this study identify pharmaceutical sales representative as the most commonly mentioned main source of new-drug information. Similarly, the findings of Campo *et al.* (2005) indicate that visits from sales representatives were appreciated by most physicians and considered a quick and valuable source of information about the drug. In fact, Bauer and Wortzel (1966) found that sales representatives are the main source of information leading to the prescribing of new drugs, while direct-mail advertising came second and information from medical journals came third. However, unlike Bauer and Wortzel (1966), Campo *et al.* (2005) did not find representatives to account for the majority, but instead only 28.4%. These findings more closely align with Williams and Hensel (1991), who reported the significant decline of sales-rep detailing as a source of information about pharmaceuticals and the increase in the influence of colleagues. Moreover, this study found symposiums/ seminars ranked second highest (23%) as a source for new-drug information, followed closely by medical magazines and journals (22.4%), then the Internet (19.7%). It is important to keep in mind that the research of Bauer & Wortzel (1966) is nearly fifty years old and, since then, advances in technology and, specifically, the establishment of the Internet, have significantly impacted both the availability of publications and information-retrieval practices.

Notwithstanding the above, the literature reports that pharmaceutical sales reps are the primary source of medical information and drug information for physicians and pharmacists in developing countries (P.Norris, 2004). This can likely be attributed to a number of factors that are both economic and cultural in nature. However, as noted by Norris (2009), the lack of research evidence from developing countries relating to the effects of promotion and other systems of drug distribution makes it difficult to understand why some sources are preferred over others. Furthermore, Kisa (2006) also says representatives of firms are the main sources of information about new drugs in Turkey (24.4% or n=38). On the other hand, Christensen and Wertheimer (1979) reported that physicians used primarily literature-based sources for general drug information. And though the source of first news on drugs differed depending on the drug in question, it was found that colleagues were the prime influence in the initial prescribing of a new drug. Again, however, this 1979 study was conducted more than a decade before the dot.com environment conquered the world.

Furthermore, Anderson, Silverman, Loewenstein, Zinberg, and Schulkin (2009) reported that the role of representatives in the decision to prescribe a new drug is noteworthy. In fact, 29% of participants used representatives often or almost always in these situations, and 44% used them occasionally (Anderson *et al.*, 2009). Finally, in this study, sales representatives were reported as the main source of new-drug information, which can be rationalized as follows: getting information from sales representatives is a quick and easy way to learn about the new drug. Among the possible explanations for this is that sales representatives can educate physicians about new indications as well as potential side effects for approved medicines. Indeed, many physicians consider the information from pharmaceutical representatives to be up to date, useful and reliable. In addition, these interactions create an opportunity for the physicians to provide feedback to a company about their experiences with a specific drug ("How Doctors Learn About Medicines," 2011).

7.2 Most Effective "Reminder Methods"

Leaflets are also identified in the literature as "among the most frequently" used promotional techniques (Schramm *et al.*, 2007). Likewise, nearly a quarter of the participants of this research identified leaflets to be the most effective reminder (24.5%), while pharmaceutical sales representatives' visits ranked second (19.8%) and product samples third (17.9%). In the literature, product brochures and product samples were the most-accepted giveaways (Zaki, 2014).

Furthermore, detailing by reps has been found to have a lasting informative effect on physicians (Gonul, Carter, Petrova, & Srinivasan, 2001). As mentioned above, product samples were ranked as the third most effective reminder method; this result closely aligns with Campo *et al.*'s expectation (2005) that samples positively impact drug prescription rates by facilitating new product trials and encouraging brand loyalty.

Campo *et al.* (2005) also note that samples are believed to foster commitment towards sales representatives and their company, to function as a reminder of the sales representatives' visit and to possibly increase physicians' responsiveness to the pharmaceutical company's marketing efforts. Importantly, Alosaimi *et al.* (2013) report that nearly half (48.3%) of the interactions between physicians and pharmaceutical sales representatives occurred more than once a month, and the majority of the participants (72.1%) occasionally accepted gifts, such as stationery, drug samples, meals and the sponsorship of educational activities. Burashnikova *et al.* (2008) found that pen gifting is among the most commonly used marketing techniques by the pharmaceutical sales representatives; however, the study showed that this strategy was not considered very effective among respondents. Importantly, despite its frequent use, fewer than 6% of participants in the study reported pen gifting to be the most-effective reminder strategy. Therefore, investing in this type of promotional item (and perhaps similar ones) *might* be an ineffective use of a pharmaceutical company's promotional budget. Indeed, in this study, pens, prescription pads, notebooks, calendars and mugs collectively accounted for only 19% of the most-effective reminder methods.

Finally, because this study has found that leaflets are the most-effective reminder method, we can rationalize that companies use them most often because of their effectiveness as a reminder. Another reason could be that leaflets contain important information about the particular drug (indications, side effects, contra-indications, etc.). This idea is supported by clinical studies and sometimes with feedback from esteemed specialists. Further, pharmaceutical companies occasionally use physicians' experiences with specific patients as references for other physicians. Indeed, some physicians are not willing to prescribe new drugs until these have been used by highly recognized specialists (Schramm *et al.*, 2007).

7.3 Factors That Affect Physicians' Drug Selection

In this study, it was found that more than half of the participants (56.6%) agreed or strongly agreed that frequent visits from pharmaceutical sales representatives were an important factor in physicians' drug selection. These findings match those in the literature. For example, David W (2000) reported that detailing from pharmaceutical sales representatives could lead physicians to ask management to add the detailed drugs to the "hospital formulary points." Many researchers in fact believe that pharmaceutical sales representatives have a strong persuasive effect (Spiller and Wymer Jr (2001); Narayanan *et al.*, 2003). What's more, the intensity of pharmaceutical detailing impacts drug prescription rates. For example, Campo *et al.* (2005) reported that although more intensity can be expected to increase prescription rates, there is a tipping point; they suggest that high-frequency sales visits can actually be counterproductive.

Moreover, Kisa (2006) reported that about 75% of the participants strongly agreed/agreed that physicians working in the same hospitals are influenced by department heads and colleagues when selecting drugs. However, in this study, physicians' colleagues were not nearly as influential, with participants who agreed/strongly agreed representing only 37.7% of responses. Participants who agreed/strongly agreed that hospital management affected drug selection represented 53.8% of respondents--noteworthy but still significantly less than Kisa's findings (2006). Moreover, Petroschius, Titus, and Hatch (1995) reported that, by and large, "physicians are favorably disposed to the advertising of pharmaceutical products both to consumers and other physicians" (p. 41). However, in this study, although more than half (57.5%) agreed/strongly agreed that advertisements in the media influenced physicians' drug selection, nearly a third (29.2%) disagreed/strongly disagreed with this view, and the remainder were uncertain, suggesting that perceptions among physicians tend to be divided in this regard.

In Campo *et al.*'s (2005) study, the authors reported that drug prices are, for the most part, not an overly important factor in most prescription decisions. However, these findings differ from those of our research, which found that more than half (53.8%) of the participants agreed/strongly agreed that price was an important factor in physicians' drug selection, and 79.2% agreed/strongly agreed that the patient's financial situation was a relevant consideration.

Campo *et al.* (2005) concluded that the physicians' strong need for fast, knowledgeable and personalized sources of information were leading factors in pharmaceutical marketing decisions, and for this reason, detailing is one of the prime marketing instruments. Although in this study more than half (56.6%) of the participants agreed/strongly agreed that detailing was important, they agreed/strongly agreed at an even higher percentage for patients' financial situation, hospital policy and advertisements.

As for peer influence, this study found that over a third (37.7%) of participants agreed/strongly agreed that colleagues impacted prescribing decisions; this factor received the lowest "agree/strongly agree" percentage. Similarly, Yang, Lien, and Chou (2014) reported that peer influence is less significant compared with other factors, but they note that peer impact was stronger both among physicians of a similar age and among those sharing a longer, larger or more stable group. Yang *et al.* (2014) also reported greater peer influence when drugs are newly introduced. Further, the findings of Yang *et al.* (2014) suggest that peer impact is strongest when physicians are less familiar with a new drug and when conforming to the prescribing habits of the majority is deemed the more reliable and sensible option (when a drug is new and unfamiliar, for instance).

8. Conclusion

Pharmaceutical companies spend billions of dollars in marketing annually and use various methods to increase sales revenue. Previous research has discussed the primary marketing techniques but has failed to identify which ones are most effective at influencing the prescribing decisions of physicians. Thus, this research fills a gap in the existing literature by identifying the most important factors affecting physicians' drug selection, the main source of information for physicians about new drugs, and the most effective "reminder methods" used by pharmaceutical sales representatives cited by physicians in Saudi Arabia. The study findings indicate that the main sources of new-drug information are pharmaceutical sales representatives, followed by medical magazines/journals and the Internet. It was also found that the most effective "reminder methods" are leaflets, followed by sales rep visits and drug samples. Also, the factors identified as the most impactful on physicians' drug selection include the patient's financial situation and prevailing hospital policies, followed by advertising and frequent visits from sales representatives.

It is important to note that this study had some limitations: 1) the number of physicians sampled was relatively low in comparison with the total number of physicians in Saudi Arabia; 2) data were collected only from the western region of Saudi Arabia, and although the western region is fairly typical of SA, this geographical limitation deserves mention; 3) English is considered a secondary language for the physicians who participated. Not only is this research undertaking significant because it fills important gaps in the existing literature, but it also offers pharmaceutical companies a better understanding of the factors that most impact the physician's drug selection; this can help companies focus on the most effective marketing methods to boost their sales revenue, as well as reduce their marketing expenses significantly, which might lower the drug cost passed on to patients.

Future studies could focus on whether age, income, gender, years of experience and subspecialty impact physicians' prescribing decisions. Also, the influence of additional factors and techniques/methods can be considered. Indeed, as the use of technology becomes more prevalent, especially for communication and information gathering, the degree of influence of the factors discussed will likely continue to change in the years to come, and understanding such changes will become increasingly important to the success of pharmaceutical companies.

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