Promotional Tools: Do Physicians Really Bite The Hook?

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Abstract

This study focusses on promotion done by pharmaceutical industry and its influence on physician prescription behavior. Primary data for the study was collected through a survey of physicians. A total of 189 physicians participated in the study. The predictors of prescription behavior were found to be Offers, Advertisement and Medical representative. The predictors are able to explain 20.2 percent of the physician prescription behavior. In this study researchers also attempted to establish a relationship between the variables explored. The study shall be able to guide the marketers in opting for an appropriate promotion mix.

Keywords: *Decision Making , Physician Prescription Behavior, Promotion*

INTRODUCTION

Drug prescription has always been under consideration by many pharmaceutical companies as a way to maximize the influence the physician prescription behaviour and thus sales. Physician prescription behaviour is influenced by varied sources including research agencies, peer pressure, drug and drug interactions, promotion done by pharmaceutical companies and individual experience of the doctor. It has been found that promotion done by pharmaceutical companies has been found to be significantly influencing drug prescription. Individual and social influences on the physicians have been rated very high by physicians but some of the studies have also concluded that drug promotion by pharmaceutical companies (as it stands in front of the other alternatives available) also stands tall in influencing prescription behavior.

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PHYSICIAN PRESCRIPTION BEHAVIOR

Physician prescription behavior is a decision making attempt by the physicians to choose an alternative amongst many available to treat an ailment. Decision making is a process whereby one alternative is chosen amongst many available through a series of steps. Decision making behavior can be emotional and rational. A rational consumer logically looks at all the pertinent attributes, evaluates the alternatives to look for the best fit solution to his need. Whereas the emotional consumer gets swayed away by the promotional activities of the organizations and makes a decision in the light of these promotional efforts which may not be directly related to the need satisfying properties of the solution. A qualitative analysis of the physicians' decision process for drug prescription was carried out (Campo et al., 2005). It was found that physician's prescription behavior is less rational and more hybrid in nature. It was established in the study that non-compensatory decision rules dominate the decision process, cost of the drug did not emerge as a major issue for most physicians, detailing was found to be one of the most powerful pharmaceutical marketing instruments and was highly appreciated as a valuable and quick source of information, and certain types of non-medical marketing incentives (such as free conference participation) may influence drug choices. Although Physician prescription behavior is very difficult to be interpreted in terms of cause and affect model, still many researchers have attempted to examine the same. Physician prescription behavior is never, ever a simple interaction of symptom and the treatment: whether the decision making is going in a critical care setting or for routine ailments; whether it is going on in the chamber of a gynecologist or a pediatrician; whether it is for a newly launched molecule or for a time tested molecule. Various researchers have proposed number of models. Some propose physician prescription behavior to be habitual process. A few researchers have proposed prescriptive (how should people behave) models of prescribing behavior, while others have conducted descriptive (how do people behave) studies of physician prescribing behavior. (Knapp and Oeltjen,1972) In an experimental study of risk-benefit assessment by general practitioners and internists regarding drug selection, it was found that the probability of a practitioner prescribing a drug for a particular case was a function of (1) physician expectancy that a beneficial effect on a patients' condition would occur if the drug was prescribed(2) the amount of beneficial effect to be gained (3) the expectancy of drug side effects(4)the magnitude of

these side effects. Utilizing this analytic framework, the authors found "disease seriousness" and "medical specialty" to be highly related to perceived risks in the decision making. (Hemminki, 1975) It has been reported that the major influencers on physician prescription behavior are research and the pressure from drug firms, and proposed the simplified model to describe the decision making process for prescribing drugs. She observed that, research and drug firms are closely dependent on each other, and may affect physicians through education, scientific journals, and advertising according to the doctor's personal characteristics, his work and his therapeutic opportunities. She further observed that the patient demands and expectations are controversial and might be largely created by doctors themselves. (Lilja, 1976)In a study conducted on 118 General Practitioners engaged with government, "high curing effect" was found to be the most important criterion for drug selection. Second most important factor came out to be "Low side effects". These two factors were studied in context of anti-diabetic medication. For the category of antibiotic medication "Low cost" was found to be the most important criterion. Thus he concluded that physicians select drugs through a habitual or non-habitual process. This seems to conclude that physician drug prescription behavior depends upon the therapeutic category of the medication. This can be further related to chronic and acute therapy. (Sandra, 1995) Physicians adopt the role of deciders who make the buying decision for their patients. Thus the bulk of marketing efforts are directed towards medical practitioners. (Dubois, 2003) Drug promotion leads to increased disease awareness by both physicians and patients and to greater detection, diagnosis and treatment. Successful marketing by pharmaceutical manufacturing companies to members of the medical profession is greatly determined by a good understanding of the various factors that influence their purchasing behavior (Pitt and Nel, 1988).

PROMOTION TOOLS

More specifically, it would be of benefit to pharmaceutical marketers to ascertain to what extent prescribing decisions are influenced by company's own promotional tools and relevant interpersonal/ organizational influences beyond marketers' immediate control. (Evans and Beltramini, 1986) Age has also been found to be influencing prescription behavior since older physicians were more likely to solicit prescription drug information from sales representatives than were their younger peers. (IMS, 2004)According to IMS Health Report younger physicians(under 45

years) are more responsive to e-detailing program than older physicians'. (Beltramini, 1986) It was further reported that physicians were likely to solicit information from conferences and conventions. (Conlan, 1991) reported that physicians were offered gifts, trips and cash awards by pharmaceutical companies during the promotion of their drugs. (William, 1991) It was described that the importance of information sources is ranked in the following order by physicians i.e., direct mail, journal advertising, detailing and meetings and conferences. (Baker,1992) suggested that office items like patient record forms and prescription pads are more effective since they are perceived to be less promotional. Commercially sponsored information varies in terms of its usefulness to and influence on physicians. (Choi and Lee, 2007)It was found that physicians are receptive towards web as a source of prescription drug information and Direct to Consumer promotions on web. (Tebbey, 2004) It was found that advertisements in professional media play an essential connect between pharmaceutical company and physician. (Castagnoli, 2002) It was mentioned in one of the study that journal advertisements are a preferred source of information for physicians, presented in line with physicians' utility. (Manchanda and Chintagunta, 2004) Detailing has been found to have positive impact on prescriptions written. (Wittink, 2002) Medical representative amount to 80% of all promotional expenditure. (Alkhateeb and Doucette, 2008) Due to ever decreasing ROI pharmaceutical companies are using e-detailing as a complimentary approach to detailing. Also, convenience, quality of information and incentives are the common reasons for physicians' adoption of e-detailing.

Other Information Sources (Pitt and Nel, 1988)

Interpersonal influences are discussions with colleagues, associates and friends whereas organizational influences are hospital ward rounds, in-practice discussions as well as doctor's experience with products in their working situation. Several studies have found that extensive use of journal articles is more frequent among physician opinion leaders, that journal articles are used more frequently as the severity of patient disease increases, and that journal article usage is related to needs for both new drugs and general prescribing information. Journal articles appear to be highly credible sources of prescribing information; however what remains unclear is what characteristics of journal articles physicians perceive as important when assessing the usefulness of one article over another. Physicians, with their training in diagnostics, are likely to be critical in

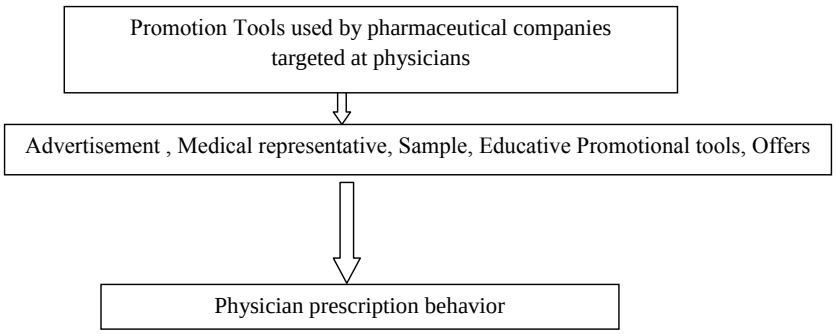
their evaluation of research findings reported in information sources. Thus, the usefulness of a journal article is likely to be a function of physicians' perceived importance of certain information source characteristics such as the prestige of the journal, the author(s) of the article, and the quality of the article's research design (Evans and Beltramini, 1986). Moreover, physicians were most likely to solicit prescription drug information from journal articles, followed by colleagues and conventions(Evans et al., 1986).

Though pharmacists were referred in the physician prescribing behavior literature, but they are found as a weak source of information. In one of the study conducted by Evans and Beltramini(1986) it was found that physician specialty subgroups rated past experience with a pharmacist as an important information source characteristic in contradiction to their perceived likelihood of using pharmacists as an information source for prescribing purposes.

Physician usage of both commercial and non-commercial drug information sources (journal articles, colleagues and to some extent, pharmacist) has been found vary with physician specialization and years in practice(Hemminki, 1975). Evans and Beltramini(1986) reported in their study that non-commercial sources(i.e., journal articles, colleagues and conventions) were preferred over commercial sources. In addition to medical journal articles, colleagues have been found to be important sources of information for new drugs and/or when the physiology of the disease is not very well understood. In general, colleagues appear to perform a vital function early in the adoption phase of new drugs or in high-risk situations. Though studies have found that physician opinion leaders frequently attend out of town medical meetings (Rodgers1983), little is known about how physicians select among their colleagues their opinion leaders.

Fig 1 shows the variables studied during research. Promotion mix of the company influences the physicians' prescription behavior. Promotional tools employed by the marketers act as an information source. They play along with other information sources like colleagues, medical association, chemists, hospitals and patients. Physicians get influenced by the information sources on the basis of the credibility attached to each one of them. This influence guides the physician prescription behavior. Drug efficacy and promotional policy are also being studied as an influencer of physician prescription behavior.

Figure 1: Physician Prescription Behavior



RESEARCH METHODOLOGY

A structured questionnaire was developed for collecting data from the selected sample on the variables identified in the study. To ensure that the questionnaire was appropriate for achieving the objectives of the study and to ensure the comprehensiveness of the items included, the questionnaire was presented for review to experts in the area. In addition, feedback and suggestions from these experts was also sought, regarding the content, layout, wording and ease of understanding of the measurement items. They were also asked to offer suggestions for improving the proposed scale and to edit the items to enhance clarity, readability, and content adequacy. The feedback was used for revising the instrument. The revised instruments were pilot tested on a sample of thirty respondents. The feedback received was incorporated in the questionnaire. No changes were suggested as a result of this round of testing. The results of factor analysis and cronbach alpha values for the various scales included in the questionnaire are presented in table 2 and 3. The reliability coefficient alpha was satisfactory for all the dimensions.

First part of the questionnaire was designed to obtain demographic information about doctor's age, gender, educational qualification, specialty; kind of hospital physician is practicing in, prescription size. The second part of the questionnaire comprised of 63 statements related to perception of physicians towards these promotional tools. Physician prescription behaviour was rated according to the agreeability to the extent to which promotional tools influence the prescription on a 5-point likert scale. Promotional tools considered were medical representative, educational programs, advertisement and gifts. 35 statements were studied to assess physician prescription behaviour.

Table 1: Demographic Profile of Physicians participating in the Study

Specialty	(%)	Qualification	(%)	Kind of Hospital	(%)
Dentistry	13.8	MBBS	30.7	Non-Teaching Government Hospital	9.5
Orthopaedics	3.7	MD	31.7	Non-Teaching Private Hospital	18.0
Internal medicine	16.9	MS	10.6	Government Teaching Hospital	50.3
Psychiatry	11.1	DM	4.2	Private Teaching Hospital	19.6
Neuro-Psychiatry	1.1	MDS	20.1	Others	2.6
Paeditrician	12.7	BDS	.5	Total	100.0
Gynaecologist	4.8	others	2.1	Age (%)	
General Physician	20.1	Total	100.0	<35	70.9
Surgery	2.1	No. of Prescription (%)		36-45	20.0
Cardiologist	1.6	1-20	20.6	46-55	7.9
Plastic surgery	1.1	21-50	28.6	>55	1.1
Dermatology	1.6	51-100	22.8	Total	100.0
critical care	1.6	>100	28.0	Years of practice (%)	
Neurologist	1.6	Total	100.0	0-5	51.3
chest Physician	4.2	Gender (%)		6-10	30.4
Nephrology	2.1	Male	60.8	11-15	12.2
Total	100.0	Female	39.2	6-20	2.6
		Total	100.0	>20	3.5
				Total	100.0

*n = 189

Hospitals were identified by convenience sampling for the respondent sets. Snowball sampling was employed to reach to the physicians, in these hospitals. Afterwards these respondents were further asked to recommend others. From the list of 614 registered private and government hospitals available on the Delhi government website(www.delhi.gov.in). One thousand physicians were approached through snowball sampling. The doctors were contacted personally and by e-mail. A total of 189 usable

questionnaires were obtained yielding a response rate of approximately 20 percent.

RESULT AND ANALYSIS

As per the model Physician Prescription Behavior has been found to be dependent on advertisement, medical representative, offers, educative promotion tools, company image and drug knowledge. (Table 1)The reliability score for the following construct is more than 0.6 on an average this implies that following is a reliable construct. Amongst the statements two new variables came out to be having high reliability score i.e, Drug knowledge and Company Image.

Table 2: Reliability Score for Independent and Dependent Variable

Statement No. Items	Titled Variable	Reliability Score
13,14,15,16,17,18,,24, 27,35,48,55	Physician Prescription Behavior	0.70.
40,41, 42	Medical representative	0.70.
19,22,23,,25	Drug Knowledge	0.73
6,7,8,10	Advertisement	0.80
45, 51,52	Offers	0.78
28, 30, 36	Company Image	0.547
2,3,4,5	Educative Promotion tools	0.75

(Table 3) Factors identified by literature review were put to manual Factor identification. Then, the reliability of each statement was checked for its overall contribution to the component. The factors identified were later on cross checked with Factor Analysis run under SPSS. Results were found to be similar. Factor Analysis for variable Medical Representative suggests that the statements are depicting only one component.

Table 3: Component Matrix: Establishes that Individual Components are Made of Single Components

	Component
	Medical Representative
41. Medical representatives inform me that on which chemist shops the drugs are available.	.799
40. Medical Representatives always update me about new drugs available in the market.	.782

42. I get to know about dosage schedules and forms from Medical Representatives.	.772
	Drug Knowledge
22. I prefer a safe drug always.	.802
19. If I prescribe a more effective drug I feel satisfied.	.759
25. I always try to find the relative advantages of different molecules before prescribing.	.729
23. I find the time to keep myself fully abreast of the research studies and developments in my field.	.701
	Advertisement
10. Advertisements' credibility as an information source	.822
7. Direct Mail's credibility as an information source	.785
8. Sample catch cover' credibility as an information source	.777
6. Company website credibility as an information source	.767
	Offers
51. It is alright to have pharmaceutical firm buy lunch for the physician and his/her staff.	.861
52. It is alright to take such items as tickets to special entertainment events or dinner for me and my family from pharmaceutical companies.	.845
45. I often accept gifts from pharmaceutical companies.	.794
	Company Image
30. Sales promotion tactics used by the companies are too aggressive.	.788
28. I believe pharmaceutical firm will do what is best for their companies and worry about the impact on the consumer (patient) later.	.737
36. I always prescribe brands which are easy for me to remember.	.665
	Educative Promotional Tools
2. Journal's credibility as an information source	.797
4. Clinical Studies' credibility as an information source	.796
3. Periodical's credibility as an information source	.735
5. Conference/ symposia's credibility as an information source	.684

Durbin- Watson value for the variables is 1.598(table 4), thus claiming that there exists no auto-correlation between the variables. We also see

that there exists no co linearity between the variables as the tolerance is much above 0.1 and VIF values are much below 10(table 5). Thus the variables satisfy all conditions to carry out regression.

(Table 4)We now proceed to use the Linear Regression Model with Dependent variable as Physician Prescription Behavior and explanatory variables Medical Representative, Drug Knowledge, Advertisement, Offers, Company Image and Educative promotion tools.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.333(a)	.111	.106	4.65163	
2	.408(b)	.166	.157	4.51569	
3	.450(c)	.202	.189	4.42907	1.598

a Predictors: (Constant), Factor4

b Predictors: (Constant), Factor4, Factor3

c Predictors: (Constant), Factor4, Factor3, Factor1

d Dependent Variable: Dependent variable

(Table 5)The predictors are able to explain only 20.2 percent of the dependent variable. The predictors of prescription behavior stand to be Factor 4(Offers), Factor 3(Advertisement) and Factor 1(Medical representative).

As per Table 5, the predictors of Physician Prescription Behavior are Factor 4(Offers), Factor 3(Advertisement) and Factor 1(Medical representative). They are found to be significant as per the above mentioned table. Moreover Beta values align the independent factors in the order of their importance.

Individual contribution of offers is 9% , of advertisement is 6% and of medical representative is 5% to physician prescription behaviour as per the above table.

CONCLUSIONS AND FUTURE RESEARCH

Physician Prescription Behavior was found to be dependent on advertisement, medical representative, offers, educative promotion tools, promotional policy and drug efficacy. The predictors of prescription behavior were found to be Offers, Advertisement and Medical

Table 5: Predictors of Physician Prescription Behavior (Model 3)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	18.349	1.111		16.521	.000		
	Factor4	.649	.136	.333	4.770	.000	1.000	1.000
2	(Constant)	15.543	1.345		11.556	.000		
	Factor4	.595	.133	.305	4.471	.000	.986	1.014
	Factor3	.345	.099	.238	3.491	.001	.986	1.014
3	(Constant)	12.105	1.784		6.784	.000		
	Factor4	.554	.131	.284	4.220	.000	.975	1.026
	Factor3	.307	.098	.212	3.144	.002	.969	1.032
	Factor1	.415	.145	.193	2.861	.005	.967	1.034

a Dependent Variable: Dependent variable

Table 6: Critical Predictors of Physician Prescription Behavior

Variable	Predictors	Zero order correlation(A)	Partial correlation	Standard Beta coefficient(B)	Individual contribution(A*B)
Drug Prescription Behavior	Factor 4	0.333	0.299	0.284	0.09
	Factor 3	0.274	0.228	0.212	0.06
	Factor 1	0.259	0.208	0.193	0.05

representative. The predictors are able to explain 20.2 percent of the dependent variable.

Prescription behavior patterns might be strongly influenced by factors other than the variables studied so far. Due to limitation of data unobserved factors related to physician's personal characterstics, patients and interaction related to these two variables were not studied. (Gonul, Carter, Petrova and Srinivasan, 2001) highlighted physicians' unobservable personal characteristics such as inertia and loyalty to certain drugs. They further discussed unobservable factors related to patients like the severity of their condition, their health history, other drugs they are currently taking that may cause interactions or exacerbate side effects. They further highlighted the unobserved specifics unique to the interaction between the physician and the patient which are the patient involvement in drug choice because of experience, knowledge, word-of-mouth or DTC. (Hemminki, 1975)It has also been proposed that physician prescription behavior is dependent on the therapeutic category of the drug.

SIGNIFICANCE OF FINDINGS

A major finding of this study which may deviate from the common belief of the pharmaceutical industry is the relatively low importance of influence accorded to sales representatives. Nevertheless, no promotional tools other than personal selling can identify and exploit directly the sources of influence. In addition, relationship is the most important determinant of doing business (Redding and Ng,1983; Yau, 1987). It is important for the pharmaceutical companies to place more emphasis on quality of sales calls when salespeople can only have limited direct interactions with medical practitioners. If physicians view individual representatives in bad light, the entire industry can suffer. Pharmaceutical firms must continue training their sales representatives so that the information they supply is accurate and trustworthy.

LIMITATIONS

Due to the type of repondent involved it was not feasible to cover a large data set. Other factors which can influence prescription behavior can be price of the drug as well as insurance coverage of the patients. It has been found that physicians with a relatively large number of patients with insurance coverage tend to be less influenced by pharmaceutical

promotion. Drug efficacy ceases to be a determining factor for physician prescription behavior since all pharmaceutical companies are assumed to follow good manufacturing practices. To remedy this future research should try and make analysis of unobserved factors in this research. In addition, the respondents were drawn from a snowball sampling. Majority of the respondents are drawn from hospitals selected by convenience sampling. This limits the generalizability of study results to private practitioners.

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