ABSTRACT

Objective: The interaction between physicians and the pharmaceutical industry influences physicians’ attitudes and prescribing behaviors. In this regard, physicians’ attitudes towards pharmaceutical promotions and their trustworthiness towards pharmaceutical representatives’ information on new drugs were explored in this study.

Methods: The present study was an analysis of a cross-sectional survey of 183 physicians with different job and education hierarchies and from various clinical settings in Erbil-Iraqi Kurdistan in July 2018. The physicians were invited from the public sector, comprising a general, emergency, and pediatric hospital. The information was collected through an anonymous, self-administered questionnaire. The questionnaire included exposure to marketing activities, motivations to contact pharmaceutical representatives, attitudes towards promotional activities, and trustworthiness of the pharmaceutical representatives’ information on new drugs.

Results: Majority of the physicians reported that the information provided by pharmaceutical representatives assisted them in staying up to date or learning about new products (76.5%), but 55.7% of them trusted their medical information. In addition, most of them reported that pharmaceutical representatives prioritized the promotion of their products over patients’ benefits (70.5%). They reported that receiving promotional material and participating in promotional activities have an effect on doctors’ behaviors to prescribe a new drug, including promotional materials (55.2%); medical samples (67.8%); funding of registration costs to conferences (60.1%); participation in industry-funded researches (69.9%); and continuing medical education (69.4%). Receiving promotional materials and participation in promotional activities were considered to be ethical.

Conclusions: The present study showed that most of the physicians reported the role of promotional materials and activities on physicians’ behaviors to prescribe new drugs.

Key Words: Trustworthiness, Drug prescription, The pharmaceutical industry

1. INTRODUCTION

Selecting a medicine for a patient is the main responsibility for physicians. Whether doctors decide to accept a new drug is often unclear. Several of new medications are not therapeutic innovations, but merely they are expansions to similar available medicines.[3] Several factors have been mentioned in the literature to have an impact on a new drug prescribing by physicians. Awareness is one of the factors...
that impacts new drug prescribing. Awareness is the first stage in the decision-making process. The pharmaceutical industries through their representatives are the main and most important sources of information of new drugs for the doctors.\

Apart from the company representatives, non-peer-reviewed literature and the mass media could be other sources of information. Peer-reviewed literature or independent drug information sources are not significant to the doctors at this stage. The pharmaceutical industry disseminates the information through advertising, mailshots, promotional activities and materials, pharmaceutical representatives, and pharmaceutical industry-sponsored meetings. Other sources of pharmaceutical information are hospital doctors, colleagues, pharmacists, health authority, conferences, medical peer-reviewed journals, therapeutic literature, newsletters, media, and drug bulletins.

Some of other factors that were mentioned to have an impact on new drug prescriptions include current therapy failure and adverse effects of alternatives, perceived economic or therapeutic benefits of new drugs over alternatives, or the treatment with first-choice drugs in a patient had been suboptimal.

The link between the pharmaceutical industry and drug prescribing by doctors has been confirmed in the literature. Whether the information given is considered trustworthy by doctors or not is questionable. The trust in the interactions between doctors and the pharmaceutical sector is critical to a sustainable pharmaceutical system.

In this regard, the physicians’ attitudes towards pharmaceutical promotions and their trustworthiness towards pharmaceutical representatives’ information on new drugs were explored in the study. The authors expected that many of doctors do not trust the medical information provided by the representatives of pharmaceutical industries.

2. METHODS

2.1 Study design and sampling methods

The present study was an assessment of attitudes of a sample population of physicians in different areas of specialization and job hierarchies, towards new drug prescription in Iraqi Kurdistan in July 2018. The doctors were invited from three public hospitals, comprising a general, emergency, and pediatric. The hospitals with multi-specialty tasks and clinical settings were selected to capture the attitudes of doctors with different medical specialties.

Resident doctors of the three mentioned hospitals met eligibility criteria – their gender, age, job hierarchies and job rotation notwithstanding. A probability convenience sampling technique was used to select the participants. Since the doctors in the selected hospitals run shifts, we did not carry out random sampling in this study based on the hours of work. Areas of the question for the present study were the new drugs released between 2010 and 2018 in Iraqi Kurdistan.

2.2 Data collection and measurement

The verbal consent was sought from each participant and an anonymous paper-based copy of the self-administered questionnaire was presented to each doctor. The questionnaire had two sections of information. The first section had some items on general information and included age, gender, job hierarchies (categorized as junior house officer, senior house officer, general practitioner, specialist, and consultant), working sectors (public, private, and both sectors), working shift (categorized as morning [8 a.m.-2 p.m.], evening [2 p.m.-8 p.m.], night [8 p.m.-8 a.m.], and multi-shift). The shift was categorized in line with the local health system.

The second section of the questionnaire was about the agreement of the doctors with factors that could affect the prescription of a new drug. The information was recorded in a self-administered structured questionnaire. The questionnaire assessed the views of doctors on statements could impact on new drug prescription (5 items). The information included: 1) the information provided by pharmaceutical representatives helps me stay up to date or learn about new pharmaceutical products; 2) the information provided by pharmaceutical representatives about new drugs is trustworthy; 3) pharmaceutical representatives prioritize the promotion of their products over patients’ benefit; 4) receiving gifts or meals affects my prescribing of a new drug; and 5) receiving gifts or meals affects my colleagues’ prescribing of a new drug.

Physicians were asked if they felt that industry’s promotional activities affected prescribing behaviour and if the activities were ethical. Physicians’ exposure to industry’s promotional activities for new drugs (8 items) and included the following items; receiving these materials or participating in these activities affects doctors’ prescribing behavior for a new drug: 1) Promotional materials (food, pens, etc.), 2) medical samples, 3) gifts not related to medical practice valued at < US$50, 4) gifts not related to medical practice valued at > US$50, 5) cocktails, lunch or dinner, 6) funding of registration costs to conferences, 7) continuing medical education, and 8) participation in industry-funded research (clinical trials, case-control studies, cross-sectional studies etc.). The responses of the doctors on the ethics of receiving above promotional activities had eight items. The responses
of the doctors were presented as a binary variable: agree or disagree.

2.3 Statistical analysis
The age of the participants was displayed as the mean and standard deviation. Responses of the doctors towards promotional activities and ethics were determined in frequencies and percentages. The physicians’ attitudes towards promotional materials and activities were determined in frequency and percentage. The association of the physicians’ trustworthiness towards pharmaceutical representatives’ information with promotional material and activities was assessed using Pearson Chi-Square. The $p$-value of less than .05 was considered to reject the null hypothesis. Analyses were carried out using SPSS Version 25.00. The sample size was estimated using Slovyn’s formula as follows: $n = N \left(1 + Ne^2\right)$, where $n$ is sample size, $N$ (target population), and $e$ (error tolerance). Slovin’s formula is used to find out what sample of a population of 1,000 people we need to take for a survey. The Slovyn’s formula was used to estimate the sample size, since the number of target population was clear.

The total number of doctors in the three hospitals who were eligible for the study was 220. The total sample size required for the study was 142. Of the number, 186 accepted to participate (84.54% response rate) and the remaining 37 doctors refused. The main reasons to refuse participation were therapeutic procedures and working pressure. Of the 186 doctors included in the study, 3 of them were excluded owing to the high percentage of missing information (more than 20% missing data). Finally, 183 doctors (83.18%) were included in the analysis with no missing data.

2.4 Ethical approval
The authors obtained the ethical clearance from the Scientific Research Division; Directorate of Planning, General Directorate of Health – Erbil registered as 638 in 14th January 2018. The objectives of the study were explained to the physicians, and verbal consent was sought from all participants prior to data collection.

3. Results
The mean age of the participants was 41.48 ($SD: 11.26$ years). Of the total 183 doctors who were included in the study, more than half of them were males (53.6%). Their qualifications were senior house officers (35.5%), followed by specialists (25.7%). Most of them worked in both public and private sectors (57.9%) and worked in multi-shift (49.7%) and morning shift (36.1%), see Table 1.

Majority of the doctors reported that the information provided by pharmaceutical representatives helped them stay up to date or learn about new pharmaceutical products (76.5%). However, 55.7% of them mentioned that the information of the pharmaceutical representatives was trustworthy. Also, majority of the doctors reported that the pharmaceutical representatives prioritized the promotion of their products over patients’ benefit (70.5%). Majority of doctors agreed that receiving gifts does affect their colleagues prescribing habits (57.4%) but did not affect their own use of new drugs (35.0%), see Table 2.

### Table 1. General information of physicians

| Doctors’ General Information (n = 183) | Frequency Distribution |
|--------------------------------------|------------------------|
| Age (range: 25-63 years)             | 41.48 11.26            |
| Gender                               |                        |
| Male                                 | 98 53.6                |
| Female                               | 85 46.4                |
| Job Hierarchies                      |                        |
| Junior House Officer                 | 39 21.3                |
| Senior House Officer                 | 65 35.5                |
| General Practitioner                 | 26 14.2                |
| Specialist                           | 47 25.7                |
| Consultant                           | 6 3.3                  |
| Working Sector                       |                        |
| Public                               | 68 37.2                |
| Private                              | 9 4.9                  |
| Both Sectors                         | 106 57.9               |
| Working Shift                        |                        |
| Morning (8 a.m.-2 p.m.)              | 66 36.1                |
| Evening (2 p.m.-8 p.m.)              | 17 9.3                 |
| Night (8 p.m.-8 a.m.)                | 9 4.9                  |
| Multi-shift                          | 91 49.7                |

Note. The numbers are in frequency and percentage except for mean and standard deviation for age

Participants reported that the following promotional activities had an impact on their prescription of new drugs: promotional materials (55.2%); medical samples (67.8%); funding of registration costs to conferences (60.1%), continuing medical education (69.4%), and participation in industry-funded research (69.9%). But, less than half of the participants reported that the following promotions have an impact on new drug prescription, gifts not related to medical practice valued at < US$50 (44.8%) and < US$50 (39.9%); and cocktails, lunch or dinner (38.8%).

Similarly, majority of the doctors considered promotional activities as ethical tasks, but not receiving non-medical gifts (60.7% and 74.3%) and entertainment (56.8%), see Table 2.
### Table 2. Physicians agreement with the promotional statements

| Statements (New Drugs Only) | Agree F (%) | Disagree F (%) |
|-----------------------------|-------------|----------------|
| The information provided by pharmaceutical representatives helps me stay up to date or learn about new pharmaceutical products | 140 (76.5) | 43 (23.5) |
| The information provided by pharmaceutical representatives about new drugs is trustworthy | 102 (55.7) | 81 (44.3) |
| Pharmaceutical representatives prioritize the promotion of their products over patients’ benefit | 129 (70.5) | 54 (29.5) |
| Receiving gifts or meals affects my prescribing for a new drug | 64 (35.0) | 119 (65.0) |
| Receiving gifts or meals affects my colleagues’ prescribing for a new drug | 105 (57.4) | 78 (42.6) |
| Receiving these materials or participating in these activities affects doctors’ prescribing behavior for a new drug | 101 (55.2) | 82 (44.8) |
| Promotional materials (food, pens, etc.) | 104 (56.8) | 79 (43.2) |
| Medical samples | 124 (67.8) | 59 (32.2) |
| Gifts not related to medical practice valued at < US$50 | 82 (44.8) | 101 (55.2) |
| Gifts not related to medical practice valued at > US$50 | 73 (39.9) | 110 (60.1) |
| Cocktails, lunches or dinners | 71 (38.8) | 112 (61.2) |
| Funding of registration costs to conferences | 110 (60.1) | 73 (39.9) |
| Continuing medical education | 127 (69.4) | 56 (30.6) |
| Participation in industry-funded research (clinical trials, case-control studies, cross-sectional studies etc.) | 128 (69.9) | 55 (30.1) |

**Note.** The bold numbers show the higher percentages.

### Table 3. Association of trustworthiness of physicians towards pharmaceutical representatives’ information with receiving promotional materials

| Receiving Physicians Information (n = 183) | Trustworthy (n = 46) | Non-trustworthy (n = 37) | p-value (Two-Sided) |
|------------------------------------------|----------------------|-------------------------|---------------------|
| Promotional materials (food, pens, etc.) | 59 (57.8) | 42 (51.9) | .418 |
| Medical samples | 69 (67.6) | 55 (67.9) | .971 |
| Gifts not related to medical practice valued at < US$50 | 42 (41.2) | 40 (49.4) | .268 |
| Gifts not related to medical practice valued at > US$50 | 41 (40.2) | 32 (39.5) | .925 |
| Cocktails, lunches or dinners | 40 (39.2) | 31 (38.3) | .896 |
| Funding of registration costs to conferences | 62 (60.8) | 48 (59.3) | .834 |
| Continuing medical education | 72 (70.6) | 55 (67.9) | .695 |
| Participation in industry-funded research (clinical trials, case-control studies, cross-sectional studies etc.) | 74 (72.5) | 54 (66.7) | .389 |

**Note.** Pearson Chi-squared test was performed for statistical analyses.
The influence of promotional materials with trust of the physicians towards the pharmaceutical representatives’ information did not show any significant difference (see Table 3).

4. Discussion

The present study showed that the majority of the physicians agree that the information provide by pharmaceutical representatives help them stay up to date or learn about new pharmaceutical products. However, the same percentage does not believe that the pharmaceutical information of the representatives is trustworthy. The doctors agree that pharmaceutical representatives prioritize the promotion of their products over patients’ benefits. The interaction of pharmaceutical representatives with physicians is a regular feature of the routine practice of doctors throughout the world. The studies report that a close relationship exists between physicians and the pharmaceutical industry in the studied populations.\[8,9\]

The studies conducted in other parts of the globe reported that the information presented by pharmaceutical representatives is “not trustworthy” (75%) and the pharmaceutical representatives “prioritize the promotion of their products over patients’ benefit” (80.3%).\[7\] The level of trust among doctors varies with geographical areas. However, it must be taken into account that those physicians who rely on pharmaceutical industry for their main source of information could prescribe medicine in a biased way. In addition, they may expose their patients to sub-optimal treatments and unnecessary costs on the patients. Lack of trust in doctors and pharmaceutical industry has some implications: There may be a decline of faith in the efficacy of therapy and patients may be encouraged to engage in self-diagnosis and self-medication.\[10\]

Therefore, it is imperative to raise transparency and improve the ethical guidelines surrounding the physician—pharmaceutical industry relationship in Iraqi Kurdistan.

The influence of the pharmaceutical industry on physicians’ behaviors to prescribe drugs has been reported in the literature.\[11–13\] Acceptance of gifts and promotional materials from the representatives of a pharmaceutical company has been shown to have a significant impact on the prescription of drugs by physicians. It is likely to contribute to the irrational prescription of company drugs.\[13\] The main concern of the authors is that the majority of the doctors reported that the pharmaceutical industries prioritize their promotion over the patients’ benefits, but they considered the majority of promotional materials as ethical behavior. This concern is doubled when it is reflected in physicians across different parts of the world.\[14,15\]

We suggest the intervention in the way of policy implementation and education on the negative consequences of these relationships between the pharmaceutical industry and physicians at different levels. It must be considered that gifts, medical samples, or industry-funded trips increase the prices of drugs. Hence, considering the pharmaceutical companies’ investment of considerable amounts of financial resources in marketing activities, it would be a matter of public interest to stop receiving promotional materials, because physicians may be unable to make a difference between promotional information and scientific evidence.\[16,17\]

The studies observed that those doctors who accept the promotional materials had a positive attitude towards the information given by pharmaceutical representatives\[3,18,19\]. We did not find a link between the physicians who considered the pharmaceutical representatives’ information as trustworthy/not trustworthy with receiving promotional materials and activities in this study. The authors did not find the relevant information about drug prescription in this region.

Prosser et al.\[1\] reported that GPs follow the opinions of their colleagues, particularly hospital consultants. Several of GPs are reluctant to prescribe new drugs until their credible consultants advise them. The personal experiment is important for continuous use of new drugs. It depends on the primary outcomes of a new drug. The successful outcome reinforces repetition of the drug prescription. This finding was reflected in the sample size of this study, as more than sixty percent of junior house officers and GPs do not trust pharmaceutical representatives’ information (data not shown). The new drug prescription is frequently affected by the drug experience,\[20\] personal and professional experience in clinical practice.\[21\]

The main issue to provide reliable new drugs is to find a trusted pharmaceutical products source or information source. The support of Primary Care Trust prescribing advisers could be an important strategy to make a facility and new drug appraisal.\[22\] New drugs are prescribed by doctors after their hospital colleagues accept the drugs.\[20,23\] GPs use the consultants’ advice to make a decision on a new drug prescription and reduce the uncertainty when they face a complicated situation.

4.1 Implications

The authors recommend that factors contributing to lack of trust on the pharmaceutical representatives’ information be examined in future researches. The activities that change the physicians’ clinical behaviors are ethically not acceptable. The physicians’ interaction with pharmaceutical representatives may put the patients’ trust at risk. The trust of the majority of patients to their doctors will decrease if they
know that their doctors receive the promotional materials from the pharmaceutical sellers.\textsuperscript{[24]}

The previous findings support the effectiveness of implementing policies and educational programs aimed at increasing doctors’ awareness and improving the quality of information by company reps to doctors’ attitudes toward representatives of pharmaceutical companies.\textsuperscript{[25–28]}

4.2 Strength and limitations of the study

The strength of the current investigation originates from the gap of literature on pharmaceutical promotion and trustworthiness of the pharmaceutical representatives’ information. However, the present study has some shortcomings. The doctors who participated in this study may underreport their interactions with the pharmaceutical industry to present themselves in a better light (social desirability bias). The authors tried to reduce this kind of bias by using an anonymous questionnaire. Also, the study was conducted in one geographic area (three hospitals in Erbil-Iraqi Kurdistan) and may not generalize to other settings across the country or globe. Also, sampling bias is possible, as we were unable to obtain a random sample from the target population.

5. Conclusions

The present study suggests that physicians have a frequent encounter with the pharmaceutical industry. They agreed that the information provided by pharmaceutical representatives assisted them in staying up to date or learn about new products, but a considerable percentage did not believe that this information is trustworthy. The physicians agree that pharmaceutical promotions and activities have a role in a new drug prescription.

Conflicts of Interest Disclosure

The authors declare they have no conflicts of interest.

References

[1] Prosser H, Almond S, Walley T. Influences on GPs’ decision to prescribe new drugs—the importance of who says what. Family Practice. 2003; 20(1): 61-68. PMid: 12509373. https://doi.org/10.1093/fampra/20.1.61

[2] Klemenc-Ketis Z, Kersnik J. Which Pharmaceutical Sales Representatives’ Features do Slovenian Family Physicians Value? Acta Informatica Medica. 2013; 21(4): 257. PMid: 24554801. https://doi.org/10.5455/aim.2013.21.257-260

[3] Lieb K, Scheurich A. Contact between doctors and the pharmaceutical industry, their perceptions, and the effects on prescribing habits. PLoS One. 2014; 9(10): e110130. PMid: 25330392. https://doi.org/10.1371/journal.pone.0110130

[4] Kamal S, Holmberg C, Russell J, et al. Perceptions and attitudes of Egyptian health professionals and policy-makers towards pharmaceutical sales representatives and other promotional activities. PLoS One. 2015; 10(10): e0140457. PMid: 26473484. https://doi.org/10.1371/journal.pone.0140457

[5] Zipkin DA, Steinman MA. Interactions between pharmaceutical representatives and doctors in training: a thematic review. Journal of General Internal Medicine. 2005; 20(8): 777-786. PMid: 16050893. https://doi.org/10.1111/j.1525-1497.2005.0134.x

[6] Hernandez F, van Thiel G, Mantel-Teeuwisse A, et al. Understanding trust in pharmaceutical companies, regulatory authorities and doctors. Trust in the Pharmaceutical Sector. 2015; 19. PMid: 24295641. https://doi.org/10.1016/j.trusps.2013.11.019

[7] De Ferrari A, Gentille C, Davalos L, et al. Attitudes and relationship between physicians and the pharmaceutical industry in a public general hospital in Lima, Peru. PLoS One. 2014; 9(6): e100114. PMid: 24978481. https://doi.org/10.1371/journal.pone.0100114

[8] Alhasayeer M, Kowalski S. A survey of pharmaceutical company representative interactions with doctors in Libya. Libyan Journal of Medicine. 2012; 7(1): 18556. PMid: 23002397. https://doi.org/10.3402/ljm.v7i10.18556

[9] Montastruc F, Moulis G, Paladin A, et al. Interactions between medical residents and drug companies: a national survey after the Mediator® affair. PLoS One. 2014; 9(10): e104828. PMid: 25279555. https://doi.org/10.1371/journal.pone.0104828

[10] Makowska M. Polish physicians’ cooperation with the pharmaceutical industry and its potential impact on public health. PLoS One. 2017; 12(9): e0184862. PMid: 28926592. https://doi.org/10.1371/journal.pone.0184862

[11] Hodges B. Interactions with the pharmaceutical industry: experiences and attitudes of psychiatry residents, interns and clerks. CMAJ: Canadian Medical Association Journal. 1995; 153(5): 553.

[12] Riese F, Guloksuz S, Roventa C, et al. Pharmaceutical industry interactions of psychiatric trainees from 20 European countries. European Psychiatry. 2015; 30(2): 284-290. PMid: 25456156. https://doi.org/10.1016/j.eurpsy.2014.09.417

[13] Fickweiler F, Fickweiler W, Urbach E. Interactions between physicians and the pharmaceutical industry generally and sales representatives specifically and their association with physicians’ attitudes and prescribing habits: a systematic review. BMJ Open. 2017; 7(9): e016408. PMid: 28963287. https://doi.org/10.1136/bmjopen-2017-016408

[14] Zaki NM. Pharmacists’ and physicians’ perception and exposure to drug promotion: A Saudi study. Saudi Pharmaceutical Journal. 2014; 22(6): 528-536. PMid: 25561865. https://doi.org/10.1016/j.jsps.2014.02.008

[15] Khan N, Naqvi A, Ahmad R, et al. Perceptions and attitudes of medical sales representatives (MSRs) and prescribers regarding pharmaceutical sales promotion and prescribing practices in Pakistan. Journal of Young Pharmacists. 2016; 8(3): 244-250. https://doi.org/10.5830/jyph.2016.3.13

[16] Ziegler MG, Lew P, Singer BC. The accuracy of drug information from pharmaceutical sales representatives. JAMA. 1995; 273(16): 1296-1298. PMid: 7715044. https://doi.org/10.1001/jama.1995.03520400066047
[17] Othman N, Vitry AI, Roughead EE, et al. Medicines information provided by pharmaceutical representatives: a comparative study in Australia and Malaysia. BMC Public Health. 2010; 10(1): 743. PMID: 21118551. https://doi.org/10.1186/1471-2458-10-743

[18] Lieb K, Brandtönies S. A survey of german physicians in private practice about contacts with pharmaceutical sales representatives. Deutsches Ärzteblatt International. 2010; 107(22): 392. PMID: 20574555. https://doi.org/10.3238/arztebl.2010.0392

[19] Gupta SK, Nayak RP, Sivaranjani R. A study on the interactions of doctors with medical representatives of pharmaceutical companies in a Tertiary Care Teaching Hospital of South India. Journal of Pharmacy & Bioallied Sciences. 2016; 8(1): 47. PMID: 26957869. https://doi.org/10.4103/0975-7406.171695

[20] Jones MI, Greenfield SM, Bradley CP. Prescribing new drugs: qualitative study of influences on consultants and general practitioners. BMJ. 2001; 323(7309): 378. PMID: 11509431. https://doi.org/10.1136/bmj.323.7309.378

[21] Freeman AC, Sweeney K. Why general practitioners do not implement evidence: qualitative study. BMJ. 2001; 323(7321): 1100. PMID: 11701576. https://doi.org/10.1136/bmj.323.7321.1100

[22] O’Brien MA, Rogers S, Jamtvedt G, et al. Educational outreach visits: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews. 2007(4). https://doi.org/10.1002/14651858.CD000409.pub2

[23] Feely J, Chan R, McManus J, et al. The influence of hospital-based prescribers on prescribing in general practice. Pharmacoeconomics. 1999; 16(2): 175-181. PMID: 10539398. https://doi.org/10.2165/00019053-199916020-00006

[24] Green MJ, Masters R, James B, et al. Do gifts from the pharmaceutical industry affect trust in physicians? Family Medicine-Kansas City. 2012; 44(5): 325.

[25] Randall ML, Rosenbaum JR, Rohrbaugh RM, et al. Attitudes and behaviors of psychiatry residents toward pharmaceutical representatives before and after an educational intervention. Academic Psychiatry. 2005; 29(1): 33-39. PMID: 15772402. https://doi.org/10.1176/appi.ap.29.1.33

[26] Chressanthis GA, Khedkar P, Jain N, et al. Can access limits on sales representatives to physicians affect clinical prescription decisions? A study of recent events with diabetes and lipid drugs. The Journal of Clinical Hypertension. 2012; 14(7): 435-446. PMID: 22747616. https://doi.org/10.1111/j.1751-7176.2012.00651.x

[27] Larkin I, Ang D, Avorn J, et al. Restrictions on pharmaceutical detailing reduced off-label prescribing of antidepressants and antipsychotics in children. Health Affairs. 2014; 33(6): 1014-1023. PMID: 24889951. https://doi.org/10.1377/hlthaff.2013.0939

[28] Yeh JS, Austad KE, Franklin JM, et al. Association of medical students’ reports of interactions with the pharmaceutical and medical device industries and medical school policies and characteristics: a cross-sectional study. PLoS Medicine. 2014; 11(10): e1001743. PMID: 25314155. https://doi.org/10.1371/journal.pmed.1001743