ABSTRACT

Purpose: The purpose of this study was to investigate the attitudes and the factors which influence physician prescribing decisions and practice in Karachi, Pakistan. Methods: A questionnaire was developed specifically for the purpose of the study. This was then distributed to a sample of 100 physicians in Karachi, Pakistan. Results: Clinical effectiveness is the most important factor, reaching 81.81%; with regard to the cost of drugs to patients 59.09% of physicians take it into consideration when prescribing. Medical textbooks and medical journals are preferred by 72.72% and 50.00% of doctors respectively, to guide and justify their prescription choices. Regarding perceptions of new drug effectiveness, only 50.00% of Karachi physicians believe that they are more effective. Adverse Drug Reactions appear to be a major cause of prescription choice modification, as more than 77.26% of doctors declare that they change their prescription patterns in cases of Adverse Drug Reactions. Conclusion: The present study highlights the attitudes and the factors influencing physician prescribing behavior in Karachi, Pakistan. These insights will help policy makers in Pakistan & South Asia to develop measures which could be used to achieve greater clinical effectiveness and economic efficiency from drug prescribing. These insights will also help marketers in developing better and effective pharmaceutical marketing strategies.

Keywords: prescribing, physician behavior, prescribing pattern, prescribing habits, karachi pakistan, pharma marketing.

INTRODUCTION

Globally, there are gaps between research, policy and practice; attention should be focused on making research-based evidence easily available so that it can facilitate change in the
behaviors of health practitioners. Clinicians are faced with increasing scientific literature on a variety of topics, making it difficult to stay up to date (Harpreet et al., 2013; Davis et al., 1999; Davis et al., 1995).

Current studies suggest that activities for educating physicians and other health professionals, printed materials and practice guidelines do not produce changes in their prescribing behavior. Following evidence-based educational approaches that can influence physicians prescribing behavior include: interactive educational activities; teaching aimed at identified learning needs; sequenced and multifaceted interventions; enabling tools such as flow charts, patient education programs, and reminders; academic detailing or educational outreach; feedback and audit and to prescribers (Gray, 2006).

In the United States pharmaceutical organizations spent more than $57 billion on marketing, in 2004, approximately twice their expenditure on R&D (Gagnon and Lexchin, 2008). Most of this spending targeted physicians through sales representatives, physician meetings, sampling, and advertisements in medical journals (Manchanda and Honka, 2005). These trends have raised the concern that pharmaceutical companies might have undue influence on the prescribing habits of physicians (Geoffrey et al., 2011).

There is an increasing concern regarding inappropriate, irrational, or sometimes even harmful prescribing. There is a lot of evidence from observational or experimental studies that, eligible patients are not always prescribed the medicines indicated for their condition. On the other side, there is also evidence about over and misuse of pharmaceutical products (Theodorou et al., 2009).

A lot of research is trying to analyze and to understand the factors which influence physician prescribing decisions and practice (Theodorou et al., 2009). The factors of influence on the prescription behavior which were identified in the study (Girdharwal and Singh, 2007) were assessed by the physicians according to the importance given to each one on a scale from 1 to 10. On the first positions there were the factors Quality of the products, the Price of the products and respectively their Availability. Remaining factors in sequence were Image of the company, Regular visits of the representatives of the producing companies, Research in the molecular domain, The specialty literature/journals, The personality of the medical representatives, Sponsorships for participating in conferences, New combinations, Medical educational programs, Presentation way (package), Obtained incentives, Personally received
gifts, Samples of the products, Free campaigns for the identification of illnesses, and Existence of the websites of the medicine producers (Girdharwal and Singh, 2007).

It is notable that no other study has attempted so far to analyze the prescribing behavior and its determinants amongst Pakistani physicians. Therefore, a survey was carried out in order to investigate the prescribing attitudes of physicians in Karachi, Pakistan and in the present paper main survey results are presented.

METHODOLOGY

A questionnaire was developed specifically for the purpose of survey, by modification of questionnaire of Theodorou et al, 2009. The questionnaire is divided into four different sections: the first section includes questions about the demographic characteristics of the person answering; the second section is designed to investigate the determinants of physician prescribing behavior, their main sources of information, and reflects their opinion about the cost of pharmaceuticals to the patient; the third section reflects attitudes towards new pharmaceutical products; the last section is about adverse drug reactions and safety. In total, the questionnaire included 20 semi-closed questions.

In Karachi, a sample of 100 physicians was randomly selected for the purpose of the study. Excluded from the sample were physicians who were not authorized to prescribe, either because they belonged to a specialty that is not permitted to prescribe (radiology, nuclear medicine, microbiology, hematology, anesthesiology, forensic medicine) or because they were still interns. The questionnaire was distributed to physicians from 1st February 2013 to 31st May 2013. The study is non-interventional and it does not involve patients and hence no ethical/IRB approval was needed. Statistical analysis was done with MS Excel.

RESULTS

Demographic characteristics

100 physicians from Karachi, Pakistan participated in the study (response rate: 66%). 59.09% were male and 40.90% were female. Half of the participants (49.99%) were between 30 – 50 years of age. 40.90% of physicians had 6 - 20 years of experience and 18.18% physicians had 21 years plus experience. In terms of specialties (Graph 1), the largest proportion of the participants were internists (22.72%), followed by pediatricians and gynecologists (13.63%). A larger percentage of participants were post graduate (81.81%), 27.27% physicians had participated in a publication during the previous five years and 13.63% doctors attend at least
one conference per year. 40.90% of physicians highly use computer and are more computer literate than the general population.

Influential factors
The second section of the questionnaire was intended to investigate the criteria which physicians take into consideration when making prescribing decisions and their sources of information regarding advances in pharmaceuticals. Clinical effectiveness is the most important factor, reaching 81.81%; with regard to the cost of drugs to patients 59.09% of physicians take it into consideration when prescribing. The recommended daily dose (18.18%), patient’s own preferences (13.63%), and the pharmaceutical dosage form (9.09%) also constitute the basic criterion for selecting a drug (Graph 2). In particular, cost is important to 50.00%, highly important to 40.90% and not very important to 9.09% of physicians. In relation to patient insurance coverage, almost not all influence selection.
Information Sources
Physicians derive information to guide and justify their prescription choices mainly from medical textbooks, medical journals, sales representatives, proceeding of medical congresses, and the internet (Graph 3). Medical textbooks and medical journals are preferred by 72.72% and 50.00% of doctors respectively. Pharmaceutical representatives and medical congress announcements are preferred by 22.72% of doctors, and 31.81% of doctors relay on medical libraries and internet. Physicians are looking for information on the above sources mainly regarding the dose (63.63%), adverse drug reactions (63.63%), interactions (54.54%), provision during pregnancy (63.63%), provision during lactation (59.09%), liver-renal disorders (54.54%), and chronic disease (31.81%).

New drug prescribing
The majority, 86.35%, of physicians in Karachi believe that a higher price does not necessarily imply better patient outcomes. In opinion of 13.63% of physicians, higher price of new products also implies better effectiveness. Regarding perceptions of new drug effectiveness (Graph 4), only 50.00% of Karachi physicians believe that they are more effective. Finally, regarding the sources of information about new product launches, these mainly include sales representatives (54.54%), medical journals (40.90%) and congresses (36.36%) and secondarily scientific medical societies (13.36%) and the internet (31.81%).
Adverse drug reactions and safety

Physicians get information about Adverse Drug Reactions (ADRs) primarily from the internet (63.63%) and secondarily from the scientific journals (22.72%), pharmaceutical companies (13.63%), colleagues (13.63%), medical text books (9.09%) and other sources (27.27%). ADRs appear to be a major cause of prescription choice modification (Graph 5), as more than 77.26% of doctors declare that they change their prescription patterns in cases of ADRs. However, 27.27% of doctors in Karachi declared that they had not encountered any ADR during the two years prior to the study, while 72.71% of doctors encountered ADR several time during the two years prior to the study. It is also notable that the majority of doctors (72.72%) do not inform the authorities about their own cases of ADRs.

DISCUSSION

According to the present analysis, the physicians in Karachi are well educated. Furthermore doctors participate in medical conferences and have publication activity. Particularly, the
findings show that drug clinical effectiveness is the most important factor considered by physicians when they prescribe drugs. However, cost is the second most important factor considered by physicians, and recommended daily dose, patients own preferences and pharmaceutical dosage form are of least importance. Furthermore doctors declare that they are sensitive to economic burden imposed on patients and health care system and they claim that cost is important factor during prescription. The results of our study show that most doctors prefer medical textbooks and medical journals than other sources of information to guide and justify their prescription choices.

Finding in our study suggest that majority of doctors believe that high price of new products does not mean better patient outcomes and half of doctors believe that they are more effective. Specifically, sales representatives are the first source of information, in the case of new drugs. These data are consistent with those from other studies, where it has been also shown that pharmaceutical sales representatives are highly influential on decisions to prescribe new drugs (Prosser et al, 2003; Jones et al., 2001).

Finally, in the case of adverse drug reactions (ADRs) physicians are informed primarily by the internet and secondarily from the scientific journals, pharmaceutical companies, colleagues, medical text books and other sources. Adverse drug reactions do have a profound effect on a physician prescribing habits, even though; they may not appear very often, so doctors search information in order to be protected and prepared. It is noteworthy, that when they encounter such problems physicians rarely inform the authorities accordingly, maybe that they do not want to recognize the fact that their patients had adverse drug reactions, or they do not evaluate the ADRs as important.

In conclusion, the results of this study are compatible with other published studies regarding physician prescribing behavior and attitudes (Theodorou et al., 2009; Buusman et al., 2007; Arroll et al., 2005).

**CONCLUSION**

The present article provides valuable information regarding the prescribing behavior of doctors in Karachi, Pakistan. These insights will help policy makers in Pakistan & South Asia to develop measures which could be used to achieve to greater clinical effectiveness and economic efficiency from drug prescribing. These insights will also help marketers in developing better and effective pharmaceutical marketing strategies.
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REFERENCES
behaviour of physicians in Greece and Cyprus: results from a questionnaire based survey”, BMC Health Services Research 2009, 9:150

