Influence of Pharmaceutical Promotional Tools on Doctors' Prescribing Behaviour: An Exploratory Study

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Abstract

The healthcare industry in general, and the prescription drug industry, in particular, employs an unusual combination of marketing and promotional efforts to influence the doctors who write the prescriptions that determine which drugs (brands) will be used by the ultimate consumer (patient). The involvement of doctors as key decision makers is the reason that they are the focus of most promotional efforts of pharmaceutical companies. Thus, influencing the doctor is a key to the pharmaceutical sales, and the pharmaceutical companies are spending a lot of money on marketing their products to the doctors. The present study examines the impact of promotional tools on doctors' prescribing behaviour. A total of 431 respondents were selected through convenience sampling from different cities of Rajasthan. The results show that the promotional factors which were found to be more influencing were the activities of the MR (medical representative), their rapport with the doctors, their personality traits, and the drug samples, leaflets, and brochures given by the MRs to the doctors. The findings are discussed in the light of past studies, and future directions for research are outlined.

Keywords : **pharmaceutical promotions, pharmaceutical marketing, doctors, prescribing behaviour, prescribing habits, medical representatives**

The marketing strategies employed in the pharmaceutical industry sharply contrast with those typically adopted by other industries (Manchanda & Chintagunta, 2004). One of the primary reasons for this difference is that there is a distinct breach in the traditional buying process : the decision maker is the doctor who chooses among an array of drug alternatives, but it is the patient who takes the drug and ends up paying for the choices made by the doctor (Gönül, Carter, Petrova, & Srinivasan, 2001). Therefore, the intermediary role played by the doctors cannot be ignored, thus making them the most important players in the pharmaceutical marketing system. While many companies have successfully deployed a plethora of strategies to influence the prescribing behaviour - which includes extravagant marketing practices like offering vacation/travel expenses, gifts of substantial value, lavish meals and entertainment, offering cash/ commission for prescribing a particular drug, offering money for drug trial, samples, and promotional material, and CME (continuous medical education) funding and honoraria (Wazana, 2000) to giving away small gifts and trinkets of low values, which are considered by doctors as the way of interaction from the pharmaceutical companies (Gibbons et al., 1998). Many of these promotional practices adopted by the pharmaceutical companies may be regarded as unethical, but are rampant in this industry.

The Indian pharmaceutical industry is highly fragmented (with more than 20,000 registered units), with severe price competition, and government price control. There is a fierce competition in the market, and this affects the prescribers to a certain extent (Mohanty et al., 2010). This intense competition in the Indian pharmaceutical industry implies that practicing doctors are exposed constantly to various competing stimuli. The present study identifies these cues in the form of promotional activities and found that doctors in the study responded to these cues differently.

Literature Review

In today's competitive pharmaceutical market, marketers are increasingly concentrating on studying the prescription trends and prescribing behaviour of physicians. There are a good number of studies available in the area pertaining to doctors' prescribing behaviour. These studies cover the issues like effect of interaction of pharmaceutical sales representatives (PSRs) on prescription behaviour (Arora & Taneja, 2006 ; Caudill, Johnson, Rich, & McKinney, 1996 ;

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Ching & Ishihara, 2005 ; Chintagunta & Desiraju, 2005; Hopper, Speece, & Musial, 1997; Narayanan, Manchanda, & Chintagunta, 2005 ; Saito, Mukohara, & Bito, 2010) which starts as early as medical school till the practice lasts (Wazana, 2000), driving out the maximum benefit to the doctors and the industry (Balhara, Mathur, & Anand, 2012) .

Although, many a times, doctors believe that that PSRs sometimes use unethical marketing practices by providing commercial, biased, and untrue information (Mujirers, Grol, Sijbrandij, Janknegt, & Knottnerus, 2005; Prosser & Walley, 2003), and the amount of contact with PSR's in the outpatient clinic is excessive (Hopper et al., 1997, Wazana, 2000), while many studies viewed the quality of information provided by PSRs to be convenient, accurate, and reasonable (Girdharwal, 2007 ; Narayanan et al., 2005 ; Saito et al., 2010; Watkins et al., 2003). The effectiveness of free drug samples and gifts and other promotional tools on physicians' attitude and prescribing behaviour was considered as most appropriate and least unethical in the study by Morgan, Dana, Loewenstein, Zinberg, and Schulkin (2006), and these free samples lead the doctors to dispense and subsequently prescribe drugs even at the times when these drugs are not their preferred drug choice (Chewet al., 2000 ; Warrier, Monaghan, Anna, Huggett, & Rich, 2010). Similar studies have been conducted by - Stryer and Bero (2009) ; Madhavan, Amonkar, Elliott, Burke, and Gore (1997) ; Gibbons et al. (1998) ; McGettigan, Golden, Fryer, Chan, and Feely (2001) ; Cardarelli, Licciardone, and Taylor (2009) ; Grande, (2010) ; Ijoma, et al., (2009) ; Siddiqi et al., (2011) ; Jain and Saxena (2011), concluding that free drug samples affect prescription choices.

Bhatt's (1993) study concluded that the physicians' samples are given to doctors with higher pen power to create brand (drug name) awareness. Taneja (2008) concluded that private sector doctors attached more importance to personal selling, sponsorships, and educational promotional tools ; while scientific promotional tools were considered more important by higher qualified doctors. It was also identified that promotional policies that emphasized relationship with opinion leaders and personal selling were labelled as successful marketing efforts (Stros, Hari, & Marriott, 2009). Ijoma et al., (2009) concluded there is a need to educate doctors about drug promotion and its influence on prescribing attitude, aiming at improving the doctors' skills in dealing with the promotional strategies adopted by the companies. Henry (2010) discussed the relationship between doctors and drug companies that lead to inappropriate prescribing, which harm patients, create conflict of interest and conflict of communication, thereby diminishing professional standing of doctors in the eyes of the patients. These relationships lead to the use of unnecessary and expensive medications, thereby affecting the overall health cost of the nation.

Objective of the Study and Hypotheses

In the light of above review of literature and the issues raised, the objective of the present study is toanalyze the impact of promotional activities on the prescribing behaviour of doctors. The financial ties between doctors and drug companies have come under intense scrutiny in recent years as there is a widespread skepticism about the intent of the industry and there is concern regarding the vulnerability of doctors in such a relationship. Based on the above observations and theoretical underpinnings, the following null hypotheses have been proposed:

- **H_1: There is no significant difference in the prescribing behaviour of doctors belonging to different age groups in terms of promotional activities done by the pharmaceutical companies**.
- **H_2: There is no significant difference in the prescribing behaviour of doctors belonging to different specialities in terms of promotional activities done by the pharmaceutical companies.**
- **H_3: There is no significant difference in the prescribing behaviour of doctors with different years of experience in terms of promotional activities done by the pharmaceutical companies.**
- **H_4: There is no significant difference in the prescribing behaviour of doctors with different employment status in terms of promotional activities done by the pharmaceutical companies.**
- **H_5: There is no significant difference in the prescribing behaviour of doctors from different cities in terms of promotional activities done by the pharmaceutical companies.**

Research Methodology

The research design was descriptive in nature, utilizing the survey method. A validated questionnaire was sent to 750

Table 1: List of Sample Cities Covered by the Study		
City code	**Population**	**Cities covered**
City code 1	More than 1 million	Jaipur, Jodhpur, Kota
City code 2	Population within 0.5-1 million	Ajmer, Bikaner
City code 3	Population within 0.1-0.5 million	Alwar, Beawar, Bharatpur, Bhilwara, Bundi, Chittorgarh, Hanumangarh, Jhalawara, Jhunjhunu, Kishangarh, Nagaur, Pali, Sikar, Sriganganagar, Swaimadhopur, Udaipur
City code 4	Population less than 0.1 million	Dausa, Dungarpur, Mt.Abu, Nathdwara, Rajsamand
Source: Compiled by the Authors		

Table 2: Demographic Profile of the Respondent Doctors		
Demographic variables	**N**	**Percentage**
Gender of the doctor with coding		
Male (coding 1)	344	79.81
Female (coding 2)	87	20.19
Area of Specialty with coding		
General Physicians (coding 1)	198	45.94
Gynaecologists/Obstetricians (coding 2)	80	18.56
Pediatricians (coding 3)	80	18.56
Ophthalmologists (coding 4)	61	14.15
Psychiatrists (coding 5)	12	2.78
Employment status with coding		
Government Sector Doctor (coding 1)	132	30.63
Private Sector Doctor (coding 2)	141	32.71
Self Employed Doctor (coding 3)	158	36.66
Years of experience with coding		
1-5 years of experience (coding 1)	12	2.78
6-10 years of experience (coding 2)	30	6.96
11-20 years of experience (coding 3)	126	29.23
21-30 years of experience (coding 4)	135	31.32
31-40 years of experience (coding 5)	70	16.24
41 & above years of experience (coding 6)	58	13.46
Age of the doctors with coding		
25-35years of age (Age 1)	15	3.48
36-40 years of age (Age 2)	35	8.12
41-45 years of age (Age 3)	53	12.30
46-50 years of age (Age 4)	71	16.47
51-60 years of age (Age 5)	158	36.66
61 & above years (Age 6)	99	2.97
City of doctors with coding		
City type 1(pop>1 million)	232	53.83
City type 2(pop within 0.5-1 million)	65	15.08
City type 3(pop within 0.1-0.5million)	125	29
City type 4(pop <0.1 million)	9	2.0
Source: Compiled by the Authors		

doctors in Rajasthan with five different specialities - namely General Medicine, Gynaecology/ Obstetrics, Paediatrics, Ophthalmology, and Psychiatry. These doctors were asked to give their responses regarding the importance attached to various promotion activities affecting their prescribing behaviour. The doctors were first contacted over telephone, and their permission was sought to send them the questionnaires. No incentives of any manner were offered to them for completing the questionnaire. A total of 431 usable questionnaires were returned from 26 cities of Rajasthan, and the State was divided into four zones (according to the population census of India, 2011) for the purpose of the research (presented in the Table 1). The data was collected from December 2011 till April 2012, and the statistical tools used were means, frequency distribution, unpaired Z-test, and multiple regression analysis. The Table 2 depicts the demographic profile of the sample respondents with the respective sample coding.

Analysis and Findings

The results of study show that the doctors' prescribing behaviour was affected by the promotional activities carried out by the pharmaceutical companies. As seen from the Table 3, the impact of promotional tools on prescribing behaviour of doctors was significantly different in the age group of 25-30 years and 41-45 years, although the impact on older doctors was seen to be less influencing. Therefore, the hypothesis H1 is rejected.

The impact of promotional tools on the prescribing behaviour of doctors of different specialties was significantly different in case of pediatricians, who were less influenced by the promotional tools used in the industry, therefore, the hypothesis H2 is rejected. The impact of promotional tools on the prescribing behaviour of doctors with different years of experience showed a significant difference in case of respondent doctors with 31-40 years of experience, wherein these doctors were less influenced, while doctors with 41 and above years of work experience were more influenced, therefore, the hypothesis H3 is rejected. The variations in prescribing behaviour among the doctors with different employment status were found to be significant and hence, the hypothesis H4 is rejected. The effect of promotional tools on doctors from different cities was found to be statistically insignificant. Hence, the hypothesis H5 is accepted,

Table 3: Impact of Promotional Tools on Different Demographic Profiles of the Doctors

Srl	Sample criteria	N	Mean	s.d.	Z	p-value (Two Tailed)	Hypotheses
1	AGE=1 (25 to35 years)	15	30.33	5.576	3.14	<.01**	H1 Rejected
	AGE<>1	416	25.71	6.106			
2	AGE=3(41 to 45 yrs)	53	23.91	6.214	-2.46	<.05*	
	AGE<>3	378	26.15	6.088			
3	SPCD=3 (Paediatricians)	80	23.96	6.122	-3.1	<.01**	H2 Rejected
	SPCD<>3	351	26.31	6.07			
4	EXPYRS =5 (31- 40 yrsexp)	70	24.56	5.704	-2.08	<.05*	H3 Rejected
	EXPYRS<>5	361	26.13	6.197			
5	EXPYRS= 6 (41yrs & above)	58	27.26	5.219	2.1	<.05*	
	EXPYRS<>6	373	25.66	6.251			
6	ESTATUS =3 (Self employed)	158	26.61	5.355	2	<.05*	H4 Rejected
	ESTATUS<>3	273	25.45	6.524			
7	CITYCD= 1(popln.more than1 million)	232	26.09	6.14	0.8	NS	H5 Accepted
	CITYCD<>1	199	25.62	6.148			
8	CITYCD=2 (popln. within 0.5-1million)	65	26.26	6.498	0.52	NS	
	CITYCD<>2	366	25.81	6.082			
9	CITYCD=3 (popln. within 0.1-0.5 million)	125	25.32	5.982	-1.21	NS	
	CITYCD<>3	306	26.1	6.201			
10	CITYCD= 4 (popln.less than 0.1 million)	9	25.11	6.173	-0.37	NS	
	CITYCD<>4	422	25.89	6.147			

Source: Compiled by the authors *P<.05, **P<.01, # significant cases are shown in the table, NS: Non Significant

Table 4: Age of the Doctors and the Impact of Promotional Tools on Prescribing Behaviour #

Promotional tool	Sample criteria	N	Mean	s.d.	z	p-value (Two Tailed)
MR Rapport	AGE= 3(41 to 45 yrs)	53	2.3	1.066	-2.4	<.05*
	AGE<>3	378	2.68	1.033		
MR Personality trait	AGE= 3(41 to 45 yrs)	53	2.49	1.085	-2.32	<.05*
	AGE<>3	378	2.87	1.176		
MR product knowledge	AGE=1 (25 to 35 years)	15	3.93	1.099	2.51	<.05*
	AGE<>1	416	3.2	1.229		
	AGE=3(41 to 45 yrs)	53	2.89	1.25	-2.13	<.05*
	AGE<>3	378	3.28	1.222		
Free drug samples	AGE=1 (25 to 35 years)	15	2.73	1.099	2.23	<.05*
	AGE<>1	416	2.09	1.066		
Distribution of leaflets and brochures	AGE=3(41 to 45 yrs)	53	2.08	1.089	-3.69	<.01**
	AGE<>3	378	2.67	1.135		
	AGE=6(61 yrs & above)	99	2.87	1.157	2.68	<.01**
	AGE<>6	332	2.52	1.13		
New drug inf. from colleagues	AGE=1 (25 to 35 years)	15	3.93	0.258	2.72	<.01**
	AGE<>1	416	3.72	0.781		

Source: Compiled by the authors *P<.05 **P<.01, # only significant cases are shown in the table

AGE=1: 25-35 years old AGE =2: 36-40 years old AGE =3: 41 to 45 years old

AGE=4: 46-50 years old AGE =5: 51 to 60 years old AGE =6: 61 & above years old

Table 5: Doctors' Specialty and the Impact of Promotional Tools on Doctors' Prescribing Behaviour#

Promotional tool	Sample criteria	N	Mean	S.D.	z	p-value (Two Tailed)
MR Rapport	SPCD =1 (Gen Physician)	198	2.78	1.021	2.81	<.01**
	SPCD<>1	233	2.5	1.046		
	SPCD =3 (Paediatrics)	80	2.4	1.142	-2.04	<.05*
	SPCD<>3	351	2.68	1.014		
MR Personality trait	SPCD=3(Paediatrics)	80	2.58	1.155	-2.08	<.05*
	SPCD<>3	351	2.87	1.169		
	SPCD =5 (Psychiatry)	12	3.67	1.154	2.57	<.01**
	SPCD<>5	419	2.79	1.164		
MR product knowledge	SPCD =3 (Paediatrics)	80	2.98	1.211	-2.07	<.05*
	SPCD<>3	351	3.29	1.23		
Free drug samples	SPCD = 3 (Paediatrics)	80	1.79	0.923	-3.35	<.01**
	SPCD<>3	351	2.19	1.091		
Leaflets, brochure distribution	SPCD =3 (Paediatrics)	80	2.17	1.111	-3.74	<.01**
	SPCD<>3	351	2.69	1.132		
CME/Academic sponsorships	SPCD =3 (Paediatrics)	80	2.54	1.179	-2.19	<.05*
	SPCD<>3	351	2.86	1.174		
New drug inf. from MR	SPCD=2(Gyne/Obst)	80	3.83	0.807	2.8	<.01**
	SPCD<>2	351	3.53	1.044		
New drug inf. from colleagues	SPCD=4(Ophthalmology)	61	3.93	0.749	2.28	<.05*
	SPCD<>4	370	3.7	0.768		

Source: Compiled by the Authors *P<.05; **P<.01, # only significant cases are shown in the table

SPCD =1: General Physicians, SPCD =2: Gynaecology/ Obstetricians, SPCD =3: Paediatrics, SPCD=4: Ophthalmology, SPCD=5: Psychiatry

which proves that the prescribing behaviour of doctors from different cities was not influenced by the promotional tools used by the pharmaceutical companies.

As depicted in the Table 4, the doctors in the age group of 41-45 years of age were seen to be less influenced by the medical representatives' (MRs) personality, the MRs' product knowledge, and distribution of leaflets and brochures by the companies. The promotional efforts carried out by the companies did not influence the prescribing behaviour of doctors falling in the age group of 41-45 years of age. The MRs' product knowledge, free drug samples, and relying upon colleagues for information about new drugs had a substantiative positive effect on the youngest category of doctors within the age group of 25-35 years, while the most senior doctors in the age group of 61 and above years displayed a positive behaviour towards the materials distributed by the pharmaceutical companies in the form of leaflets and brochures.

As seen from the Table 5, the effect of MRs' rapport with the general physicians' (GPs) prescribing behaviour was more significant as compared to its effect on other doctors. The GPs in general had a good prescription power. Hence, MRs of pharmaceutical companies wanted to establish a good relationship with them so that later on, they could use this rapport to influence the prescribing behaviour of the GPs. The effect of promotional tools like MR rapport, MR personality traits, MRs' product knowledge, free drug samples, distribution of materials, CME/academic sponsorships

Table 6 : Doctors' Years of Experience and the Impact of Promotional Tools on Doctors' Prescribing Behaviour#

Promotional tools	Sample criteria	N	Mean	S.D.	z	p-value (Two Tailed)
MR Rapport	EXPYRS =5 (31-40yrs.exp)	70	2.4	0.954	-2.17	<.05
	EXPYRS <> 5	361	2.68	1.055		
MR Personality trait	EXPYRS = 5 (31-40 yrs.exp)	70	2.56	1.15	-2.07	<.05*
	EXPYRS <>5	361	2.87	1.17		
	EXPYRS =6 (41& above yrs. exp)	58	3.17	1.045	2.71	<.01**
	EXPYRS <>6	373	2.76	1.181		
Free drug samples	EXPYRS = 5 (31-40 yrs.exp)	70	1.84	0.845	-2.75	<.01**
	EXPYRS <>5	361	2.16	1.104		
	EXPYRS = 6 (41& above yrs. exp)	58	2.38	1.04	2.1	<.05*
	EXPYRS <>6	373	2.07	1.072		
CME/Academic Sponsorships	EXPYRS = 6(41& above yrs. exp)	58	3.09	1.096	2.12	<.05
	EXPYRS<>6	373	2.75	1.188		

Source: Compiled by the authors *P<.05; **P<.01, # Only significant cases are shown in the table

EXPYRS = 1 : 1-5 years of experience EXPYRS = 2: 6-10 years of experience EXPYRS = 3:11-20 years of experience
EXPYRS = 4 : 21-30 years of experience EXPYRS = 5 : 31-40 years of experience EXPYRS = 6: 41 &above years of experience

Table 7: Employment Status of the Doctors and the Impact of Promotional Tools on Doctors' Prescribing Behaviour #

Promotional tool	Sample criteria	N	Mean	S.D.	z	p-value (Two Tailed)
MR product knowledge	ESTATUS = 3 (Self Employed)	158	3.41	1.151	2.4	<.05*
	ESTATUS<>3	273	3.12	1.265		
Free drug samples	ESTATUS = 2 (Pvt. Sec.)	141	1.96	1.071	-1.98	<.05*
	ESTATUS <>2	290	2.18	1.067		
	ESTATUS = 3 (Self Employed)	158	2.25	1.068	2	<.05*
	ESTATUS <> 3	273	2.03	1.068		
New drug inf. from MR	ESTATUS = 3 (Self Employed)	158	3.74	0.978	2.51	<.05*
	ESTATUS<>3	273	3.49	1.018		

Source: Compiled by the authors *P<.05; **P<.01 # Only significant cases are shown in the table
ESTATUS =1: Government Sector doctors; ESTATUS =2: Private Sector doctors ; ESTATUS =3: Self Employed doctors

had less influence on pediatricians, while for the other specialists like gynaecologists, psychiatrists, and ophthalmologists, the impact of promotional tools were seen to positive and were greatly influencing their prescription choices.

The variations in prescribing behaviour of doctors with reference to their years of experience were seen primarily in senior doctors, and the impact was negative. CME/ academic sponsorships was seen to be a positively influencing factor in case of most of the senior doctors, and they also perceived the MR's personality traits and free drug samples as a positive factor influencing their choice of drugs (Table 6).

As seen from the Table 7, the factors - effect of promotional tools like MR's product knowledge, free drug samples, and MR acting as a source of information for new drugs were found to be a significant influencing factor in case of the self employed group of doctors, as they found all these tools handy and useful, which in turn affected their prescription

Table 8: Multivariate Predictors of Doctors' Involvement in Promotional Activities#

Factor		Rapport of MRs with you	MRs' personality traits (communication/ courtesy/ presentation skills)	Free drug samples provided by MRs	Distribution of leaflets and brochures	Academic Sponsorship Service	Information received through MRs
Speciality	Psychiatry	1.00	1.00	1.00	1.00	1.00	1.00
	GP	0.6577	0.1744	0.6571	0.7887	1.2727	0.3824
	95 % CI lr.lt.	0.1898	0.0457	0.1355	0.2284	0.3706	0.0815
	95 % CI hr. lt.	2.2794	0.6653	3.1879	2.7241	4.3708	1.7948
	z statistics	0.661	2.556	0.521	0.375	0.383	1.219
	p ratio	0.5088	**0.0106****	0.6023	0.7074	0.7016	0.2230
Speciality	Pediatricians	1.00	1.00	1.00	1.00	1.00	1.00
	GP	2.0628	1.5692	3.3733	2.2347	1.7879	1.6450
	95 % CI lr.lt.	1.0106	0.8743	0.9834	1.1240	1.0069	0.9698
	95 % CI hr. lt.	4.2106	2.8166	11.571	4.4431	3.1747	2.7903
	z statistics	1.989	1.510	1.933	2.293	1.983	1.846
	p ratio	**0.0467***	0.1311	0.0532	**0.0218***	**0.0473***	0.0649
Speciality	Gynaecologists	1.00	1.00	1.00	1.00	1.00	1.00
	GP	1.5503	0.8268	1.6210	0.9773	1.5771	0.5159
	95 % CI lr.lt.	0.8006	0.4833	0.6340	0.5502	0.8989	0.2801
	95 % CI hr. lt.	3.0023	1.4145	4.1442	1.7360	2.7670	0.9501
	z statistics	1.300	0.694	1.009	0.078	1.588	2.124
	p ratio	0.1935	0.4876	0.3132	0.9377	0.1122	**0.0337***
Years of	21 years & above	1.00	1.00	1.00	1.00	1.00	1.00
experience	1 to 20 years	1.6665	1.1938	2.0147	0.8403	0.8516	0.8972
	95 % CI lr.lt.	1.0392	0.7947	1.0882	0.5392	0.5649	0.5983
	95 % CI hr. lt.	2.6725	1.7935	3.7298	1.3094	1.2838	1.3454
	z statistics	2.119	0.853	2.229	0.769	0.767	0.525
	p ratio	**0.0341***	0.3935	**0.0258***	0.4419	0.4431	0.5998
City	Popln < 1 million	1.00	1.00	1.00	1.00	1.00	1.00
	Popln > 1 million	1.0370	1.2025	1.2478	1.0818	0.6430	1.4325
	95 % CI lr.lt.	0.6480	0.8048	0.6711	0.7036	0.4311	0.9622
	95 % CI hr. lt.	1.6595	1.7968	2.3198	1.6632	0.9591	2.1327
	z statistics	0.151	0.900	0.700	0.358	2.165	1.770
	p ratio	0.8798	0.3681	0.4842	0.7201	**0.0304***	0.0767

Source: Compiled by the Authors *P<.05; **P<.01, # Only significant cases are shown in the table

choices. However, doctors employed with the private sector were less influenced by free drug samples provided by the companies in affecting their prescribing behaviour.

❖ **Multivariable Analysis :** The Table 8 depicting the multivariable effect of promotional activities on doctors' prescribing behaviour shows the odds ratio - that the GPs were two times more likely to get influenced by their rapport with the MR as compared to the paediatricians, while doctors with 1 - 20 years of experience would be 1.6 times more likely to get influenced due to their rapport with the MRs, as compared to doctors who had 21 and above years of experience. Looking at the odds of getting influenced by the MR's personality traits, the GPs were less than 20% of the time getting influenced by this factor as compared to the psychiatrists. Free drug samples provided by the MRs were twice likely to affect the doctors with 1-20 years of practice as compared to doctors with more than 21 years of practice. Distribution of leaflets and brochures were twice likely to influence the GPs as compared to the paediatricians. Furthermore, the effect of academic sponsorships on prescribing behaviour of doctors was not that effective in case of doctors practicing in cities having a population of more than 1 million.

Discussion and Conclusion

The present study adds to the previous research that conceptualizes the fact that clinical practice decision making is a dynamic process, which is affected by a number of factors (Prosser et al., 2003) and that the decisions could depend upon factors from the core aspect of drugs to the contextual aspect and habitual aspect (Denig, Witteman, & Schouten, 2002). Although the pharmacological criteria is generally used by the doctors in deciding which drugs to prescribe, the findings of the study show that the psychosocial influences were also rated as important factors in the doctors' decision to prescribe. The doctors in the study with different demographic variables - Age, Specialty, Years of Experience, Employment Status, and Practicing in different cities - showed variations in their perception towards promotional tools used by the pharmaceutical companies. The results of the study are in line with the results of a study conducted by Sbarbaro (2001), who concluded that physicians' prescribing pattern can be influenced by means of personal contact and other pharmaceutical marketing activities, which many a times are considered to be unethical and problematic. The prescribing behaviour of majority of the doctors interviewed for the study was undoubtedly influenced by the promotional activities carried out by the pharmaceutical companies. Similar results were obtained by Rohra et al. (2006) for their study. The present study also revealed that the promotional factors, which were found to be more influencing, were the activities of the MR, their rapport with the doctors and their personality traits, providing free drug samples, leaflets, and brochures (provided by the MR).

According to the literature review, the PSRs have been considered as primary disseminators of product information to physicians in an increasingly cluttered market place and in the age of information explosion (Singh, 2008). Companies are known to spend more than 25% of their marketing budgets on MRs so they provide information useful to the physicians and give free samples to doctors, which they would further prescribe to their patients (Shankar, Singh, & Piryani, 2012). So, building a rapport with the doctors is crucial in influence their prescribing behaviour. Interestingly, the present study is in agreement with the results of a study conducted by Hopper et al. (1997), who found that pediatrics were less influenced by the MRs' rapport with the doctors after post intervention, and agreed that the use of unethical marketing practices by PSRs, and the practice of giving gifts to doctors to prescribe their medicines -which did not benefit the patients - may be inappropriate, and such practices influence the prescribing pattern of doctors. Taneja (2008), in his study, concluded that private practitioners assigned greater value to MRs, educational promotional tools, and sponsorships as compared to the Government sector doctors. However, the present study refutes these results, as no difference in perception was found in doctors employed in the private sector, doctors who were self employed, and doctors who were employed in the government sector, except in case of importance given to MRs' product knowledge, which was rated high by the self employed doctors as compared to private sector and government sector doctors.

MRs acting as a source of information - found much favour in studies conducted by Alghasham (2009) and Ijoma et al. (2009), who concluded that promotional strategies broaden the knowledge of the doctors about particular medications, but had little and no impact on their prescribing behaviour. The present study results also show that GPs and psychiatrists, doctors in the age group of 25-35 years and 41 and above years, and self- employed doctors had a positive effect of interactions (with the MRs) on their prescribing behaviour, which is well documented in prior studies

by Armstrong, Reyburn, and Jones (1996), Hopper et al. (1997) , Saito et al. (2010). It has also been identified in a study by Bauer and Wortzel (1966) that the weight of pharmaceutical promotions increased in the early and mid fifties. The physician's population became more selective, and actually spent less time in reading and listening to these sources. Hence, this justifies the results of the present study, which shows that doctors of this age group either were not influenced by the promotional activities or were less influenced by the same. However, free drug samples given to the physicians facilitated them to dispense and subsequently prescribe drugs. The results of a study by Chew et al. (2000) confirms the results, as the study depicted that doctors in age group of 25-35 years of age were influenced by free samples of drugs.

The results of the present study pertaining to distribution of medical literature, distribution of leaflets and brochures, processing source(s) of information about new drugs partially goes in line with a prior study conducted by Bhardwaj and Mazumdar (2011), who concluded that the medical practitioners read medical journals and drug advertisements to update themselves with the latest drug developments and referred to multiple sources of information to check the efficacy of the drugs. Although the results of the studies by Stryer et al. (2009) , Rohra et al. (2006), Othman, Vitry, and Roughead (2009) match with the results of the present study, where few doctors were influenced by the material distributed by the pharmaceutical companies (the past studies also obtained the same results), and the others (doctors) were of the opinion that the promotional material hardly conveyed any relevant information, and also, many claims made by the advertisements were unjustified and misleading.

The importance attached to CME programs and academic sponsorships in the study obtained a mixed bag of results, with pediatricians being less influenced by the same, which was justified by Steinman and Baron (2007), who were of the opinion that CMEs are an important part of drug promotional tools used by pharmaceutical companies to sell their products, and had an element of commercial biasness. Kalantri (2004) was of the opinion that these programs (rather than being educational programs) degenerate into *melas* (fairs) which educate, entertain, amuse, irritate, and deceive the participants. However, in the case of the present study, senior doctors with 41 and above years of experience believed that these programs are designed to upgrade the knowledge of the participants about the healthcare industry. This finding is supported by a study conducted by Mehta (2000), which stated that not all CMEs become ineffective or untrustworthy by them getting industry sponsorship.

Conclusion

The study concludes that the richer are the insights the marketers have about the prescription patterns of doctors, the better are their chances to influence the same. In this era of cut throat competition, the pharmaceutical marketers are under immense pressure to create the right blend of marketing mix to yield fruitful results. Hence, the present research has highlighted the variables which need to be focused upon by the marketers in pitching their products to the prescriber to avoid any kind of wasteful expenditure on marketing of drugs, which in turn increases the cost of the healthcare industry.

Managerial Implications

The pharmaceutical companies are spending an enormous amount of money on marketing to doctors. It is estimated that on an average, 20-30% of the sales turnover is spent on the promotional and marketing expenditure, which is about two or three times the average expenditure on research and development (Lexchin, 1993). Indian pharmaceutical companies have been reportedly spending as much as 1/6th to 1/5th of their turnover on promotional activities. The industry experts have also identified some specialty areas like oncology, neurology, cardiology, and diabetology, owing to their continued developments, that require a greater amount of promotional effort. Hence, it becomes imperative for the pharmaceutical marketers, who engage in multiple marketing tactics, to know and get the mind share of the doctors who play a pivotal role in influencing their patients' pattern of selecting and administering drugs.

Moreover, to sustain in this cut throat competitive business, a viable strategy is needed. The most important part of this strategy is to study the prescribing behaviour of the doctors. Furthermore, marketing of pharmaceuticals is of crucial importance from an economic and social welfare perspective. The relationship between the drug companies and doctors would be of little interest if they did not have potential consequences for patients, doctors, and the society at large. The present study identifies the impact of promotional tools on doctors' prescribing behaviour with an objective to identify the importance given to each factor by the doctors so that a framework can be provided to the

pharmaceutical managers to curb any wasteful expenditure on the marketing of drugs, thereby increasing the overall quality of the healthcare profession.

Scope for Future Research

Future research studies can examine the impact of promotional tools on the prescribing behaviour of doctors in the rural areas, which can give new insights about this untapped market. The dynamic nature of pharmaceutical marketing and its impact on doctors' prescribing behaviour needs longitudinal enquiry. The study of pharmaceutical marketing in India is at the nascent stage, and there lies immense scope in this field, and further studies on this topic would provide a framework to the pharmaceutical managers to curb any wasteful expenditure on the marketing of drugs; thereby increasing the overall quality of the healthcare profession.

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