REPORT

Interactions and conflicts of interests between prescribers and medical sales representatives (MSRs) regarding prescribing and drug promotion practices in Karachi, Pakistan

Atta Abbas Naqvi[1], Fatima Zehra[2], Nabeel Khan[3], Rizwan Ahmad[4] and Ken McGarry[3]

[1]Department of Pharmacy Practice, College of Clinical Pharmacy, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia
[2]Applied Economics Research Centre (AERC), University of Karachi, Karachi, Pakistan
[3]School of Pharmacy and Pharmaceutical Sciences, Faculty of Health Sciences and Wellbeing, University of Sunderland, Sunderland SR1 3SD, United Kingdom
[4]Natural Products and Alternative Medicines, College of Clinical Pharmacy, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

Abstract: Pharmaceutical drug promotion practices are found to have potentially controversial ethical standards. They may compromise on patient's wellbeing especially when it inordinately affects the clinical care and patient's interests by influencing the prescribing behavior of physicians. There is no proper system to keep a watch on the drug marketing and promotion strategies by the pharmaceuticals in Pakistan. A cross sectional study using a specially designed questionnaire and convenience sampling was conducted in Karachi for 6 months targeting prescribers and medical sales representative (MSRs). A total of 600 MSRs and prescribers consented to participate. 66% of MSRs highlighted that prescribers follow ethical prescribing but only (58%) seek evidence base behind promoted drug. This was contradictory to prescribers' response to same, which was 87%. Only (10%) of prescribers acknowledged demanding expensive gifts such as laptops, ACs, furniture and renovation of the clinic which was about 40% according to MSRs. This study offered intricate insights into the MSR and physicians interactions. It highlighted various aspects of these relationships from both MSRs' and prescribers' point of view. Although majority of the physicians negated the notion of expecting expensive favors from the sales representatives, responses by MSRs suggest that anticipation of gifts and incentives exists on part of the physicians. This has the potential to indulge in unethical promotion and irrational prescribing on part of MSRs and prescribers respectively that may further contribute to untoward patient outcomes such as increased treatment costs and adverse drug reactions.

Keywords: Pharmaceutical, sales, promotion, prescribing, drug, detailing, Pakistan

INTRODUCTION

Pharmaceutical industry like other profit-oriented industries has begun to narrowly focus on an overarching aim of maximizing profits. This profit driven approach is intensifying the aggressive drug marketing and promotional practices in numerous ways. This can be judged from the fact that out of ten large pharmaceutical companies, nine were found to be spending far more on marketing budgets rather than investments in the research and development. (Anderson, 2014) These drug promotional strategies have evolved over years. From doling out freebies such as calendars and pens to more expensive gifts like cars and air conditioners, funding of medical activities such as grants for research projects, continuing medical education and payment for participation in international conferences and seminars, drug makers are known for incentivizing doctors to promote their products. (Schramm *et al.*, 2007)

This is a matter of grave concern globally as many marketing practices are found to have potentially controversial ethical standards and may compromise on patient's wellbeing. This is especially true when it affects the clinical care and patient's interests by influencing the prescribing behavior of physicians. This leads to irrational prescribing and subsequently adverse drug reactions (ADRs). (Wazana, 2000) This may take the form of over prescription, or doctors prescribing new or more expensive branded drugs despite the availability of inexpensive generics. (WHO, 1999), (Zehra *et al*, 2017) However this issue is of importance to developing countries where there are already existing issues such as those of counterfeit medicines and weak drug regulation mechanisms. (Ofori-Asenso *et al.*, 2016; Naqvi *et al.*, 2015). In this context, irrational prescription of drugs

*Corresponding author: e-mail: naqviattaabbas@gmail.com

because of unethical promotional practices adds to the misery of the economically impoverished society.

In context of Pakistan, it is alarming that there is no proper system to keep a watch on the drug marketing and promotion strategies by the pharmaceutical firms which increases the likelihood of adverse drug reactions (ADRs). The role of pharmaceutical drug distributors does not help the cause either. (Naqvi *et al.*, 2015) Several cases have been reported in the national media where they have ceased supplies of essential medicines and drugs to create an artificial drug shortage. This scenario results in more demand creation and reduced supply rendering medicines to be sold at exorbitant prices that further add to untoward patient outcomes. (Mansoor, 2016) Since most of patients in Pakistan bear the burden of out of pocket spending on prescription of drugs, irrational pharmacotherapy further contributes to their burden significantly (Zaidi *et al.*, 2011; Naqvi *et al.*, 2016).

MATERIALS AND METHODS

A cross sectional survey using a specially designed questionnaire was conducted in the city of Karachi for the period of 6 months targeting prescribers and medical sales representative (MSRs). The study methodology adhered to STROBE guidelines.

Target population and exclusion criteria

The target population of the study included prescribers and medical sales representatives (MSRs). All inactive medical sales representatives and those working in non-pharmaceuticals firms were excluded. Non-registered and non-practicing prescribers were also not included in the study.

Sampling procedure and size

The study employed convenient sampling to gather as many responses as possible. The respondents were approached in their free (off peak) time in out-patient clinics (OPD) of tertiary care hospitals in Karachi. The sample size of the respondents was calculated using Raosoft ® (Raosoft, Inc. 6645 NE Windermere Road Seattle, WA 98115 USA) sample size calculator. (Raosoft Inc., 2017) According to Pakistan Medical and Dental Council (PM&DC), there are 47,947 registered practitioners practicing in the city of Karachi. (PM&DC, 2017) This value was assumed as the total population size taking 95% confidence level and 5% alpha error. The sample size for prescribers was found to be 382. The number of medical sales representatives (MSRs) associated with pharmaceuticals in the city of Karachi is not known. Therefore, we assumed a figure of 100,000 as our population for medical sales representatives' sample size calculation and using the same confidence level and alpha margin of error, the sample size for MSRs obtained was 383.

Study instrument

A questionnaire was specially designed for documenting the responses of prescribers and medical sales representatives (MSRs). The questionnaire had two separate versions for both respondents. It also included questions related to the demographics and interaction between prescribers and MSRs occurring during drug promotion and prescribing.

Piloting and validation procedure

The questionnaire was formulated by a team of experts including academic professors, health care professionals including practicing pharmacists and physicians as well as social scientist. The research instrument was subjected to physical and statistical validation. It was piloted in 16 MSRs and 19 prescribers. The average time to complete both versions of questionnaire was 2-2.5 minutes. The research instrument was subjected to reliability analysis and value of Cronbach alpha *(α)* obtained was *0.743* for 19 items which was considered satisfactory. The questionnaire was also subjected to *Kaiser Mayer Olkin (KMO)* measure of sampling adequacy that reported a value of 0.749 and *Bartlett's test for sphericity* reporting significant *p value* of *0.0001*. Furthermore, the research instrument underwent *Exploratory Factor Analysis (EFA)* using *Principle component axis* extraction and *Promax* rotation method with *Kaiser Normalization* that extracted 4 components. Using the above-mentioned observations, the questionnaire was divided into versions A and B for prescribers and medical sales representatives (MSRs) and each version was divided into 2 sections i.e. demographic information and interactions.

Data coding and analysis

The data obtained from the respondents was coded into categorical variables. The variables identified were work experience, work place and clinical affiliation of prescribers that was categorized as demographic information of prescribers. The variables of work experience, type of pharmaceutical firm and product group affiliation were categorized as demographic variables for medical sales representatives (MSRs). The interactions of prescribers with MSRs and vice versa were also categorized as a separate entity. The data was analyzed using Statistical Package for Social Sciences (SPSS Inc., IBM Corporation, New York, USA) version 20. The demographic variables were expressed in frequency counts *(N)* and percentages *(%)*. The study also employed *chi–square* X^2 test for association and *cross tabulation* to check for association between the demographics and interactions. Level of significance *(α)* was determined at *0.05*.

Informed consent and ethical approval

Prior to the initiation of the study, the participants were briefed about the study and its objectives. A verbal consent was sought before handing the questionnaire.

Table 1: Demographic information for MSRs and Prescribers

Demographics	Sample (N)	Percentage (%)	Demographics	Sample (N)	Percentage (%)
Work experience			Work experience		
> 5 years	264	44	> 5 years	121	20.2
5 – 10 years	276	46	5 – 10 years	278	46.3
>10 years	60	10	>10 years	201	33.5
Total	600	100	Total	600	100
Medicines group			Affiliated Clinical domain		
General	306	51	General	331	55.2
Specialty	294	49	Consultant	269	44.8
Total	600	100	Total	600	100
Pharmaceutical Manufacturer			Hospital		
Local/National	408	68	Private Sector	418	69.7
Multinational	192	32	Public Sector	182	30.3
Total	600	100	Total	600	100

Table 2: Interactions between MSRs and prescribers

Interactions	Sample (N)	Percentage (%)	P value	Interactions	Sample(N)	Percentage (%)	P value
MSRs expectation from prescribers				Prescribers' expectations from MSRs			
Prescribers follow ethical practice			0.0001	Good communications and drug detailing skills			*0.0001*
Yes	401	66.8		Yes	486	81	
No	199	33.2		No	114	19	
Total	600	100		Total	600	100	
Knowledge and evidence base sought by prescribers behind promoted/ drug			0.0001	Knowledge and evidence base expected from MSRs regarding promoted/ detailed drug			*0.0001*
Yes	348	58		Yes	522	87	
No	252	42		No	78	13	
Total	600	100		Total	600	100	
Prospects of inducements i.e. gifts, samples and luxury expected by prescribers			0.0001	Prospects of inducements i.e. gifts, samples and luxury asked from MSRs			*0.624*
Yes	378	63		Yes	240	40	
No	222	37		No	360	60	
Total	600	100		Total	600	100	
Continuous Medical Education CME opportunities expected by prescribers			0.0001	Continuous Medical Education CME opportunities expected from MSRs			*0.0001*
Yes	192	32		Yes	486	81	
No	408	68		No	114	19	
Total	600	100		Total	600	100	
Expensive gifts such as laptops, air conditioners and furniture expected by prescribers			0.0001	Expensive gifts such as laptops, air conditioners and furniture expected from MSRs			*0.0001*
Yes	228	38		Yes	66	11	
No	372	62		No	534	89	
Total	600	100		Total	600	100	
Lunch, paid holiday trips to be offered from MSRs expected by prescribers			0.0001	Lunch, paid holiday trips asked by prescribers			*0.0001*
Yes	234	39		Yes	216	36	
No	366	61		No	384	64	
Total	600	100		Total	600	100	
Prescribers indulge in irrational prescribing to avail inducement			0.0001	MSRs ignore patient health for sake of increasing sales			*0.0001*
Yes	99	16.5		Yes	421	70.2	
No	501	83.5		No	179	29.8	
Total	600	100		Total	600	100	

Table 3: Association of demographic variables of medical sales representatives with their personal experience

Demographic variable	Perceptions of MSRs regarding prescribers		P value	Phi
	Observed N (Expected N)			
Work Experience	Prescribers follow ethical practice		0.904	0.018
	Yes	No		
<5 years	178 (176.4)	86 (87.6)		
5 – 10 years	182 (184.5)	94 (91.5)		
>10 years	41 (40.1)	19 (19.9)		
Work Experience	Knowledge and evidence base sought by prescribers behind promoted/ drug		0.002	0.143
<5 years	174 (153.1)	90 (110.9)		
5 – 10 years	144 (160.1)	132 (115.9)		
>10 years	30 (34.8)	30 (25.2)		
Work Experience	Continuous Medical Education CME opportunities expected by prescribers		0.0001	0.240
<5 years	84 (84.5)	180 (179.5)		
5 – 10 years	108 (88.3)	168 (187.7)		
>10 years	0 (19.2)	60 (40.8)		
Work Experience	Expensive gifts such as laptops, air conditioners and furniture expected by prescribers		0.0001	0.420
<5 years	66 (100.3)	198 (163.7)		
5 – 10 years	162 (104.9)	114 (171.1)		
>10 years	0 (22.8)	60 (37.2)		
Work Experience	Lunch, paid holiday trips to be offered from MSRs expected by prescribers		0.0001	0.454
<5 years	60 (103)	204 (161)		
5 – 10 years	114 (107.6)	162 (168.4)		
>10 years	60 (23.4)	0 (36.6)		
Work Experience	Prescribers indulge in irrational prescribing to avail inducement		0.037	0.105
<5 years	45 (43.6)	219 (220.4)		
5 – 10 years	51 (45.5)	225 (230.5)		
>10 years	3 (9.9)	57 (50.1)		
Medicine group	Knowledge and evidence base sought by prescribers behind promoted/ drug		0.017	0.098
General	192 (177.5)	114 (128.5)		
Specialty	156 (170.5)	138 (123.5)		
Medicines group	Expensive gifts such as laptops, air conditioners and furniture expected by prescribers		0.0001	0.304
General	72 (116.3)	234 (189.7)		
Specialty	156 (111.7)	138 (182.3)		
Medicines group	Continuous Medical Education CME opportunities expected by prescribers		0.0001	0.443
General	36 (97.9)	270 (208.1)		
Specialty	156 (94.1)	138 (199.9)		
Medicines group	Lunch, paid holiday trips to be offered from MSRs expected by prescribers		0.0001	0.201
General	90 (119.3)	216 (186.7)		
Specialty	144 (114.7)	150 (179.3)		
Organization	Knowledge and evidence base sought by prescribers behind promoted/ drug		0.0001	0.198
Local/National	264 (236.6)	144 (171.4)		
Multinational	84 (111.4)	108 (80.6)		
Organization	Prospects of inducements i.e. gifts, samples and luxury expected by prescribers		0.002	0.126
Local/National	240 (257)	168 (151)		
Multinational	138 (121)	54 (71)		
Organization	Expensive gifts such as laptops, air conditioners and furniture expected by prescribers		0.0001	0.170
Local/National	132 (155)	276 (253)		
Multinational	96 (73)	96 (119)		
Organization	Continuous Medical Education CME opportunities expected by prescribers		0.0001	0.173
Local/National	108 (130.6)	300 (277.4)		
Multinational	84 (61.4)	108 (130.6)		
Organization	Lunch, paid holiday trips to be offered from MSRs expected by prescribers		0.0001	0.505
Local/National	228 (159.1)	180 (248.9)		
Multinational	6 (74.9)	186 (117.1)		

Table 4: Association of demographic variables of prescribers with interactions

Demographic variable	Perceptions of MSRs regarding prescribers		P value	Phi
	Observed N (Expected N)			
	MSRs ignore patient health for sake of increasing sales		0.0001	0.459
Work Experience	Yes	No		
<5 years	37 (84.9)	84 (36.1)		
5 – 10 years	205 (195.1)	73 (82.9)		
>10 years	179 (141)	22 (60)		
Affiliated Clinical domain	MSRs ignore patient health for sake of increasing sales		0.015	0.101
General	246 (232.3)	85 (98.7)		
Consultant	175 (188.7)	94 (80.3)		

The study was approved by the Institutional Review Board of Clifton Hospital, Karachi 75600, Pakistan. (Ref # 234-1-15)

RESULTS

A total of 600 medical sales representatives and prescribers participated in our study. The demographic information of medical sales representatives revealed that most of them had a work experience of between 5-10 years (N=276, 46%). Regarding the management team of MSRs, the survey incorporated almost equal number of MSRs from general medicines (N=306, 51%) and specialty medicines group (N=294, 49%). More than half of MSRs (N=408, 68%) were associated with local/national pharmaceutical manufacturers. All the findings except medicines group of MSRs were statistically significant i.e. *p* value less than 0.05. The demographic information is presented in table 1.

Furthermore, the data of the interactions between MSRs and prescribers revealed significant findings. From the perspective of MSRs, more than half of the MSRs (N= 401, 66.8%) mentioned that the prescribers whom they interacted with, followed ethical prescribing practice. Additionally, they also revealed that slightly more than half of the prescribers (N=348, 58%) sought evidence base regarding the promoted drug. Regarding the prospects of inducements and luxury more than half of the MSRs (N=378, 63%) revealed that prescribers expected them to offer such provisions and a third (N=228, 38%) and (N=234, 39%) further mentioned that prescribers demanded for expensive gift items such as overseas holidays, air tickets, laptops, air conditioners (AC), furniture and renovation of the clinic respectively. Only a third proportion of the MSRs (N=192, 32%) mentioned that prescribers asked for continuous medical education (CME).

A very small segment of MSRs (N=99, 16.5%) highlighted that prescribers often indulged in irrational prescribing to avail the inducements. All the findings obtained were statistically significant i.e. *p* value less than *0.05*.

From the perspective of prescribers, an overwhelming majority of prescribers (N=486, 81%) mentioned that they only expected effective communication and drug detailing skills from MSRs in order to be convinced for prescribing a promoted drug. Furthermore, similarly majority (N= 522, 87%) highlighted that they sought evidence base from MSRs regarding detailed product. Regarding prospects of inducements i.e. gifts and samples of drugs expected from MSRs, more than half of the prescribers (N =240, 40%) responded negatively with almost 90% of them (N=534, 89%) negating the notion of demanding above mentioned expensive gifts from MSRs. However, a third of prescribers (N=216, 36%) acknowledged that they expected free lunch, paid overseas holidays from MSRs. Regarding CME, majority of the prescribers (N=486, 81%) mentioned that they always try to inquire about such opportunities from MSRs. Lastly, the prescribers were asked if MSRs ignore patient health for the sake of increasing their sales to which majority of the prescribers (N=421, 70.2%) were in agreement. All the findings except for the question of inducement prospects are statistically significant i.e. *p* value *<0.05*. The summary of the interactions between MSRs and prescribers is presented in table 2.

The demographic variables of medical sales representatives (MSRs) and interactions with prescribers were cross tabulated to check for associations using chi square X^2 test for association. There was no statistical significance between work experience of MSRs and prescribers following ethical practice (*p value>0.05).* The variable of work experience of MSRs was statistically significant with prescriber's quest for evidence base behind promoted drug with *p value* less than *0.05* and weak to moderate effect size i.e. *phi* value reported at *0.143*. It was also statistically associated with prescribers' demand for continuous medical education (CME) i.e. *p value <0.05* and moderate effect size i.e. *phi* reported at *0.240*. Furthermore, the work experience of MSRs and prescribers' demand for expensive gifts such as laptops, air conditioners (AC), furniture and renovation of the clinic, had significant association with *p value* less than *0.05* and strong effect size i.e. *phi* reported at *0.420*. Further to this, the variable of prescribers' demand for

free lunch, overseas holidays and air tickets was significantly associated with, the work experience of MSRs with *p value* reported *0.0001* i.e. less than *0.05* and strong effect size i.e. *phi* reported at *0.454*. In addition, there was statistically significant association between work experience, and prescribers indulging in irrational prescribing to avail inducements. (*P value<0.05* and *phi* value reported at *0.105*).

The demographic variable of medicines group of MSRs was also tested for association with the variable of prescribers' quest for evidence base behind promoted drug. It was statistically significant with *p value* less than *0.05* but weak effect size i.e. *phi* reported at 0.017. Similarly, medicines group was statistically associated with prescribers' demand of expensive gifts, *p value* reported at *0.0001* i.e. less than *0.05* with moderate to strong effect size i.e. *phi* value = *0.304*. Furthermore, the association of same demographic variable was also significant *(p value<0.05, phi value at 0.201)* with prescribers' expectation of free lunches, overseas holiday trips and air tickets from MSRs.

Finally, the demographic variable of workplace of MSRs was also tested for association with the above-mentioned variables of interactions. The organization of MSRs was statistically associated *(p value<0.05)* with prescribers demand for evidence base regarding promoted drug having a weak to moderate effect *(phi value at 0.198)*; prospects of inducements such as gifts and samples of drugs *(p value<0.05, phi value at 0.126)*; expensive gifts *(p value<0.05, phi value at 0.17)*; free lunches, overseas holiday trips *(p value<0.05, phi value 0.505)* and CME *(p value<0.05, phi value 0.173)*. The summary of association of MSRs' demographic variables and their interactions with prescribers is tabulated in table 3.

Similarly, the demographic variables of prescribers were also tested for statistically significant association with their interactions with MSRs. The results revealed that the work experience of prescribers was statistically associated *(p value less than 0.05)* with the variable of, MSRs ignoring patient health for the sake of increasing sales; having a strong effect *(phi value 0.459)*. The demographic variable of affiliated clinical domain of prescriber was also significantly associated with the same with *p value* less than *0.05* and weak to moderate effect size i.e. *phi* value reported at *0.101*. The summary of association of prescribers' demographic variables and their interactions with MSRs is tabulated in table 4.

The data obtained from medical sales representatives (MSRs) and prescribers revealed conflicting findings. According to the MSRs, slightly more than a half of the prescribers (N=348, 58%) sought evidence base behind promoted drug which was more than 80% i.e. (N=522, 87%) according to prescribers' narrative. Similarly, regarding CME opportunities, the figs. were conflicting as MSRs reported only a third of prescribers (N=192, 32%) sought CME opportunities. However according to the prescribers 8/10 (N=486, 81%) sought such opportunities from MSRs. Furthermore, only a tenth proportion of prescribers acknowledged demanding expensive gifts such as laptops, ACs, furniture and renovation of the clinic from MSRs the fig. for which, according to MSRs, was about 40% i.e. (N=234, 39%). The summary of interaction conflicts is presented in fig. 1.

DISCUSSION

This study was conducted in the city of Karachi, Pakistan to document the interaction and conflicts of interests between prescribers and MSRs prevailing in health sector. For this purpose, the medical sales representatives and prescribers were approached with a questionnaire. A total of 600 medical sales representative and prescribers participated in the study. Most of the MSRs had a work experience of between 5 to 10 years. This was quite expected as MSRs after spending a considerable time in the field were promoted to higher managerial positions rendering them in offices rather than in the field. They mostly become part of the project management teams (PMT) supervising the sales force for a medicine group. (Khan N *et al*, 2016), (Ali SI *et al*, 2014)

In this context, the survey incorporated MSRs from general (51%) and specialty (49%) medicine groups as well as from local and multinational pharmaceutical firms. A general medicine group may contain any medicine for an ailment and/or any OTC product that may be prescribed by a general physician. For the specialty medicines, this category may include medicines mostly prescribed by consultants and/or patented products exclusively marketed by a pharmaceutical firm and/or specialized products such as biological, CNS stimulants, etc. (ACP, 2017). The profit margin is more in the latter group. (Anderson R, 2014) Furthermore, the MSRs were approached from both local and multinational pharmaceutical firms. According to the Pakistan Pharmaceutical Manufacturer's Association (PPMA), the pharma sector of the country comprises of around 400 pharmaceutical manufacturing facilities. About 25 firms are managed by multinationals groups while others are locally owned. The market share in terms of products is almost equally distributed between the two. (PPMA, 2016) Hence, it was essential to incorporate the views from MSRs belonging to both pharmaceutical manufacturers.

With regards to the prescribers, most of them (46.3%) appeared to be in practice for around 5-10 years and a very small segment having work experience of more than 10 years. The latter is a significant finding in the Pakistani context as the country has been subjected to the phenomenon of brain drain of skilled professionals

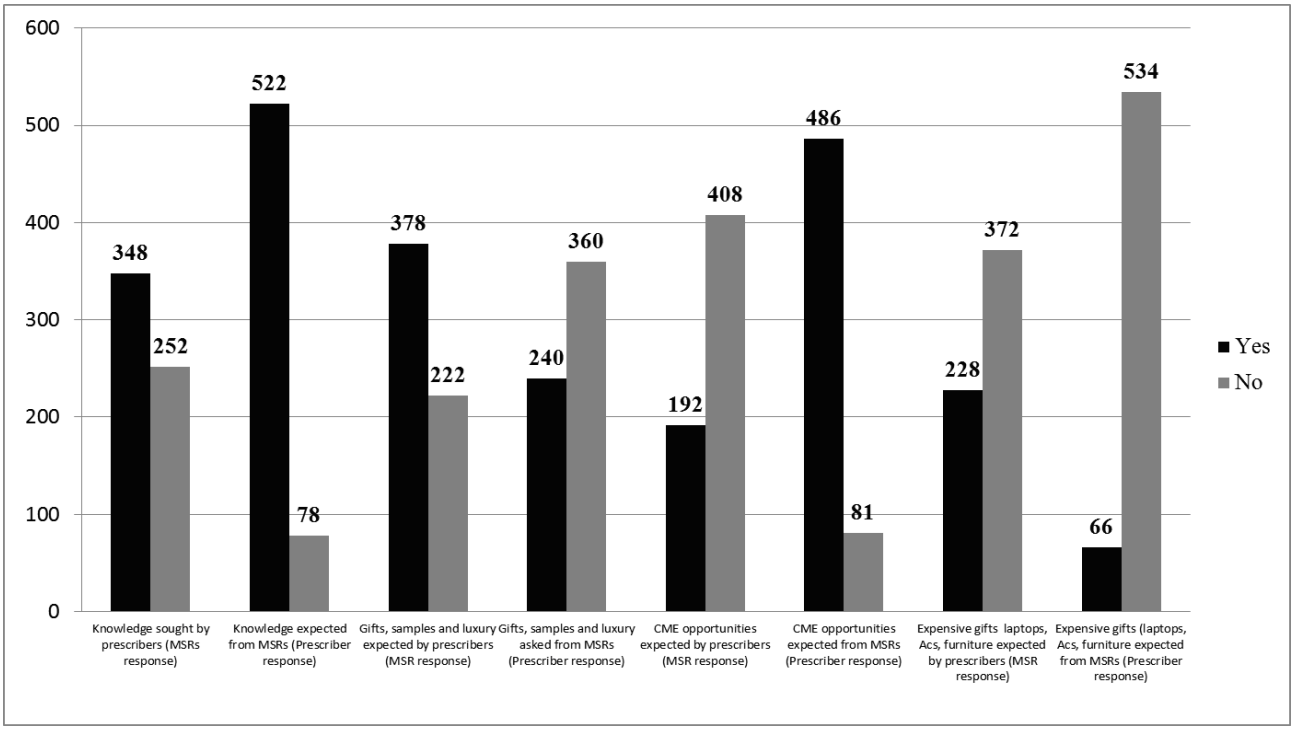

Fig. 1: Self reported interaction conflicts between MSRs and Prescribers

including pharmacists and physicians. (Naqvi AA *et al*, 2017), (Abbas A & Khan N, 2015) As a result, most of the health professionals who had stayed and practiced medicine for some time in Pakistani health care system moved and settled abroad. (Khan N, 2016) The survey incorporated both general practitioners (55.2%) and consultants (44.8%) and most of the prescribers (69.7%) were affiliated with private sector hospitals. Pakistan's health care system is distributed into public and privately owned health care institutions therefore, it was imperative to incorporate views of prescribers from both sectors. (Zaidi S *et al*, 2013), (Zehra F *et al*, 2017).

Regarding the interactions between MSRs and prescribers from MSRs' reflected experience; it was observed that majority (66.8%) of the MSRs experienced that prescribers followed ethical practice and slightly more than half (58%) reported knowledge and evidence base seeking attitude regarding promoted drug being exhibited by prescribers during drug detailing. The latter was also statistically associated with the work experience of the MSRs *(p value <0.05)*. Knowledge and evidence base seeking attitude of prescribers were reported more than expected count against category of MSRs having a work experience of less than 5 years. This can relate to the fact that prescribers are skeptical of sales representatives who are relatively new in their career. As they progress in their career, drug detailing transcends knowledge and evidence base to communication skills and personal contacts. (Khan N *et al*, 2016)

The demographic variable of MSRs' organization was also statistically associated with the knowledge and evidence base seeking attitude of prescribers *(p value <0.05).* The observed count for MSRs belonging to local/national pharmaceutical firms was reported higher than expected which implies that prescribers seek knowledge and evidence base behind promoted drug more aggressively from MSRs working for local firms as compared to the multinationals. One of the reasons supporting this concept is the emphasis of multinationals on quality of medications. Products from multinational pharmaceuticals are appropriately marketed to the prescribers and as a result; they are inclined towards prescribing a brand over generic. (Zehra F *et al*, 2017) Studies have reported the negative perceptions regarding generic prescribing among health professionals in Pakistan. Thus, MSRs associated with a local pharmaceutical firm often find themselves being inquired exhaustively by prescribers. (Zehra F *et al*, 2017), (Jamshed SQ *et al*, 2011)

Furthermore, most of the sales representatives (63%) reported prescribers exploring the prospects of gifts and drugs samples as they reflected on to their experience with more than a third proportion (38%) mentioning the demands of expensive gifts such as laptops, ACs, furniture and renovation of the clinic. Moreover, a similar proportion of MSRs (39%) also shared their account of interaction with prescribers expecting free lunches, paid holidays trips, air tickets to be offered. The variables of

gifts were statistically associated *(p value <0.05)* with the work experience, medicines group and organization of MSRs. The cross tabulated data revealed that the observed counts for MSRs with 5-10 years experience exceed the expected counts. This can be related with the previous association of experience with knowledge seeking. As the MSRs progress in their career, their relationship with prescribers develops on communication and mutual trusts that sometimes lead to both parties exploring potential areas for personal gains. Sale is a target-oriented job, the sales representatives may request a prescriber to prescribe their brand to facilitate monthly sales target completion and in due course, may offer some inducement for doing so. At the same time the prescriber may demand the same in return for the favor. With regards to medicines group, observed counts exceeded expected counts for specialty group. It is evident that specialty group accounts for medicines having more margins of profits hence, this medicines group is prone to be exposed to inducements demand. The MSRs were further enquired regarding the opportunities for continuous medical education (CME) expected by prescribers to which only a third of MSRs (32%) mentioned prescribers seeking such prospects during their meetings. This was also significantly associated with experience *(p value <0.05)* and can be related in the same way as for prospects of inducements. The former was also associated with the medicines group and organization of MSRs *(p value <0.05)*. It is quite common since the pharmaceuticals target consultants for most part to promote their specialty medicines and in that context, it is justified to offer CME opportunities to the prescribers to empower them in knowledge. However, an overwhelming majority (83.5%) negated the notion of prescribers indulging in irrational prescribing to avail inducements during their interactions.

With regards to the prescribers, the work experience and their clinical domain was statistically associated (*p value* less than *0.05*) with their reflection of MSRs ignoring patient health for sake of increasing the sales. It appeared that prescribers practicing between 5 to 10 years and those having an experience of more than 10 years were of the view that MSRs ignore patient health for sake of increasing the sales more than expected. Furthermore, general practitioners who had the same view, were observed to be more in number than expected.

One of the notable features of the study was the conflict of interests observed between the two respondent groups regarding drug detailing and prescribing practices. There were conflicting results obtained as only a half segment of MSRs (58%) highlighted knowledge and evidence base seeking attitude of prescribers during detailing which was contradictory to the response given by the prescribers. According to the prescribers, an overwhelming majority (81%) sought knowledge and evidence base behind promoted drug. Similar conflicts were observed in response of both groups to the notion of expensive gifts such as laptops, ACs, furniture and clinic renovation as an inducement for drug prescribing. According to the MSRs, more than a third proportion of prescribers expected MSRs to offer such inducements however, when response to the same was sought from prescribers, only a tenth proportion acknowledged expecting such inducements from MSRs. Moreover, the trend was the same for CME opportunities. According to MSRs, only a third of prescribers appeared interested in benefiting from CME opportunities offered by MSRs. Contrastingly, an overwhelming majority of prescribers highlighted their interest in benefiting from such opportunities offered by MSRs.

CONCLUSION

This study offered intricate insights into the MSR and physicians interactions. It highlighted various aspects of these relationships from both MSR and physician point of views. Although majority of the physicians negated the notion of expecting expensive favors from the sales representatives, responses by the MSRs suggest that anticipation of gifts and incentives exists on part of the physicians. This calls for establishment of ethical guidelines for drug promotion in the country. Institutional intervention is also required so that a proper mechanism is put in place to assess various promotional activities by the pharmaceutical companies. This has potential to curb unethical prescribing that may reduce the likelihood suffering from adverse drug reactions (ADRs) as well as decrease financial health burden thereby improving patients' treatment outcomes and health related quality of life.

REFERENCES

Abbas A, Khan N (2015). The brain drain of qualified clinical pharmacy in Pakistan's pharmacy education: a retrospective study. *Pharmaceut Reg Affairs*, **4**: 130.

Ali SI, Abbas A, Tanwir S, Sabah A, Rizvi SA, Adnan S, Tufail MA, Farooq OM, Usman M, Ahmed M, Sheikh FM, Abbasi Z (2014). Evaluation of knowledge of pharmacist and non-pharmacist medical sales representatives (MSRs) in pharmaceutical drug promotion: a comparative study. *British Biomedical Bulletin*, **2**(1): 40-48.

American College of Physicians (ACP). About Internal Medicine. https://www.acponline.org/about-acp/about-internal-medicine. (Accessed on April 20, 2017).

Anderson R (2014). Pharmaceutical industry gets high on fat profits. BBC News. http://www.bbc.com/news/business-28212223. (Accessed on April 20, 2017).

World Health Organization (WHO) (1999). Effective Drug Regulation: What can countries do? http://apps.who.int/iris/bitstream/10665/65025/1/WHO

_HTP_EDM_MAC(11)_99.6.pdf. (Accessed on April 21, 2017).

Jamshed SQ, Ahmad Hassali MA, Mohamed Ibrahim MI and Babar Zaheer UD (2011). Knowledge attitude and perception of dispensing doctors regarding generic medicines in Karachi, Pakistan: A qualitative study. *J. Pak. Med. Assoc.*, **61**(1): 80-83.

Khan N, Naqvi AA,Ahmad R, Ahmed FR, McGarry K, Fazlani RY and Ahsan M (2016). Perceptions and Attitudes of Medical Sales Representatives (MSRs) and Prescribers Regarding Pharmaceutical Sales Promotion and Prescribing Practices in Pakistan. *J. Young Pharm.*, **8**(3): 244-250.

Mansoor H (2016). The politics of medicine pricing. Dawn. https://www.dawn.com/news/1289752. (Accessed on April 21, 2017).

Naqvi AA, Ahmed FR, Rizvi M, Khan MH, Kachela B (2015). Evaluation of drug dispensing practices by pharmaceutical drug retailers in Pakistan. *World Journal of Pharmaceutical Research*, **4**(2): 189-197.

Naqvi AA, Naqvi SBS, Zehra F, Ahmad R, Ahmad N. (2016). The cost of poliomyelitis: Lack of cost-of-illness studies on poliomyelitis rehabilitation in Pakistan. *Arch Pharm Pract*, **7**(4): 182.

Naqvi AA, Zehra F, Shyum Naqvi SB, Ahmad R and Ahmad N (2017). Migration Trends of Pharmacy Students of Pakistan: A Study Investigating the Factors Behind Brain Drain of Pharmacy Professionals from Pakistan. *Indian Journal of Pharmaceutical Education and Research*, **51**(2): 192-206.

Ofori-Asenso R and Agyeman AA (2016). Irrational Use of Medicines-A Summary of Key Concepts. *Pharmacy*, **4**(4): 35.

Pakistan Medical and Dental Council (PM&DC) (2017). http://www.pmdc.org.pk/PractitionerSearch/tabid/177/Default.aspx. (Accessed on April 30, 2017).

Pakistan Pharmaceutical Manufacturer's Association (PPMA) (2016). Pakistan Pharmaceutical Industry. http://www.ppma.org.pk/Profile/pakistan-pharmaceutical-industry/. (Accessed on April 30, 2017).

Raosoft, Inc (2017). Sample size calculator. http://www.raosoft.com/samplesize.html. (Accessed on May 1, 2017)

Schramm J, Andersen M, Vach K, Kragstrup J,Kampmann JP and Søndergaard J (2007). Promotional methods used by representatives of drug companies: A prospective survey in general practice. *Scand J. Prim. Health Care.*, **25**(2): 93-97.

Wazana A (2000). Physicians and the pharmaceutical industry: Is a gift ever just a gift? *JAMA.*, **283**(3): 373-80.

Zaidi S, Bigdeli M, Aleem N, Rashidian A (2013). Access to Essential Medicines in Pakistan: Policy and Health Systems Research Concerns. *PLoS ONE.*, **8**(5): e63515.

Zaidi S, Nishtar NA (2011). Access to Medicines: Identifying Policy Concerns and Policy Research Questions, Research Report, Aga Khan University Karachi and the Alliance for Health Policy & Systems Research - *WHO*, Geneva.

Zehra F, Naqvi AA, Tasneem S, Ahmad R, Ahmad N, Shamsi AZ, Asghar NA and Khan GU (2017). Brand versus generic dispensing trend for ciprofloxacin 500 mg, levofloxacin 500 mg and moxifloxacin 400mg oral dosage forms among pharmacies of Karachi, Pakistan. *Int. J. Pharma Investig*, **7**(2): 70-76.