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Short Communication مراسلة قصيرة

Pharmacological and Pharmaceutical Factors Affecting Physician's and Pharmacist's Selection of Drugs

العوامل الدوائية والصيدلانية التي تؤثر على الطبيب والصيدلاني في إختيار الدواء

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Abstract

A survey of random sample of physicians and pharmacists in north Palestine was carried out to ascertain the factors that influence their decisions when selecting a drug for a patient. Of the four hundred (400) questionnaire distributed, two hundred and fourteen (214) were filled correctly and returned giving a response rate of approximately 56%. The ten factors which had the greatest influence on drug selection were as follows in ranking order: active ingredients, evidence of product efficacy, patient characteristics, presence of side effects for the drug, successful self use of product, product abuse potential, confidence in manufacturer, availability of product in community pharmacies, cost of drug for the patient and range of dosage forms available for the product. Commercial factors like profitability, number of medical samples and personal relations with manufacturers have slight influence on the drug selection by physicians and pharmacists. The results of this short communication suggest that selection of drugs for therapy is based on clinical and patient factors and whilst commercial factors may be involved they do not compromise the quality of therapeutic recommendations.

ملخص

قمنا بدراسة مسحية على عينة عشوائية من الأطباء والصيادلة في شمال فلسطين للتعرف على العوامل التي تؤثر عليهم عند إختيار الأدوية. وقد تم توزيع ٤٠٠ استبيان استعدنا منه ٢٢٤ أي أن نسبة الأستجابة هي ٥٦%. وقد تبين من الدراسة وجود عشرة عوامل مؤثرة عند إختيار الأدوية وهي بالترتيب حسب نسبتها المؤية: المواد الفعالة، الأدلة العلمية على نجاعة الدواء، مواصفات المريض، وجود عوارض جانبية للدواء، التجارب الناجحه للدواء، احتمالية الادمان على الدواء، الثقة بالمنتج، تواجد الدواء في الصيدليات، سعر الدواء وتوفر اشكال صيدلانية متعددة للصنف. وتبين أن العوامل التجارية مثل الربح الشخصي والعينات الطبية المجانية والعلاقة الشخصية مع المنتج كان لها تأثيرا"خفيفا" على اختيار الأدوية. نتيجة هذه المراسلة القصيرة هي أن

إختيار الأدوية يقوم على الأسس السريرة بالدرجة الأولى في حين ان العوامل التجارية لها تأثير ولكن ليس الى الحد المؤثر على القرارا العلاجي.

Introduction

Drugs have become an essential part of modern health care. However, when unwisely used, drugs may also entail adverse effects and can damage health. Inappropriate prescribing or drug selection has the potential to harm both the individual and society. Such inappropriate drug selection and prescribing is a global problem [(1)]. It is argued that understanding and improving prescribing behavior requires a study of the underlying decision making processes among physicians and pharmacists. In real medical practice, the prescribing should be based on the clinical conditions of the patient and the pharmacological and biochemical properties of the drug. However, other external factors such as drug companies, social and economic characteristics of the patient and drug promotion affect physician's and pharmacist's selection of drugs. Some foreign studies have indicated that advertising materials distributed by pharmaceutical companies appeared to constitute a key source of information for physicians, one that tended to promote irrational drug use [(2)]. The pharmaceutical market in Palestine is open and almost unrestricted especially to drug companies and drug agents that belong to the Israeli occupation. At the same time there are few local Palestinian pharmaceutical companies that provide the Palestinian drug market with a wide range of medications. The open and sometimes unregulated Palestinian drug market creates confusion to physicians when selecting and prescribing medications. Ideally, physicians should, for medical and economical reasons, consider drug prices when prescribing medications [(1)].

Several studies were carried out to study the factors that influence physician's selection or prescribing of drugs. Two recent studies were carried out in Australia to identify factors influencing the prescribing of medicines by general practitioners in rural and remote areas [(3-4)]. The authors found that respondents agreed that they prescribe differently in rural compared with city practice and agreed that their prescribing was influenced by practice location, patient home location, limited diagnostic testing and increased drug monitoring [(3)]. Other studies published in Europe, suggested that in order to improve the quality of drugs prescribed, physician education and training must be improved and the role of pharmaceutical companies in physician training should be limited, emphasizing more objective sources of information, such as therapeutic guidelines [(5)]. Drug cost is an important factor that should be considered by the prescribing physician. One study carried out in USA has found that physicians were predisposed to being cost-conscious in their prescribing habits, but lacked accurate knowledge about actual costs and insurance coverage of drugs [(6)]. Other factors like physician's background and other doctor's recommendation as well as the patient characteristics may play a role in influencing the physician's decision regarding medications. Another study conducted in Pakistan to investigate the factors affecting the physicians in treating acute watery diarrhea has found that year of graduation, continuing education, being in a hospital; other doctor's prescribing habits and patient demand were all influential factors in prescribing [(7)].

The purpose of this short communication is to explore factors that affect the physicians and pharmacist's prescribing and selection of drugs in the northern area of Palestine.

Research Methodology

A questionnaire was designed and distributed to practicing physicians and pharmacists. The filled questionnaires were collected after several days of distribution. The questionnaire handled three major areas: (1) the professional and social background of the physicians; (2) the factors affecting the prescribing or selection of drugs by physicians or pharmacists and (3) the major sources of drug information utilized by physicians and pharmacists upon prescribing and selection of drugs (see attached questionnaire). The collected data were analyzed using SPSS version 10 for windows. A 5-point Likert scale ranging from strongly agree, agree, uncertain, disagree and strongly disagree was used to measure the answers for each question. In data analysis, each answer was given a grade and then analyzed as seen in the results section. The sum column was calculated in two steps: first, we multiply the result of each column with the grade given for that particular type of answer, second, we added up the results of all the columns to get the sum. For example; the sum of factor one is calculated as follows {(162 X 2) + (50 X 1) + (1 X 0) + (1 X – 1) + (0 X - 2) = 373.

Factors number twenty (social factors) and number ten (cost of the product for the customer) are different. The social factors here refer to gender and marital status and not the income. Factor number 3 (characteristics of the patient) refers to age, weight and presence of other co-morbid conditions and that is why the results for the above three factors were different as will seen in table.

Results

Four hundred questionnaires were distributed to pharmacists and physicians in the northern area of Palestine. Two hundred questionnaires were distributed to physicians and another two hundred were distributed to pharmacists. Two hundred and twenty three (223, 55.7%) returned the questionnaire, while, two hundred and fourteen (214, 53.5%) correctly filled the questionnaire. So, these nine questionnaires that were incorrectly filled were dropped out of the calculations because the respondents were of unknown medical specialization. The respondents who correctly filled and returned the questionnaires comprised one hundred forty three males (67%) and seventy two females (33%). Practicing pharmacists comprise (57, 27%) of the respondents while physicians comprise (157, 73%).

The table shows the factors which influence drug selection and prescribing, in ranking order, ranging from those with the greatest positive influence to those with the least influence. Profitability was stated to be a positive influencing factor by seventy two (72; 34%) of the respondents with forty eight (48; 67%) of those being pharmacists and twenty four (24; 33%) being physicians. A majority of respondents (57%) indicated that they would be influenced by financial pressure of excess stock in the hospital or institution they work in. The results also indicated that product promotion by medical sale representatives (54%) and not the number of medical samples (32%) positively influences their drug selection. Factors that have positive influence on physicians and pharmacist upon selection include: active ingredients, evidence of product efficacy, patient characteristics (age, weight etc), successful use of product, presence of side effects, product abuse potential, convenience to the patient, under pressure of expiry date (commercial), financial pressure of excess stock, cost of product for patient, confidence in manufacturer, availability of product in community pharmacies, range of dosage forms, customer feedback, product formulation, packaging attractivity, personal relation with product manufacturer, under company/employers instructions, time available to questions, prescribing product by habit, product promotion by sale representatives, other physicians recommendations, profit from product, medical samples and number of medical reps visits.

Table (1): Factors affecting physicians and pharmacist's selection of drugs

No	Factor	+2	+1	0	-1	-2		S	M	S.D
		Strongly agree	**Agree**	**Uncertain**	**Disagree**	**Strongly disagree**	**Missing Values**	**Sum**	**Mean**	**Standard Deviation**
1	Active ingredients	162 (75.7 %)	50 (23.4%)	1 (0.5%)	1 (0.5%)	0 (0%)	0	373	1.74	0.479
2	Evidence of product efficacy	122 (57%)	80 (37.4%)	9 (4%)	3 (1.4%)	0 (0%)	0	321	1.5	0.648
3	Patient Characteristics (age, weight etc)	116 (54%)	90 (42%)	5 (2.35)	1 (0.5%)	2 (0.9%)	2 (0.9%)	317	1.48	0.662
4	Presence of side effects with product	82 (38%)	114 (53%)	9 (4%)	6 (2.8%)	1 (0.5%)	2 (0.9%)	270	1.27	0.715
5	Successful self use of product	85 (39.7%)	104 (48.6%)	17 (7.9%)	6 (2.8%)	1 (0.5%)	1 (0.5%)	266	1.24	0.758
6	Ease of use & convenience to the patient	73 (34%)	122 (57%)	7 (3.3%)	7 (3.3%)	2 (0.9%)	3 (1.4%)	264	1.26	1.00
7	Product abuse potential	81 (37.9%)	81 (37.9%)	26 (12.15)	20 (9.3%)	3 (1.4%)	3 (1.4%)	217	1.02	1.00

… Continue table (1)

No	Factor	+2 Strongly agree	+1 Agree	0 Uncertain	-1 Disagree	-2 Strongly disagree	Missing Values	S Sum	M Mean	S.D Standard Deviation
8	Confidence in manufacturer	65 (30%)	105 (49%)	20 (9.35)	16 (7.5%)	3 (1.4%)	5 (2.3%)	213	1.01	0.917
9	Availability of product in comm. Pharmacies	61 (28.5%)	116 (54%)	16 (7.5%)	12 (5.6%)	8 (3.7%)	1 (0.5%)	210	0.985	0.963
10	Cost of product for patient	64 (30%)	105 (49%)	15 (7%)	22 (10.3%)	5 (2.3%)	3 (1.4%)	201	0.95	1.00
11	Range of dosage forms	51 (40.5%)	126 (58.9%)	17 (7.9%)	15 (7%)	2 (0.9%)	3 (1.4%)	209	1.98	14.5
12	Product formulation	41 (33%)	124 (58%)	28 (13%)	15 (7%)	3 (1.4%)	3 (1.4%)	185	0.922	0.855
13	Customer feed back	51 (23.8%)	81 (37.8%)	51 (23.8%)	25 (11.7%)	5 (2.3%)	1 (0.5%)	148	0.74	1.25
14	Packaging attarctivity	41 (19.2%)	101 (47.2%)	26 (12.1%)	35 (16.4%)	8 (3.7%)	3 (1.4%)	132	0.67	1.30

… Continue table (1)

No	Factor	+2 Strongly agree	+1 Agree	0 Uncertain	-1 Disagree	-2 Strongly disagree	Missing Values	S Sum	M Mean	S.D Standard Deviation
15	Financial pressure of excess stock	61 (28.5%)	69 (32.2%)	18 (8.4%)	43 (20%)	20 (9.3%)	3 (1.4%)	108	0.602	2.00
16	Under company/emplo yers instructions	43 (20%)	80 (37.4%)	36 (16.8%)	43 (20%)	7 (3.3%)	5 (2.3%)	109	0.52	1.13
17	Under pressure of product expiry date in the pharmacy o institution.	68 (31.8%)	61 (28.5%)	14 (6.5%)	43 (20%)	26 (12%)	2 (0.9%)	102	0.481	1.42
18	Time available to question	42 (19.6%)	68 (31.8%)	25 (11.7%)	63 (29.4%)	12 (5.6%)	4 (1.9%)	65	0.36	1.44
19	Product promotion by sale reps	31 (14.5%)	84 (39.2%)	2 (12.6%)	57 (26.6%)	13 (6%)	2 (0.9%)	63	0.297	1.189
20	Social factors (sex, marital status, ertc)	29 (13.6%)	74 (34.6%)	36 (16.8%)	59 (27.6%)	15 (7%)	1 (0.5%)	43	0.11	1.87
21	Number of medical reps visits	19 (8.9%)	77 (36%)	40 (18.7%)	54 (25%)	20 (9.3%)	4 (1.9%)	21	-1.0	1.16

… Continue table (1)

No	Factor	+2 Strongly agree	+1 Agree	0 Uncertain	-1 Disagree	-2 Strongly disagree	Missing Values	S Sum	M Mean	S.D Standard Deviation
22	Customers recognize brand	29 (13.6%)	58 (27%)	41 (19.2%)	65 (30%)	18 (8.4%)	3 (1.4%)	15	0.122	1.42
23	Prescribe product by habit	36 (16.8%)	56 (26.2%)	27 (12.6%)	66 (30.8%)	25 (11.7%)	5 (2.3%)	12	0.057	1.32
24	Other physicians recommendations	29 (13.6%)	64 (29.9%)	24 (11.2%)	66 (30.8%)	31 (14.5%)	0	-6	- 2	1.317
25	Personal relation with product manufacturer	46 (21.5%)	39 (18.2%)	27 (12.6%)	53 (24.7%)	45 (21%)	4 (1.9%)	-12	-0.05	1.476
26	Medical samples	22 (10.3%)	46 (21.5%)	35 (16.3%)	77 (36%)	29 (13.6%)	5 (2.3%)	-45	-0.23	1.221
27	Profit from product (physicians and pharmacists)	24 (11.2%)	48 (22.4%)	22 (10.3%)	45 (21%)	73 (34%)	2 (0.9%)	-97	-0.38	1.623
28	Profit from Product (pharmacists only)	32 (56%)	16 (28%)	1 (1.8%)	4 (7%)	3 (5%)	1 (1.8%)	-70	-0.31	1.231

When asked about their drug information resources, journal articles (74%), pharmaceutical drug index (86%), medical textbook (65%) and medical references (59%) were indicated as the main sources of information that were most likely to influence physicians and pharmacists upon selection of drugs. Regarding the use of medical information from pharmaceutical companies, 46.7% of the respondents said that they use such information source while 2.8% said that they do not depend on pharmaceutical brochures as a medical source of information. When asked about medical representatives as a source of medical information, 7.5% of the respondents said that they do not depend on medical representatives as a medical source while 42% said that they would depend on the information supplied by the medical representatives.

Discussion

Since drug selection is an important factor in therapeutic optimization, it is important to know extensive details about what factors that influence physicians and pharmacists upon drug selection. In this study, twenty seven (27) factors were considered that included pharmacological, pharmaceutical, commercial and social factors. Commercial factors like profitability, number of medical samples and personal relations with manufacturers have minor influence on the drug selection by physicians and pharmacists in Palestine. Analysis of effect of profitability on pharmacists selection of drugs shows that most pharmacists strongly agree that profitability is an influential factor in drug selection by pharmacists. Drug promotion activities by the manufacturer and the number of visits made by the medical representatives to physicians and pharmacist were found to have a positive influence on their drug selection. A study[8] that was conducted to investigate the influences of drug companies' advertising programs on physicians revealed that of the four hundred forty six physicians interviewed, 53.9 percent were visited by pharmaceutical company representatives at least once a day, and 43.5 percent spent 15 minutes or more per day on these visits. With respect to the information delivered by the pharmaceutical company representatives, 67.7 percent of physicians thought it was not reliable, and 62.8 percent reported that it had no effect on their prescription writing. The promotional gifts had little effect on prescriptions for 43.9 percent of physicians, and 80.3 percent reported that these gifts were distributed unequally among doctors according to the drugs they prescribed. Only 23.5 percent of physicians supported the prohibition of promotion programs; 90.6 percent of physicians agreed that drugs are too expensive, and 82.9 percent agreed on the presence of over prescription. The authors suggested improving the sources of information for drug prescribing among physicians [8]. Unfortunately, there are no published studies that deal with factors influencing physician's prescribing habits in Palestine or as far as we know in neighboring countries.

The results in our study suggest that selection of drugs for therapy is based on the clinical and patient factors and whilst commercial factors may be involved, they do not compromise the quality of therapeutic recommendations. A major limitation to this study is that when completing the questionnaire, physicians and pharmacists may have selected factors that were perceived "correct" rather than what actually they are practicing. Nevertheless, this study gave insight to factors that are taking into consideration by physicians and pharmacists upon making recommendations for drug selection.

References

1) Hogerzeil, H.V., "Promoting rational prescribing: an international perspective", *Br J Clin Pharmacol,* **39**, (1995), 1-6.
2) Zarate, Cardenas, E., Liosa, Isenrich, L., "Prescribing habits of Peruvian physicians and factors influencing them", *Bull Pan Am Health Organ,* **29(4)** Dec. (1995), 328-37.
3) Cutts, C., Tett, S.E., "Influences on doctors' prescribing: is geographical remoteness a factor?", *Aust J Rural Health,* Jun;**11(3)**, (2003), 124-30.
4) Cutts, C., Tett, S.E., "Doctors perceptions of the influences on their prescribing: a comparison of general practitioners based in rural and urban Australia", *Eur J Clin Pharmacol,* Mar. **58(11)**, 2003, 761-6. Epub 2003 Feb 18.
5) Caamano, F., Figueiras, A., Gestal-Otero, J.J., "Influence of commercial information on prescription quantity in primary care", *Eur J Public Health*, Sep, **12(3)**, (2002), 187-91.
6) Reichert, S., Simon, T., Halm, E.A., "Physicians' attitudes about prescribing and knowledge of the costs of common medications", *Arch Intern Med.*, 160(18), Oct 9 (2000), 2799-803.
7) Choudhry, A.J., Mubasher, M., "Factors influencing the prescribing patterns in acute watery diarrhea", *J Pak Med Assoc*, Jan. (1997), **47(1)**, 32-5.
8) Strang, D., Gagnon, M., Molloy, W., Bedard, M., Darzins, P., Etchells, E., Davidson, W., Ann., R., "National survey on the attitudes of Canadian physicians towards drug-detailing by pharmaceutical representatives", Coll Physicians Surg Can, Dec. (1996), **29(8)**, 474-8.