



# Ethical Evaluation of Pharmaceutical Marketing in Sana'a City, Yemen

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## ABSTRACT

**Objectives:** To evaluate the ethics of pharmaceutical marketing practices in Sana'a city, Yemen.

**Methods:** A cross-sectional study was conducted among 400 physicians and 50 pharmaceutical companies in the period from March to August 2018. Data about pharmaceutical marketing ethics were collected from physicians and pharmaceutical companies using two types of self-administrated, structured questionnaires. Data were analyzed with appropriate statistical tests using IBM SPSS Statistics, version 21.0.

**Results:** The majority of physicians (60.0%) agreed that medical samples had been used most frequently as a promotional tool for pharmaceutical marketing, followed by gifts (14.0%). More than half of physicians were satisfied with the way of pharmaceutical marketing in Yemen. Personal relationships and medical samples and gifts were the factors affecting their prescriptions, being reported by about a third of physicians each. Meanwhile, most physicians (44.0%) preferred medical conferences and exhibitions as a promotional benefit to be gotten for prescribing the company's products. The majority of physicians (62.0%) agreed that the availability of medical samples affect their prescriptions, and about 28.2% of physicians reported that all medical samples are used by their patients. Most physicians (37.0%) perceived that only 50% of medical representatives respond well to their queries related to marketed drugs, and 41.5% of physicians agreed that global companies are more compliant with ethical marketing. About 60% of the physicians reported not facing unethical promotions, and the majority (54.0%) agreed that unethical pharmaceutical marketing is the responsibility of companies, physicians, and representatives. There was a statistically significant difference in the proportion of drug prescriptions affected by medical representative visits and availability of medical samples on prescription in relation to the work experience of physicians. On the other hand, there was a statistically significant difference in facing an unethical promotion offered by companies for prescribing their products and the attribution of unethical pharmaceutical marketing in relation to the type of medical profession of physicians.

**Conclusions:** Pharmaceutical marketing in Yemen still depends on traditional tools, with the lack of ethical guidelines or codes for pharmaceutical marketing in the country. Work experience and medical profession of physicians can significantly affect pharmaceutical marketing. The spread of unethical marketing is the responsibility of pharmaceutical companies, physicians and medical representatives. Therefore, it is recommended to develop well-defined and updated ethical standards and national guidelines for pharmaceutical marketing by the Ministry of Public Health and Population. Furthermore, official campaigns should be regularly carried out to control and restrict unethical promotion. Further studies on the ethics of pharmaceutical marketing are also recommended. Pharmaceutical companies should continuously train their medical representatives and provide physicians with the latest medical knowledge about new drugs.

**Keywords:** Pharmaceutical marketing, Ethics, IFPMA guidelines, Sana'a

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## 1. Introduction

Pharmaceutical marketing uses different activities for advertising or promoting the sale of medicines. It focuses on raising the awareness of pharmaceutical products among physicians and other health professionals as well as the public. Pharmaceutical marketing practices can harmfully influence both patients and healthcare professionals.<sup>(1,2)</sup> They might help physicians in matching drug therapy with the needs of individual patients by providing them with the required information about medicines. Recently, pharmaceutical marketing is more organized to provide physicians with updated information about affordability, safety, effectiveness, therapeutic uses, adverse effects, and other queries related to drugs. Its essential role is to match effective therapeutic management to individual patient needs.<sup>(3)</sup>

Marketing ethics practically describes marketing policies, strategies and approaches of how to apply ethical standards to marketing choices, performances and institutions. It should be perceived as a subdivision sector of business ethics since marketing is an established process in most organizations.<sup>(4)</sup> Unethical marketing is common malpractice worldwide, being more rising in developing countries. Drug prescribing can be affected by promotional drug practices.<sup>(5)</sup> In pharmaceutical marketing, the primary unethical goal of companies is to grow profits by increasing customer demand. Unethical marketing displays when companies provide physicians with information on drugs that only focus on their benefits but hide their adverse effects, making the physicians and the community unaware of the risks associated with such drugs.<sup>(6)</sup>

Pharmaceutical promotion is regulated by specific codes and guidelines, and in some countries through self-legislations that differ from one country to another. The codes of World Health Organization (WHO) and International Federation of Pharmaceutical Manufacturers and Associations (IFPMA) are the two international guidelines that

have been created to control pharmaceutical marketing and encourage the rational use of drugs.<sup>(7)</sup> The WHO publication code was drawn up in 1988, and it remains the global standard for ethical drug promotion. However, this guideline is outdated due to the appearance of new promotional approaches such as advertising through social media. Therefore, the IFPMA Code of Practice is considered the global guidance for the pharmaceutical industry.<sup>(7)</sup> It was released in 1981 as the first code for any commercial subdivision and was then updated in 2019 to consider recent European and American guidances.<sup>(8,9)</sup>

In developing countries, there are no specific ethical codes for pharmaceutical promotion, and only a few countries have created their codes. Nevertheless, the implementation of such codes is still poor. The Middle East and Africa Code of Promotional Practices in the Pharmaceutical Industry (MEACPP) was confirmed in 2011 in line with the IFPMA Code of Pharmaceutical Marketing Practices. Similarly, the guideline of drug promotion in Jordan was introduced in 2009, and an initiative to create a Code of Ethics in Lebanon was launched in 2016 by the Ministry of Public Health as well as the new promotional code in Saudi Arabia was launched by Saudi Food and Drug Administration (SFDA).<sup>(10,11)</sup> In Pakistan, although there are some legislations on unethical drug promotion practices, the implementation is still lacking.<sup>(12)</sup>

In Yemen, there are no ethical codes or regulations to evaluate the pharmaceutical marketing practice, and no empirical study has been conducted on the ethics of drug promotion practices except for a few studies that have been conducted to evaluate drug marketing tools or physicians' decisions on drug prescription.<sup>(13-18)</sup> Therefore, this study evaluated various ethical and unethical marketing practices used by pharmaceutical companies and physicians in Sana'a city, Yemen.



## 2. Methods

### 2.1. Study design and population

This cross-sectional study included physicians and pharmaceutical companies in Sana'a city from March to August 2018. Physicians were recruited from public hospitals as well as private hospitals or clinics, while supervisors or medical representatives were recruited from the pharmaceutical companies.

Based on a total number of 1732 physicians as per the latest annual health statistics report of 2014,<sup>(19)</sup> a minimum sample size of 315 physicians was calculated using OpenEpi, version 3 ([www.openepi.com/](http://www.openepi.com/)) at a confidence level of 95.0% and precision of 5.0%. To increase the study power, 85 physicians were added, totaling the sample size to 400. On the other hand, 50 supervisors or medical representatives of national and multinational companies working in Sana'a were included in the study.

### 2.2. Data collection

Data about pharmaceutical marketing ethics were collected from physicians and pharmaceutical companies using two types of self-administrated, structured questionnaires. The physicians' questionnaire consisted of two parts. The first part included questions related to their demographic data, including gender, physicians' category, practicing area and the length of work experience. The second part included 18 questions about pharmaceutical marketing ethics in Yemen; each question has only one correct answer.

The pharmaceutical companies' questionnaire included 11 questions related to pharmaceutical marketing ethics in Yemen. The structure and content validity of questionnaires were reviewed by five academics and physicians at the University and Hospital of Science and Technology. The reviewers were asked to evaluate the relevance, clarity, conciseness of the items, and ease of understanding of the questions. Their comments and

feedbacks were considered in the final draft of the questionnaires.

### 2.6. Data analysis

Data were analyzed using IBM SPSS Statistics, version 21.0 (IBM Corp., Armonk, NY, USA). Demographic data and the responses of the participants were expressed as frequency and percentage. The associations between the participants' demographic data and ethical issues were tested using the chi-square test and were considered statistically significant at  $P$ -values  $<0.05$ .

## 3. Results

### 3.1. Characteristics of physicians

Of 400 physicians, the majority were males (60.0%), specialists (41.7%), affiliated with the private health sector (64.7%), and had a work experience of five to ten years (47.5%) (Table 1).

**Table 1.** Characteristics of physicians in Sana'a city, Yemen (2018)\*

Characteristics	n (%)
<b>Gender</b>	
Male	240 (60.0)
Female	160 (40.0)
<b>Medical profession</b>	
Consultant	100 (25.0)
Specialist	167 (41.7)
General practitioner	133 (33.3)
<b>Health sector</b>	
Public	141 (35.3)
Private	259 (64.7)
<b>Work experience (years)</b>	
<5	154 (38.5)
5-10	189 (47.5)
>10	57 (14.0)

\* The total number of physicians included in the study was 400.

### 3.2. Physician responses regarding pharmaceutical marketing practices

Table (2) shows that the majority of physicians (60.0%) agreed that medical samples had been used most frequently as a promotional tool for pharmaceutical marketing. More than half of physicians were satisfied with the way of pharmaceutical marketing in Yemen. Personal relationships and medical samples and gifts were the factors affecting their prescriptions, being reported by



about a third of physicians each. Moreover, personal relationships were the most frequent factor affecting prescribing drugs reported by about a third of physicians. Meanwhile, most physicians (44.0%) preferred medical conferences and exhibitions as a promotional benefit to be gotten for prescribing the company's products.

The majority of physicians (62.0%) agreed that the availability of medical samples affect their prescriptions, and about 28.2% of physicians reported that all medical samples are utilized by their patients. Furthermore, most physicians (37.0%) preferred to prescribe the drugs of original companies, followed by those produced by global ones (31.0%). More than half of physicians preferred to prescribe the brand drugs based on efficacy. Most physicians (30.0%) agreed that half of their prescriptions are possibly influenced by the frequent visits of medical representatives (Table 2).

Before prescribing a new drug, most physicians (32.0%) confirmed the necessity for evaluating its efficacy clinically, and 35.0% preferred pharmaceutical brochures as marketing literature to evaluate the quality of new drugs. On the other hand, most physicians (37.0%) perceived that only 50% of medical representatives respond well to their queries related to marketed drugs compared to only 9.0% of physicians agreeing that all the medical representatives respond well to queries about marketed drugs (Table 2).

Concerning the commitment of companies to ethical marketing, most physicians (41.5%) agreed that global companies are more compliant with ethical marketing. About half of physicians believed that both local and international companies spend a lot of money to market their products. On the other hand, about 60% of the physicians reported not facing unethical promotions offered by pharmaceutical companies, and 54.0% agreed that unethical pharmaceutical marketing is the responsibility of companies, physicians, and representatives (Table 2).

**Table 2.** Physician responses regarding pharmaceutical marketing practices in Sana'a city, Yemen (2018)\*

Variable	n (%)
<b>Promotional tools most frequently used by companies for marketing</b>	
Medical samples	240 (60.0)
Gifts	56 (14.0)
Medical conferences	40 (10.0)
Medical exhibitions	36 (9.0)
Simple promotional tools	28 (7.0)
<b>Satisfaction with the way followed for pharmaceutical marketing</b>	
Yes	216 (54.0)
No	184 (46.0)
<b>The factor most affecting drug prescription</b>	
Personal relationships	128 (32.0)
Medical samples and gifts	124 (31.0)
Ethical attitude	88 (22.0)
Insistence of representatives	20 (5.0)
Others	40 (10.0)
<b>The most important factor affecting drug prescribing</b>	
Personal relationships	136 (34.0)
Manufacturer's reputation	132 (33.0)
Self judgment	132 (33.0)
Modern studies	0 (0.0)
<b>The promotional benefit preferred for prescribing drugs</b>	
Conferences and medical exhibitions	176 (44.0)
Getting lots of free samples	72 (18.0)
Granting private items to clinic and hospital	40 (10.0)
Entertainment tours	28 (7.0)
None of them	48 (12.0)
Others	36 (9.0)
<b>Effect of medical samples availability on drug prescription</b>	
Yes	248 (62.0)
No	152 (38.0)
<b>Proportion of utilization of medical samples by customers</b>	
<25%	52 (13.0)
25%	102 (25.5)
50%	84 (21.0)
75%	49 (12.3)
100%	113 (28.2)
<b>Kind of companies usually preferred for prescription</b>	
Local	68 (17.0)
Arabic	60 (15.0)
Global	124 (31.0)
Original	148 (37.0)
<b>Reasons for preferring to prescribe the original drugs</b>	
Drug price	80 (20.0)
Global company's standards	64 (16.0)
Effectiveness of the original drugs	216 (54.0)
Others	40 (10.0)
<b>The prime advantage of prescribing the original drugs</b>	
Granted privileges	124 (31.0)
Personal relationships	40 (10.0)
Meeting patient's desires	80 (20.0)
Personal satisfaction	96 (24.0)
Others	60 (15.0)
<b>Proportion of prescriptions possibly affected by medical representative visits</b>	
0%	16 (4.0)
25%	88 (22.0)
50%	120 (30.0)
75%	96 (24.0)
100%	80 (20.0)
<b>Proportion of medical representatives with good responses to physicians' queries</b>	
0%	36 (9.0)
25%	104 (26.0)
50%	148 (37.0)
75%	76 (19.0)
100%	36 (9.0)
<b>The main consideration followed for prescribing a new drug</b>	
Matching the new drug with WHO standards	96 (24.0)
New drug's brochures and publications	56 (14.0)





The company's reputation	48	(12.0)
Evaluation its efficacy clinically	128	(32.0)
New drug's price	68	(17.0)
Others	4	(1.0)
<b>Kind of marketing literature helping to evaluate the new drugs</b>		
Diagrams	100	(25.0)
Pharmaceutical brochures	140	(35.0)
Photographic posters	52	(13.0)
Drug leaflets	56	(14.0)
Others	52	(13.0)
<b>Companies expected to spend more money for marketing their products</b>		
Local	60	(15.0)
Global	92	(23.0)
Both	196	(49.0)
Neither	52	(13.0)
<b>Companies most compliant with ethical marketing</b>		
Local	27	(6.7)
Arabic	18	(4.5)
Global	166	(41.5)
All	101	(25.3)
None	88	(22.0)
<b>Facing an unethical promotion offered by companies for prescribing their products<sup>a</sup></b>		
Yes	136	(40.0)
No	204	(60.0)
<b>Attribution of the unethical promotional marketing<sup>a</sup></b>		
Drugs' companies	80	(23.0)
Physicians	32	(9.2)
Representatives	48	(13.8)
All of them	188	(54.0)

\* The total number of respondent physicians was 400; <sup>a</sup> Data were missing for some cases

### 3.3. Ethical issues in pharmaceutical marketing in relation to the work experience and medical profession of physicians

Tables (3) shows a statistically significant difference in the proportion of drug prescriptions affected by medical representative visits and availability of medical samples on prescription in relation to the work experience of physicians.

Table (4) shows a statistically significant difference in facing an unethical promotion offered by companies for prescribing their products and the attribution of unethical pharmaceutical marketing in relation to the type of medical profession of physicians.

**Table 3.** Ethical issues in pharmaceutical marketing in Sana'a city, Yemen in relation to the work experience of physicians (2018)

Variables	Work experience (years)			P-value
	<5 (N = 154)	5-10 (N = 189)	>10 (N = 57)	
	n (%)	N (%)	n (%)	
<b>Satisfaction with the way followed for pharmaceutical marketing</b>				
Yes	86 (55.8)	93 (49.2)	37 (64.9)	0.083
No	68 (44.2)	96 (50.8)	20 (35.1)	
<b>Proportion of prescriptions possibly affected by medical representative visits<sup>a</sup></b>				
0%	4 (2.6)	9 (4.8)	3 (5.3)	0.020
25%	42 (27.3)	42 (22.2)	4 (7.0)	
50%	41 (26.6)	60 (31.7)	19 (33.3)	
75%	39 (25.3)	46 (24.3)	11 (19.3)	
100%	27 (17.5)	33 (17.5)	20 (35.1)	
<b>Effect of medical sample availability on drug prescription<sup>a</sup></b>				
Yes	105 (68.2)	114 (60.3)	29 (50.9)	0.046
No	48 (31.2)	77 (40.7)	27 (47.4)	
<b>Facing an unethical promotion offered by companies for prescribing their products<sup>a</sup></b>				
Yes	55 (41.0)	62 (38.3)	19 (43.2)	0.799
No	79 (59.0)	100 (61.7.0)	25 (56.8)	
<b>Attribution of the unethical promotional marketing<sup>a</sup></b>				
Drug companies	27 (20.6)	43 (25.7)	10 (20.0)	0.889
Physicians	11 (8.4)	15 (9.0)	6 (12.0)	
Representatives	18 (13.7)	23 (13.8)	7 (14.0)	
All	75 (57.3)	86 (51.5)	27 (54.0)	

<sup>a</sup> Data were missing for some cases.

**Table 4.** Ethical issues in pharmaceutical marketing in Sana'a city, Yemen in relation to the medical profession of physicians (2018)

Variables	Medical profession			P-value
	Consultant (N = 100)	Specialist (N = 167)	General practitioner (N = 133)	
	n (%)	n (%)	n (%)	
<b>Satisfaction with the way followed for pharmaceutical marketing<sup>a</sup></b>				
Yes	57 (57.0)	86 (51.5)	73 (55.9)	0.682
No	43 (43.0)	81 (48.5)	60 (45.1)	
<b>Proportion of prescriptions affected by medical representative visits<sup>a</sup></b>				
0%	2 (2.0)	7 (4.2)	7 (5.3)	0.268
25%	15 (15.0)	39 (23.4)	34 (25.6)	
50%	31 (31.0)	53 (31.7)	36 (27.1)	
75%	33 (33.0)	36 (21.6)	27 (20.3)	
100%	19 (19.0)	32 (19.2)	29 (21.8)	
<b>Proportion of medical representatives with good responses to physicians' queries<sup>a</sup></b>				
0%	11 (11.0)	13 (7.8)	12 (9.0)	0.873
25%	22 (22.0)	45 (26.9)	37 (27.8)	
50%	34 (34.0)	65 (38.9)	49 (36.8)	
75%	21 (21.0)	31 (18.6)	24 (18.0)	
100%	12 (12.0)	13 (7.8)	11 (8.3)	
<b>Effect of medical samples availability on drug prescription<sup>a</sup></b>				
Yes	62 (62.0)	97 (58.1)	89 (66.9)	0.331
No	38 (38.0)	69 (41.3)	45 (33.8)	
<b>Facing an unethical promotion offered by companies for prescribing their products<sup>a</sup></b>				
Yes	30 (35.7)	71 (49.0)	35 (31.5)	0.012
No	54 (64.3)	74 (51.0)	76 (68.5)	
<b>Attribution of unethical promotional marketing<sup>a</sup></b>				
Drugs' companies	21 (22.8)	35 (24.6)	24 (21.1)	0.046
Physicians	1 (1.1)	20 (14.1)	11 (9.6)	
Representatives	14 (15.2)	16 (11.3)	18 (15.8)	
All	56 (60.9)	71 (40.0)	61 (53.5)	

<sup>a</sup> Data were missing for some cases.



### 3.4. Pharmaceutical companies' responses related to pharmaceutical marketing practices

Table (5) shows that the majority of pharmaceutical companies (52%) usually use medical samples as a promotional tool to market their products, followed by gifts (38%). The majority of pharmaceutical companies (80%) were satisfied with the way of pharmaceutical marketing, and 72% spent less than 20% of their income to market their products.

More than half of companies (54%) reported that pharmaceutical marketing in Yemen trends toward both ethical and unethical directions and a half of companies considered unethical marketing the responsibility of physicians, followed by 38% that blamed pharmaceutical companies.

**Table 5.** Pharmaceutical companies' responses regarding pharmaceutical marketing practices in Sana'a city, Yemen (2018)\*

Variable	n (%)
<b>Promotional tools most frequently used by companies for marketing</b>	
Samples	26 (52.0)
Gifts	19 (38.0)
Simple promotional tools	3 (6.0)
Medical conferences and exhibitions	2 (4.0)
<b>Satisfaction with the way followed for pharmaceutical marketing</b>	
Yes	40 (80.0)
No	10 (20.0)
<b>Income spent on pharmaceutical marketing</b>	
≥ 20%	14 (28.0)
<20%	36 (72.0)
<b>The way followed for pharmaceutical marketing in Yemen</b>	
Ethical	13 (26.0)
Unethical	10 (20.0)
Both	27 (54.0)
<b>Attribution of the unethical promotional marketing</b>	
Pharmaceutical companies	19 (38.0)
Physicians	25 (50.0)
Representatives	3 (6.0)
All of them	3 (6.0)
<b>The necessity of pharmaceutical marketing besides the quality of the drugs</b>	
Yes	45 (90.0)
No	5 (10.0)
<b>The preferred major for ethical pharmaceutical marketing</b>	
Marketing graduates	4 (8.0)
Pharmacy graduates	45 (90.0)
Other majors	1 (2.0)
<b>Organizing scientific studies and/or lectures for promoting ethical marketing</b>	
Yes	25 (50.0)
No	25 (50.0)
<b>Effect of rewards and incentives in encouraging unethical marketing</b>	
Yes	22 (48.9)
No	23 (51.1)
<b>Participation in medical conferences</b>	
Yes	41 (82.0)
No	9 (18.0)
<b>Kind of participation in medical conferences</b>	
Sponsoring general expenses	18 (36.0)
Sponsoring special expenses	4 (8.0)
Gift distribution	25 (50.0)
Meal invitation	3 (6.0)

\* The total number of pharmaceutical companies was 50.

Less than half of companies thought that unethical marketing is encouraged by providing incentives and rewards. Moreover, most companies (90%) agreed that pharmaceutical marketing is necessary even if the products have good quality and preferred pharmacy graduates for ethical marketing. Only half of companies reported the organization of scientific studies and/or lectures to promote their products, and the majority (82%) participated in sponsoring medical conferences, through either gift distribution (50%) or general expenses (36%).

## 4. Discussion

Because there is no specific legislation to regulate pharmaceutical marketing in Yemen, this study explored several ethical issues in the Yemeni market and compared them with WHO guidelines and IFPMA Code of Practice as global standards of ethical criteria for pharmaceutical promotion as well as some previous relevant studies conducted elsewhere.

The present study revealed no statistically significant differences regarding the satisfaction with pharmaceutical marketing according to physicians' work experiences and professions. Meanwhile, both ethical and unethical trends in pharmaceutical marketing were reported by most companies.

Free medical samples were the most promotional tool frequently used in Yemen. This finding is consistent with those reported from Lebanon, Pakistan and Jordan,<sup>(12, 20, 21)</sup> showing that pharmaceutical marketing in developing countries still frequently uses traditional tools. Although medical sampling is not permitted in many countries or legally restricted,<sup>(22)</sup> the availability of medical samples significantly affected drug-prescribing practices of the physicians in the present study according to the length of work experiences. They claimed that it might make them familiar with the available medications, and all medical samples, or at least half of them, are given to patients. In line with this finding, 72% of American physicians



were reported receiving free drug samples,<sup>(23)</sup> and both American prescribers and manufacturers considered receiving medical samples ethically correct if this helps poor patients.<sup>(24)</sup> Similarly, 76% of Pakistani and 53% of Lebanese physicians believed that free medical samples help them to evaluate drug quality and help poor patients.<sup>(12,20)</sup> Such findings agree with IFPMA and WHO guidelines, which stated that “*Samples may be given to prescribing professionals to familiarize them with the products, enable them to gain experience with the products in their practice, or on request*”, and the WHO guidelines also consider that free samples may be used by poor patients.<sup>(25)</sup>

The finding of the present study that gifts represent the second factor mostly affecting drug prescriptions is consistent with that reported from Saudi Arabia, where physicians’ prescriptions were suggested to be indirectly influenced by medical samples and gifts.<sup>(26)</sup> On the other hand, Indian physicians agreed that only expensive gifts could be considered part of unethical marketing practices since they force physicians to do in favor of companies in return.<sup>(27)</sup> Lebanese physicians also considered gift acceptance an unethical practice.<sup>(20)</sup> Receiving gifts, whether expensive or simple, was reported to influence the prescriptions of Malaysian physicians.<sup>(28)</sup> In response to IFPMA guidelines 2019, more restrictions were undertaken in Europe and the United States for direct or indirect receipt of gifts as a promotional tool.<sup>(9, 29)</sup>

In the present study, frequent visits of medical representatives were found to affect the prescriptions of Yemeni physicians significantly according to the length of work experience, making companies hire and train medical representatives for promoting their products. In line with this finding, a previous study reported that Yemeni physicians accept medical representative visits to gain information about drugs.<sup>(16)</sup> Similar findings were found among Pakistani and Lebanese physicians.<sup>(20, 30)</sup> In contrast, medical representative visits were so motivated or affect physicians’ decisions in the USA,

Jordan and Saudi Arabia.<sup>(21, 31, 32)</sup> Additionally, the WHO Code states that “*Medical representatives should not offer inducements to prescribers and dispensers, as well as emphasized updating and continuing training for medical representatives to ensure ethical behavior*”.<sup>(25)</sup>

Personal relationships were found to be the most influencing factor in drug prescription and mainly preferred by Yemeni physicians, potentially influencing their attitudes and decisions besides drug efficacy and quality. This highlights the impact of personal relationships with healthcare professionals on pharmaceutical marketing. The significant impact of drug quality and efficacy on prescriptions by physicians has been reported from Yemen, Saudi Arabia and Pakistan. <sup>(12, 16, 32)</sup> On the other hand, Murshid et al.<sup>(17)</sup> reported the significant impact of patients’ desire on drug prescribing by Yemeni physicians.

The finding that only half of the medical representatives respond well to the queries of physicians could be attributed to poor preparation and training of medical representatives by their companies. This issue is still away from the recommendations of IFPMA and WHO which stress on the continuous training of medical representatives to provide healthcare practitioners with valuable information and scientific knowledge about the drugs and their uses.<sup>(9, 22)</sup> In Jordan, 73% of Jordanian physicians reported receiving respectful responses about new drugs from the assigned medical representatives.<sup>(33)</sup>

In the present study, the majority of companies reported spending less than 20% of their income on promoting their products, mostly for sponsorship of medical conferences, scientific studies and lectures. On the other hand, most physicians preferred medical conferences and exhibitions as the best promotional benefit they might get when prescribing the pharmaceutical products and considered this an ethical marketing practice. In another context, most Lebanese physicians recommended the sponsorship of medical conferences by compa-



nies and considered such conferences an effective tool for pharmaceutical promotion.<sup>(20)</sup> In contrast, Jordanian physicians considered external medical conferences as an ineffective tool.<sup>(21)</sup> The WHO Code recognizes the need for scientific conferences and meetings sponsored by pharmaceutical companies and allows the distribution of hospitality and gifts.<sup>(25)</sup> The IFPMA Code also states that “*Payment of reasonable honoraria and reimbursement of out-of-pocket expenses, including travel, for speakers/prescribers are customary and proper*”.<sup>(25)</sup>

In contrast to the finding that facing unethical promotion by less than half of physicians in the present study, Al-Hamdi et al.<sup>(15)</sup> considered the activities of pharmaceutical marketing in Yemen unethical. Additionally, most physicians in the present study attributed unethical marketing to pharmaceutical companies, physicians and representatives. Both physicians and pharmaceutical companies had different points of view about the responsibility for such unethical marketing, where physicians attributed such unethical marketing to the promotional tools of the pharmaceutical companies while pharmaceutical companies attributed it to the physicians’ desire. It is noteworthy that unethical marketing practices would keep growing because of the extensive market competition between different pharmaceutical companies.<sup>(34)</sup> Although pharmaceutical companies and medical representatives are primarily responsible for introducing unethical marketing practices, the role of physicians in the persistence of such unethical practices could not be ruled out.

This study is limited by the recruitment of participants from Sana’a city only and the few pharmaceutical companies included in the study.

## 5. Conclusions

Pharmaceutical marketing in Yemen still depends on traditional tools, with the lack of ethical guidelines or codes for pharmaceutical marketing in the country. Work experience and medical profession of physicians can significantly affect pharmaceuti-

cal marketing. The spread of unethical marketing is the responsibility of pharmaceutical companies, physicians and medical representatives. Therefore, it is recommended to develop well-defined and updated ethical standards and national guidelines for pharmaceutical marketing by the Ministry of Public Health and Population. Furthermore, official campaigns should be regularly carried out to control and restrict unethical promotion. Further studies on the ethics of pharmaceutical marketing are also recommended. Pharmaceutical companies should continuously train their medical representatives and provide physicians with the latest medical knowledge about new drugs.

## Ethical considerations

Ethical approval was obtained from the Ethics Committee of the Faculty of Medicine and Health Sciences, University of Science and Technology, Sana’a, Yemen (MECA No.: ECA/UST192). The participating physicians and pharmaceutical companies gave verbal informed consent after explaining the aim of the study to them. Privacy of physicians and pharmaceutical companies was assured.

## Acknowledgments

The authors thank the fifth-year pharmacy students 2018 at the University of Science and Technology and third-year pharmacy students 2018 at the High Institute of Health Sciences in Sana’a city for their help during data collection.

## Authors’ contributions

GQO designed the study and contributed to data analysis and interpretation. MMB and GQO designed the questionnaire. AMH and MMB contributed to data analysis, reviewed the literature and drafted the manuscript for publishing. All authors approved the final draft of the manuscript.

## Competing interests

The authors declare that they have no competing interests associated with this article.

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