Health professional’s exposure, attitude, and acceptance of drug promotion by industry representatives: A cross-sectional study in Ethiopia

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Abstract
Interactions between pharmaceutical companies and health care providers have long been an area of interest from ethical as well as scientific grounds. The information provided by those companies must be scientifically accurate and fair. The current study aimed to investigate the exposure, attitude, and training background of medical doctors and pharmacy professionals regarding drug promotional activities, and assess their acceptance of promotional gifts provided by pharmaceutical companies.

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sales representatives. A cross-sectional study was conducted on medical doctors and pharmacy professionals working at Bahir Dar and Gondar cities, Amhara regional state, Ethiopia. Data were collected using a self-administered structured questionnaire and Statistical Package for Social Science (SPSS) version 26 was used for analysis. A Chi-square test was computed to investigate the presence of an association between the dependent and independent variables. A p-value of less than 0.05 was considered to declare significance at a 95% Confidence Interval (CI). A total of 105 health professionals, 81 pharmacy professionals, and 24 medical doctors have participated in the study. Above two-thirds of the respondents (69.5%) agreed that most talks sponsored by drug companies were helpful and educational. On the other hand, 39% of the respondents agreed and 47.6% disagreed that receiving gifts from pharmaceutical representatives will increase the chance that they will eventually sell or recommend the drug company’s products. The majority of the study participants (81%) preferred drug samples and stationery as appropriate gifts by pharmaceutical sales representatives. Significant gaps were found regarding the training of health professionals about the ethics of drug marketing and how to deal with pharmaceutical representatives. Policies aiming at restricting health care provider’s contacts with pharmaceutical companies during residency training along with incorporating gift restriction policies could bring significant improvements.

Keywords
Promotion, pharmacy professionals, drug, doctors, pharmacists

Introduction

With the ever-increasing advancements of treatment options available, healthcare providers need to be kept up to date with the scientific advancements of new medicines.1 Drug promotion refers to all the informational and persuasive activities by manufacturers and distributors, eventually leading to encourage the supply, purchase, and/or use of particular medications.2 Drug promotion has been advocated so that healthcare providers have access to information they need about medications and that medications are prescribed and used for the welfare and benefit of patients.3

In the USA, from the year 1997 through 2016, expenditure on medical marketing of drugs, disease awareness campaigns, health services, and laboratory testing has increased from $17.7 to $29.9 billion in which a very dramatic increase was observed in direct-to-consumer (DTC) advertising, which has increased from $2.1 billion (11.9%) of total spending in 1997 to $9.6 billion (32.0%) of total spending in 2016.4 Modes of pharmaceutical advertising had also changed significantly from traditional promotional methods to the newest modes of marketing schemes over the years.1,5–7 Laws and regulations governing these activities have also increased during this period, though in many countries the research-based pharmaceutical industry has employed various mechanisms to self-regulate communication and promotional activities which encompass but go beyond statutory legal requirements.8 Nearly all developed and many of the developing countries’ national industry organizations have codes of marketing practice or ethics.1 However, stringent regulations and fines when a breach of codes is evident are necessary as evidence showed that those codes of marketing/advertisement are not usually enough to
prevent malpractices.\textsuperscript{8} Nonetheless, despite the importance of improving regulatory arrangements in an attempt to ensure unbiased medicines information, such efforts alone were also found to be insufficient because simply improving oversight and increasing penalties fail to address additional layers of industry bias.\textsuperscript{9}

Pharmaceutical promotion may serve as a key communication channel for continuing Health Care Professional’s (HCPs) education regarding pharmaceutical products and for exposing consumers to medical information.\textsuperscript{10} Moreover, promotion can also lead to the more rapid adoption of new drugs that represent incremental advances over past practices.\textsuperscript{11–13} However, pharmaceutical marketing was also being criticized as wasteful and excessive and for contributing to the overuse, misuse, and irrational prescribing/dispensing of medications.\textsuperscript{11,12}

The quality of interactions between healthcare providers (HCPs) and pharmaceutical companies can significantly affect rational prescribing and dispensing decisions. Evidence shows that drug promotion influences HCPs prescribing decisions, consumers’ behavior, the HCP/patient relationship, and health care quality and costs.\textsuperscript{14–17} It has also been recognized that doctors that rely on drug company information, through drug detailers or promotional literature, prefer expensive brands, adopt newer medicines more quickly, show more inappropriate prescribing and write more prescriptions than their colleagues.\textsuperscript{18}

In recent years, there has been a growing concern over the impact of pharmaceutical gifts on HCPs and their challenge on the principles of medical professionalism as well as on patient’s trust in the health care system and their intent to adhere to medical recommendations.\textsuperscript{18–24} Studies conducted in the USA,\textsuperscript{25,26} Japan,\textsuperscript{27} and Australia\textsuperscript{28} revealed that nearly 70% to 95% of physicians accept free drug samples or free meals from pharmaceutical companies. It was also documented that, pharmaceutical companies sometimes offer more expensive gifts such as sponsoring travel or lodging for educational symposia and payments for consulting, giving lectures, or enrolling patients in clinical trials.\textsuperscript{25–28} Many doctors and pharmacists that receive gifts from pharmaceutical companies were found to have more likely to prescribe or dispense that company’s products.\textsuperscript{24,29–35}

In Ethiopia, apart from Maternal and Child Health (MCH) and Family Planning (FP) products (contraceptives and condoms), the promotion of pharmaceutical products on public media is prohibited. The present study aimed to investigate the exposure and attitude of medical doctors and pharmacy professionals to drug promotional activities and assess their perception/acceptance of gifts provided by PSR’s. It also looks to determine whether medical doctors and pharmacy professionals have had any teaching/training during their study about how to deal with medical representatives and Pharmaceutical promotion. To the author’s best knowledge, only a few similar studies were conducted in Ethiopia and all of them were out of the Amhara region. The current study will add additional evidence to fulfill this paucity of literature and also serve as baseline data for future studies in the area.
Study methods

Study design and setting

A facility-based cross-sectional study was conducted from May 1st to June 7, 2020, on medical doctors and community pharmacy professionals working in Bahir Dar and Gondar cities, Amhara Regional State, Ethiopia. Bahir Dar is the capital city of the region which is situated 565 km from Addis Ababa, the capital city of the country, while Gondar is located 185 km away from Bahir Dar. Based on the Ethiopian Central Statistical Agency (CSA) population projection report, the population of the Amhara region was projected to be around 22,192,000 in the year 2020. Similarly, the population of Bahir Dar is estimated to be around 339,683, and 362,000 for Gondar in 2020. The two cities were chosen because these are the most populated cities in the region with better health care practice/ availability and better access to health care information.

Population

Source population

All medical doctors and pharmacy professionals working in Bahir Dar and Gondar cities. At the time of the study, there were 14 pharmacies, 32 drug stores, and eight rural drug vendors in Bahir Dar, while there were 19 pharmacies and 33 drug stores in Gondar. Pharmacy, drug store, and rural drug vendors are medicine retail outlets (MRO’s) that differ with regard to the legal requirements they have to fulfill to function and the scope of services and medicines provided in them among others. The size of the required rooms (for dispensing, storage, and compounding (if compounding service is provided), an office, and a restroom) also varies among the MROs, and the variety of medicines and medical devices handled in them also increases from rural drug vendors through drug stores to pharmacies. Besides, there were one specialized, one referral and one primary governmental hospital, 11 health centers (including one private health center), 10 health posts, one family guidance association clinic, four private general hospitals, and 35 medium private clinics in Bahir Dar, and one specialized hospital, eight governmental health centers, one private primary hospital, and 32 private clinics in Gondar at the time of the study.

Study population

The study populations were those medical doctors (including those in residential training) and pharmacy professionals that fulfilled the inclusion criteria of the study.

Inclusion and exclusion criteria’s

Inclusion criteria. Medical doctors and pharmacy professionals who have at least 1 year of independent work experience.
Exclusion criteria. Medical doctors and pharmacy professionals that were not available at the time of data collection and/or those who do not want to participate in the study. Also, medical doctors and pharmacy professionals who have a conflict of interest (direct employees/representatives of pharmaceutical companies, and or serve as consultants to companies) with drug companies were excluded.

Sampling technique and sample size determination. Medical doctors and pharmacy professionals working at public and private health facilities in both cities were invited to participate in the study. Since there was no available updated data on the total number of medical doctors and pharmacy professionals working in both cities, an invitation to participate (the study questionnaire) was sent to all available, volunteer pharmacy and medical practitioners. In doing so, the data collectors physically approached all medical doctors and pharmacy professionals that were working at the health facilities (all the available health facilities were approached) in both cities. Then, they introduced themselves and provided a clear explanation about the purpose of the study and related information, and consent to participate was collected. The questionnaires were then administered to those who agreed to participate in the study and those professionals who weren’t volunteer to participate were excluded. In addition, to exclude those medical doctors and pharmacy professionals who didn’t meet all of the inclusion criteria (such as those who doesn’t have at least 1 year of independent work experience), questions asking these specific parameters were added to the questionnaire.

Study variables

Dependent variable. Attitude and acceptance of pharmaceutical promotion activities by industry representatives.

Independent variables. These include the socio-demographic characteristics of the study participants: sex, age, educational level (Diploma, Degree, Masters (MSc), PhD for pharmacy professionals and general practitioner, resident, and specialist for medical doctors), year of work experience, and type of profession.

Data collection procedures. A self-administered, structured questionnaire, adapted from previous literature was used. The questionnaire consisted of four parts. The first part was composed of seven questions that assessed the socio-demographic characteristics of the respondents. The second and third parts had a total of 16 questions that measure the attitude and exposure status of the health professionals towards pharmaceuticals promotion. The fourth part consisted of 13 items that assessed the respondent’s choice of the appropriateness of promotional gifts provided by pharmaceutical promotors (See Annex). The data was collected by five data collectors; three data collectors from Bahir Dar and two from Gondar.

Data processing and analysis. The collected data was coded, validated, and analyzed using SPSS version 26 (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp). Quantitative data were
summarized using means and standard deviations while categorical data were summarized using frequencies and proportions. A Chi-square test was conducted to investigate the presence of an association between the dependent variables (Attitude and acceptance towards drug promotion activities) and the independent variables. A $p$-value of less than 0.05 was considered to declare statistical significance at a 95% confidence interval (CI). Cronbach’s alpha test was conducted to assess the reliability of the data collection instrument and the value was 0.642.

**Data quality assurance.** A reliable questionnaire was used. The data was collected by the investigators themselves and thus they were well aware of the purpose of the study as well as the study in question. At the end of each day, the collected data were checked for completeness, accuracy, and consistency before entering into software for analysis.

**Operational definition of terms.** Pharmacy: is an establishment retailing medicines which is managed by a pharmacist registered with a relevant legal body and licensed to dispense medicines for humans and compound prescribed preparations.

Drug store: is a medicines retail establishment managed by a pharmacist or a druggist (a pharmacy professional with a diploma level of qualification) registered and licensed to dispense medicines for humans.

Rural drug vendor: A rural drug vendor is categorized in Ethiopia as a medicine retail outlet led by a druggist or a pharmacy technician (lower level of qualification than druggists) registered and licensed to dispense medicines for humans.

Vendors’ representatives/ Pharmaceutical Sales Representatives: Agents that promote products and provide information and services to health care providers on behalf of manufacturers and/ or suppliers.

Pharmacy Professional: In the Ethiopian context, pharmacy professionals/ practitioners are classified as druggists (with a diploma in Pharmacy, and pharmacists (with a degree and above in pharmacy). To accommodate both of them, the term “pharmacy professional” is used instead of pharmacist throughout the document.

Acceptance/ perceptions of the appropriateness of various drug company gifts: This was assessed on a 12 item, 3-point scale (appropriate, inappropriate, and neutral).

Attitudes about pharmaceutical promotion: This was measured as agreement with 10 statements on a 3-point scale (agree, disagree, and neutral).

**Ethical consideration.** Ethical clearance was obtained from the Ethical Review Committee of School of Pharmacy, College of Medicine and Health Sciences, the University of Gondar with an approval number of UoG-CMHS-SoP-784/2020, and it was administered to each study participant before the data collection procedure. The study was also performed following the Declaration of Helsinki as revised in 2013 and the ethical guidelines of the University of Gondar, Ethiopia. The study participants were well informed about the purpose of the study and written informed consent was collected from each study participant before the commencement of the study. The data was collected anonymously and there was no personally identifiable information on the questionnaire.
Result

Due to fear of the COVID-19 pandemic at the time of the current study, many invited health professionals were not volunteer to participate in the study. From the total 120 questionnaires administered, 105 of them were returned with an overall response rate of 87.5%. A total of 81 pharmacy professionals and 24 doctors had participated in the study. The majority of the respondents were male 64 (61%), and 54 of the participants were from Gondar, and 51 were from Bahir Dar city. The mean age of the respondents was 31.3 (SD = 8.546) years with the majority of them being within the age range of 26–35, 63 (60%). Concerning the educational level, the majority of the pharmacy professionals 45 (55.6) were degree holders while residents took the larger share of the doctors 13 (54.2%). The average year of experience of the respondents was 6.86 (SD = 6.045) years with the majority 34 (32.4%) of them having experience of between 3 and 5 years. (Table 1)

Education/ training on pharmaceutical promotion

Of the total study participants, 35 (33.3%) of them reported that they have been taught about the ethics or effects of drug company promotion during their studies.

Table 1. Background characteristics of the study participants; N = 105.

| Characteristics                  | Frequency | Percentage (%) |
|----------------------------------|-----------|----------------|
| Sex                              |           |                |
| Male                             | 64        | 61.0           |
| Female                           | 41        | 39.0           |
| Age                              |           |                |
| 18–25                            | 19        | 18.1           |
| 26–35                            | 63        | 60.0           |
| 36–45                            | 15        | 14.3           |
| >45                              | 8         | 7.6            |
| Profession of respondent         |           |                |
| Pharmacy                         | 81        | 77.1           |
| Doctor                           | 24        | 22.9           |
| Educational level                |           |                |
| Diploma                          | 33        | 31.4           |
| Degree                           | 45        | 42.9           |
| Masters                          | 3         | 2.9            |
| General-practitioner             | 11        | 10.5           |
| Resident                         | 13        | 12.4           |
| Years of experience              |           |                |
| <2 years                         | 26        | 24.8           |
| 3–5 years                        | 34        | 32.4           |
| 6–10 years                       | 23        | 21.9           |
| >10 years                        | 22        | 21.0           |
| City of residence                |           |                |
| Gondar                           | 54        | 51.4           |
| Bahir Dar                        | 51        | 48.6           |
| Type of facility                 |           |                |
| Drug store                       | 23        | 21.9           |
| Pharmacy                         | 58        | 55.2           |
| Primary hospital                 | 1         | 1.0            |
| General hospital                 | 1         | 1.0            |
| Tertiary hospital                | 22        | 21.0           |
In addition, 30 (28.6%) of the respondents also reported that they have had received teaching on how to handle/interpret drug promotional materials and how to deal with pharmaceutical representatives (Figures 1 and 2).

**Exposure to pharmaceutical promotion**

A total of 26 (24.8%) participants (18 pharmacy professionals and eight doctors) reported that they have been approached by pharmaceutical company representatives when they were attending a placement (practical attachment) during their studies. Furthermore, 77 (73.3%) of them (67 pharmacy professionals and 10 doctors) reported that they have been approached within their professional practice (work). On the other hand, only 37% of the pharmacy professionals had reported that they were familiar with the codes of ethics for pharmacist’s interaction with industry representatives (Figures 1 and 2).

**Attitude towards pharmaceutical promotion**

Half of the study participants, 53 (50.5%) agreed that the information provided by pharmaceutical sales representatives (PSR) about their company’s product can be trusted. Chi-square analysis showed that there was a significant difference concerning sex ($p = 0.005$) (in which a greater number of females (63.4%) than males (42.2%) agreed to the sentence); educational level ($p = 0.001$) (in which a greater number of diploma holders (66.6%) followed by degree holders (53.3%), masters holders (33.3%), general practitioners (27.2%), and residents (23.1%) agreed); year of experience ($p = 0.041$) (in which those who worked for 6–10 agreed more than others (56.5%) followed by those who worked for 3–5 years (52.9%), <2 years

![Figure 1. Study participants exposure to pharmaceutical promotion.](image-url)
(50%), and >10 years (40.9%)); type of profession ($p = 0.001$) (in which a greater number of pharmacists (58%) than medical doctors (25%) agreed) (Tables 2 and 3). The majority of the study participants 86 (81.9%) also agreed that the information from drug representatives is important for the pharmacy and medical staff. There was a statistically significant difference among the study participants concerning the type of profession and educational level ($p = 0.034$ and 0.001 respectively). In addition, 39 (37.1%) of the study participants agreed and 56 (53.3%) of them disagreed that it was appropriate for pharmacy and medical professionals to accept gifts from drug companies. There was a statistically significant difference regarding the type of profession ($p = 0.014$) and the educational level of the study participants ($p = 0.011$) (Tables 2 and 3).

Above two-thirds of the respondents, 73 (69.5%) agreed that most talks sponsored by drug companies were helpful and educational. Chi-square analysis also showed a significant difference among the study participants regarding sex ($p = 0.001$), type of profession ($p < 0.001$), and educational level ($p < 0.001$). A greater number of study participants 87 (82.9%) also agreed that promotional activities by drug companies were a useful way to learn about new drugs. The result also showed a significant difference among the study participants concerning their educational level ($p = 0.029$). Only 29 (27.6%) of the study participants agreed that gifts from drug companies to pharmacy professionals/doctors will lead to increased prices of medicines. There was a statistically significant difference among the study participants regarding the type of profession and educational level ($p = 0.001$ and 0.030 respectively) (Tables 2 and 3).

Forty-one (39%) of the respondents agreed and 50 (47.6%) disagreed that receiving gifts from pharmaceutical representatives will increase the chance that they will eventually sell or recommend/prescribe the drug company’s products. A
| Type of profession        | p-Value | Year of experience | p-Value |
|---------------------------|---------|--------------------|---------|
|                          |         | <2 years | 3–5 years | 6–10 years | >10 years |         |         |         |         |         |         |         |         |         |
| All respondents           |         | A  D  N  | A  D  N  | A  D  N  | A  D  N  | A  D  N  |         |         |         |         |         |         |         |         |
| Pharmacy professional     |         | A  D  N  | A  D  N  | A  D  N  | A  D  N  | A  D  N  |         |         |         |         |         |         |         |         |
| Medical doctors           |         | A  D  N  | A  D  N  | A  D  N  | A  D  N  | A  D  N  |         |         |         |         |         |         |         |         |
| The information provided by PSR's can be trusted | 53 23 29 | 47 19 15 | 6 4 14 | 0.001 | 13 2 11 | 18 5 11 | 13 8 2 | 9 8 5 | 0.041 |
| The information from PSR's is important for the pharmacy and medical staff | 86 10 9 | 70 7 4 | 16 3 5 | 0.034 | 24 1 1 | 26 2 6 | 20 3 0 | 16 4 2 | 0.449 |
| It is appropriate for pharmacy and medical staff to accept gifts from drug companies | 39 56 10 | 36 39 6 | 3 17 4 | 0.014 | 8 15 3 | 14 19 1 | 10 11 2 | 7 11 4 | 0.736 |
| Most talks sponsored by drug companies are helpful and educational | 73 17 15 | 65 10 6 | 8 7 9 | <0.001 | 18 2 6 | 21 7 6 | 18 3 2 | 16 5 1 | 0.159 |
| Drug companies are useful way to learn about new drugs | 87 10 8 | 70 60 5 | 17 4 3 | 0.175 | 24 2 0 | 25 3 6 | 19 4 0 | 19 1 2 | 0.774 |
| Drug companies sponsored talks are often biased in favor of their products | 60 22 23 | 45 20 16 | 15 2 7 | 0.195 | 14 5 7 | 20 6 8 | 14 5 4 | 12 6 4 | 0.614 |

(continued)
## Table 2. (Continued)

| Type of profession |        | Year of experience |        |            |        |        |        |
|--------------------|--------|--------------------|--------|-----------|--------|--------|--------|
|                    |        | All respondents    | Pharmacy professional | Medical doctors | <2 years | 3–5 years | 6–10 years | >10 years | <2 years | 3–5 years | 6–10 years | >10 years | <2 years | 3–5 years | 6–10 years | >10 years |
|                    |        | A | D | N | A | D | N | A | D | N | A | D | N | A | D | N | A | D | N | A | D | N | A | D | N |
| Gifts from drug companies to pharmacy professionals/doctor led to increased prices of medicines | 29 | 61 | 15 | 24 | 51 | 6 | 5 | 10 | 9 | 0.001 | 4 | 15 | 7 | 10 | 20 | 4 | 9 | 12 | 2 | 6 | 14 | 2 | 0.173 |
| Receiving gifts or food from PSR’s increases the chance that I will eventually sell or recommend/prescribe the drug company’s products | 41 | 50 | 14 | 33 | 37 | 11 | 8 | 13 | 3 | 0.757 | 9 | 14 | 3 | 15 | 15 | 4 | 9 | 11 | 3 | 8 | 10 | 4 | 0.734 |
| Drug companies act unethically in promoting and advertising their products | 44 | 42 | 19 | 38 | 36 | 7 | 6 | 6 | 12 | <0.001 | 7 | 8 | 11 | 16 | 13 | 5 | 11 | 10 | 2 | 10 | 11 | 1 | 0.009 |
| Information from PSR’s would have more value if the representative was a pharmacy or other health professional | 104 | 0 | 1 | 80 | 0 | 0 | 24 | 0 | 0 | 0.771 | 26 | 0 | 0 | 34 | 0 | 0 | 23 | 0 | 0 | 21 | 0 | 1 | 0.134 |

A: agree; D: disagree; N: neutral; Bold: p < 0.005.
Table 3. Cross-tabulation between sex and educational level with attitude regarding drug promotion.

| Sex          | p-Value | Educational level | p-Value |
|--------------|---------|-------------------|---------|
| Male A D N   | Female A D N | Diploma A D N | Degree A D N | Masters A D N | General practitioner A D N | Resident A D N |
| A 27 D 12 N 26 | A 4 | 14 0.005 | 22 A 2 9 D N | 15 A 6 A 2 0 | 3 A N | 2 | 6 | 3 A 2 8 | <0.001 |
| 6 7 35 4 2 A D N A | 31 A 2 0 D N | 39 A 3 0 2 1 | 9 A 1 | 1 | 7 A 2 | 4 A | 0.001 |
| 0.005 | 22 A 17 2 2 2 0.394 | 14 A 17 2 2 2 1 3 1 1 1 | 1 6 | 4 | 2 1 1 0 | 0.011 |
| 22 34 8 17 22 2 0.394 | 36 14 14 37 3 1 | 0.001 | 26 4 3 9 4 2 0 2 1 5 | 2 4 | 4 3 5 5 | <0.001 |
| 51 7 6 36 3 2 A D N A | 29 A 2 2 4 0 3 2 1 1 1 10 | 1 0 | 7 3 3 | 0.031 |
| 37 11 16 23 1 1 7 0.399 | 18 10 5 | 24 10 1 1 3 0 0 6 | 0 5 | 9 2 2 | 0.911 |
| 18 34 12 11 27 3 0.223 | 9 2 2 1 5 2 7 3 0 2 1 3 | 4 4 | 2 6 5 | 0.007 |
| 22 32 10 19 18 4 0.415 | 13 16 4 19 19 | 7 1 2 0 6 | 5 | 0 | 2 8 3 | 0.499 |
| 21 28 15 23 1 4 4 0.041 | 13 16 4 25 17 | 3 0 0 2 0 2 | 2 7 | 4 4 5 | 0.002 |
| 63 0 1 4 1 0 0 0.423 | 32 0 1 4 5 0 0 3 0 0 1 1 | 0 0 | 13 0 0 | 0.378 |

A: agree; D: disagree; N: neutral; Bold: p < 0.005.
Table 4. Acceptance of pharmaceutical gifts by the study participants.

| Statements                | Frequency n (%) | Appropriate | Inappropriate | Neutral | Pharmacy prof. | Doctors | All respondents | Pharmacy prof. | Doctors | All respondents | Pharmacy prof. | Doctors |
|---------------------------|-----------------|-------------|---------------|---------|----------------|---------|-----------------|----------------|---------|-----------------|----------------|---------|
|                           |                 |             |               |         | All respondents |         |                 |           |         | Pharmacy prof. |             |         |
|                           |                 | Pharmacy   |               |         | Doctors         |         |                 |                   |         | Doctors         |                   |         |
|                           |                 |             |               |         |                          |         |                 |                   |         |                          |                   |         |
| Meal                      | 45 (42.9)       | 41 (50.6)   | 4 (16.7)      | 47 (44.8)| 36 (44.4)       | 11 (45.8)| 13 (12.4)       | 4 (4.9)         | 9 (37.5)| < 0.001         |                   |         |
| Gift up to 500 ETB*       | 11 (10.5)       | 10 (12.3)   | 1 (4.2)       | 73 (69.5)| 53 (65.4)       | 20 (83.3)| 21 (20.0)       | 18 (22.2)       | 3 (12.5)| 0.280           |                   |         |
| Gift 501–1000 ETB         | 9 (8.6)         | 9 (11.1)    | 0             | 72 (68.6)| 53 (65.4)       | 19 (79.2)| 24 (22.9)       | 19 (23.5)       | 5 (20.8)| 0.199           |                   |         |
| Gift >1000 ETB            | 17 (16.2)       | 16 (19.7)   | 1 (4.2)       | 67 (63.8)| 48 (59.2)       | 19 (79.2)| 21 (20.0)       | 17 (70.8)       | 4 (16.7)| 0.124           |                   |         |
| Drug sample               | 85 (81.0)       | 68 (83.9)   | 17 (70.8)     | 12 (11.4)| 8 (9.9)        | 4 (16.7)| 8 (7.6)         | 5 (6.1)         | 3 (12.5)| 0.303           |                   |         |
| Social trip               | 46 (43.8)       | 37 (45.7)   | 9 (37.5)      | 50 (47.6)| 39 (48.1)       | 11 (45.8)| 9 (8.6)         | 5 (6.1)         | 4 (16.7)| 0.262           |                   |         |
| International holiday     | 42 (40.0)       | 34 (42)     | 8 (33.3)      | 45 (42.9)| 36 (44.4)       | 9 (37.5)| 18 (17.1)       | 11 (13.6)       | 7 (29.2)| 0.204           |                   |         |
| Stationery                | 85 (81.0)       | 68 (83.9)   | 17 (70.8)     | 11 (10.5)| 5 (6.1)        | 6 (25)  | 9 (8.6)         | 8 (9.9)         | 1 (4.2)| 0.032           |                   |         |
| Conference registration fees | 68 (64.8)     | 62 (76.5)   | 6 (25)        | 24 (22.9)| 14 (17.2)      | 10 (41.7)| 13 (12.4)       | 5 (6.1)         | 8 (33.3)| < 0.001         |                   |         |
| Travel to conference      | 42 (40.0)       | 32 (39.5)   | 10 (41.7)     | 43 (41.0)| 35 (43.2)      | 8 (33.3) | 20 (19.0)       | 14 (17.3)       | 6 (25) | 0.594           |                   |         |
| Stethoscope               | 15 (14.3)       | 0           | 15 (62.5)     | 7 (6.7)  | 0              | 7 (29.2)| 83 (79.0)       | 81 (100)        | 2 (8.3)| < 0.001         |                   |         |
| Textbook                  | 75 (71.4)       | 56 (69.1)   | 19 (79.2)     | 23 (21.9)| 18 (22.2)      | 5 (20.8) | 7 (6.7)         | 7 (8.6)         | 0      | 0.309           |                   |         |

*ETB: Ethiopian Birr; 1 ETB = 0.029200 USD (at the time of the current study); Bold: p < 0.005.
greater number of the respondents 44 (41.9%) agreed that drug companies act unethically in promoting/ advertising their products and significant differences were observed concerning sex \((p = 0.041)\), profession \((p < 0.001)\), educational level \((p = 0.001)\), and year of experience of the study participants \((p = 0.039)\) (Tables 2 and 3).

**Acceptance of pharmaceutical gifts**

The majority of the study participants 85 (81%) preferred drug samples and stationery as appropriate gifts by pharmaceutical sales representatives. The majority of doctors preferred textbooks (79.2%), followed by stationery (70.8%) and drug samples (70.8%) as appropriate gifts, while the majority of pharmacy professionals preferred drug samples (83.9%), stationery (83.9%), and conference registration fees (76.5%) as appropriate gifts by pharmaceutical sales representatives respectively. A significant difference concerning the type of profession was observed on the appropriateness of meal \((p < 0.001)\), stationery \((p = 0.032)\), conference registration fees \((p < 0.001)\), and stethoscope \((p < 0.001)\) as a gift by pharmaceutical sales representatives (Table 4).

**Discussion**

Most of the pharmaceutical information physicians and pharmacy professionals now receive is self-serving and its accuracy is very questionable.\(^32\) One consequence of such type of information is skepticism within the medical community itself that challenges health professional’s self-confidence and makes them less appealing to resist the blandishments of those approaching medicine with a narrowly focused financial concern.\(^39\)

From the total study participants, 33.3% of them reported that they have been taught during their studies about the ethics or effects of drug promotion. In addition, about 28.6% of them also reported that they have received teaching about how to handle/interpret drug promotional materials and how to deal with pharmaceutical representatives. Similar findings were reported by a study conducted in Kuwait,\(^40\) in which 63% of medical students and 48% of pharmacy students reported having received training on the ethics of drug promotion and 41% and 27% of the medical and pharmacy students respectively reported they have received training on how to interpret drug promotion or deal with drug representatives. Similar findings were also reported by a study from Saudi Arabia.\(^3\) Educational curriculums for health professionals and especially for pharmacy professionals and physicians should incorporate courses on how to handle drug promotional activities by pharmaceutical representatives and the codes of ethics for pharmaceutical promotion so that the professionals should be aware of the ethical principles and refrain from any acts of misconduct. A global study conducted on pharmacy and medical schools to investigate whether or not the institutions were educating students about drug promotion (critical evaluation and responses to
promotion) revealed that around three-quarters of the respondents (72%) reported that education about drug promotion was part of the required curriculum at their institutions.41

In the current study, only 37% of the pharmacy professionals had reported that they were familiar with the codes of ethics for pharmacist’s interaction with industry representatives. The current finding was in line with a similar study conducted in the USA,38 in which only 34% of the pharmacists were familiar with the pharmaceutical code on interactions with healthcare professionals. Practicing pharmacy professionals should be aware of the code of ethics and standards of conduct concerning interactions with industry representatives so that they could refrain from any improper relationships with those companies and act with a primary goal of satisfying their customers’ needs as a priority. In Ethiopia, the Ethiopian Pharmaceutical Association (EPA) and the Ethiopian Medical Association (EMA) have stated the code of ethics and standards of practice for Pharmacy and medical professionals practicing in Ethiopia regarding pharmaceutical promotion.42,43 The code of ethics stated that pharmacy and medical professionals shouldn’t participate in any promotional methods or campaigns that encourage the public to equate medicine with ordinary articles of commerce or encourage a person or the public to buy more of a medicine product than the amount needed. Though the current study didn’t find a significant breach of these codes, there is a concern regarding some of the legislation as some of the respondents reported that receiving gifts from pharmaceutical representatives increases the chance that they will eventually sell or recommend/prescribe the company’s products.

In Ethiopia, the authors couldn’t find any code of ethics for pharmaceutical industries. However, the formerly Drug Administration and Control Authority of Ethiopia (DACA), currently known as the Ethiopian Food and Drug Administration Agency (EFDA), has issued a guideline for the regulation of Promotion and Advertisement of drugs in the country stating the basic requirements and information to be included during advertisement by Pharmaceutical Sales Representatives (PSR’s).44 Some of the requirements in the guideline include; PSR’s are prohibited to detail the differential advantages of their products comparing with others, the information disseminated should at least contain the name of active ingredient (API), the brand name of the product, the content of active ingredient, indication, dosage form, side-effects, major adverse drug reactions (ADRs), precautions, contraindications, warnings, major drug interactions, storage condition, and reference to scientific literature as needed.44 As such, practicing health professionals should be aware of this information and seek them whenever approached by PSR’s.

In the present study, the majority of doctors (33.3%) than pharmacy professionals (22.2%) reported that they have been approached by pharmaceutical company representatives when they were attending a placement during their studies. On the other hand, a greater number of pharmacy professionals than doctors (83% and 42% respectively) reported that they have been approached by pharmaceutical company representatives during their professional practice (work). This finding was
a little different from a study conducted in Saudi Arabia, in which the same proportion of doctors (34%) reported that they have been approached by pharmaceutical company representatives during their study and at their work, while a greater number of pharmacy professionals, 18.4%, reported that they were approached by those pharmaceutical company representatives whilst being in pharmacy placement (during their study) than in their work, 17.6%.3

Evidence shows that physicians’ contact with pharmaceutical representatives begins in medical school and continues frequently about four times per month during the physician’s career.19 In one study, about 54% of the physicians reported being visited at least once a day by a pharmaceutical company sales representative.45 These kinds of contacts will eventually influence drug prescription habits, and also requests by physicians for formulary additions.17,19,46,47 Policies aiming at restricting contacts with pharmaceutical company representatives during residency training should be implemented and these approaches have been shown to result in fewer contacts after training and a less positive attitude towards the information from such contacts.48 Furthermore, incorporating gift restriction policies at medical schools and/or implementing conflict of interest (COI) policies in medical institutions were found to be associated with lower rates of prescribing heavily marketed and brand reformulated medications by medical practitioners graduated from those institutions as compared with their counterparts.49,50

In the present study, nearly half of the study participants, 50.5%, agreed that the information provided by pharmaceutical/drug representatives about their company’s product can be trusted and was useful. This finding was consistent with a study from Saudi Arabia, in which 75% of the pharmacists and 65% of the physicians reported drug companies as a useful way to gain knowledge.3 Similar findings were also reported by other studies.51 However, some evidence shows direct company promotions of pharmaceuticals can also lead to negative consequences thus suggesting close monitoring. One study has outlined that direct company promotions of pharmaceuticals were associated with higher prescribing frequency, higher costs, or lower prescribing quality.52 Besides, there are also shreds of evidence showing that pharmaceutical companies/PSR’s didn’t provide full information about their products and especially serious adverse events associated with their products are omitted.53 One long-term survey in France revealed that around 70% of the time PSRs didn’t mention adverse effects related to their product, and almost one-third of the promotions discussed unapproved indications or doses.54

In this study, 37.1% of the study participants agreed that it was appropriate for pharmacy and medical professionals to accept gifts from drug companies. Similar results were also reported by other studies.3,34,39 However, these kinds of practices should be closely monitored as they may at some point influence the health professional’s decision-making and led to malpractice. One study revealed that the majority of the participants felt gifts worth more than $100 would likely compromise a practitioner’s independence and objectivity, and a majority favored eliminating presentations by pharmaceutical representatives at their hospitals.55
In the present study, about 39% of the respondents agreed that receiving gifts from pharmaceutical representatives increases the chance that they will eventually sell or recommend/prescribe the drug company’s products. This finding was consistent with a study from Saudi Arabia, in which 34% and 40% of the physicians and pharmacists respectively agreed that receiving gifts from pharmaceutical representatives increases the chance that they will eventually sell or recommend/prescribe the drug company’s products. Another study conducted in Mekelle, Ethiopia, reported that 48.2% of the physicians believed that their prescribing decisions were influenced by visits of medical representatives. This should be a concern because health professionals shouldn’t come under commercial pressure from drug manufacturers and/or retailers and prescribe/dispense only based on the patient’s condition/interest. Global evidence also shows that physician-pharmaceutical company/PSR’s interactions and acceptance of gifts from those companies have been found to affect physicians’ prescribing behavior and are likely to contribute to irrational prescribing of the company’s product. As such, interventions in the form of policy reforms/implementation and education about the impacts of these interactions are needed.

In the current study, the majority of the doctors preferred textbooks (79.2%), stationery (70.8%), and drug samples (70.8%) as appropriate gifts, while the majority of the pharmacy professionals preferred drug samples (83.9%), stationery (83.9%), and conference registration fees (76.5%) as appropriate gifts by pharmaceutical sales representatives respectively. This finding was different from a study conducted in Kuwait, in which textbook was the promotional gift considered most appropriate by both pharmacy and medical students, 72% and 70% respectively. In a study conducted in Saudi Arabia, the promotional gifts most appropriate in the opinion of the majority of physicians were conference registration fees 67%, and free drug samples 66%, whereas for pharmacy professionals, drug samples were the most suitable donation 79%, followed by textbook 67% and notepad 63%.

In general, the present findings show that strategies should be in place to regulate the interaction between medical practitioners and PSR’s. These could be important to minimize the influence these interactions could have on the health professional’s rational decision-making and use of medications. One of such strategies could be the implementation of policies aimed at restricting health professional’s contact with pharmaceutical company representatives during residency training (practical attachments) as well as incorporating gift restriction policies in pharmaceutical company interactions.

Limitation of the study

Because of the nature of the study, some of the respondents’ answers to the study questions may be based on their memory and thus there may be a recall bias. Similarly, the respondents may not provide their genuine answers to some of the questions due to the sensitivity of the issue (due to ethical concerns) and/or as a
result of social desirability bias. Few older literature was also used in the current study due to a lack of enough studies on the subject and at some point because some of them were general ethical guidelines. However, this could still be taken as a limitation as there could be a change in practice since those studies were conducted. Another limitation of the current study was the sample size, as many of the contacted health professionals were very reluctant to participate/ fill the questionnaire due to fear of the COVID-19 pandemic which was wide spreading during the current study period. This has brought a significant limitation to the sample size as well as the composition of the study participants as more senior health professionals haven’t participated. This could make it difficult to make generalizations and make inferences to other areas of the country. Thus, the authors recommend additional similar studies with a large sample size.

**Conclusion**

Significant gaps were reported regarding the training need of health professionals about the ethics or effects of drug company marketing/promotion activities and how to deal with pharmaceutical sales representatives. Additional problems were also identified regarding health professionals’ attitudes and acceptance of promotional gifts as these may at some point influence their decision-making and professional’s practice. The study also revealed that contact between PSR’s and medical and pharmacy professionals begins early during their professional training and thus educational institutes should implement strategies to minimize the negative impact of these contacts on their medical practice.

**Study implication**

The current study investigated the exposure and attitude of medical doctors and pharmacy professionals to drug promotional activities and assessed their perception of gifts as well as their training background regarding pharmaceutical marketing/promotion activities. The study has revealed very important findings/evidence for future policies and strategies aimed at ensuring the rational use of medications. The present study will also add additional evidence to the paucity of studies in developing countries in this particular area and thus serve as baseline evidence for future similar studies.

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Author contributions
All authors contributed to data analysis, drafting or revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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Ethical approval
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Informed consent
Written informed consent was obtained from the study participant(s) for their anonymized information to be published in this article.

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The data sets generated and/or analyzed during the current study are not available in public due to the requirement of confidentiality upon which consent was secured from the study participants but is available from the corresponding author on reasonable request.

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Consent statement

This survey is conducted to assess the exposure, attitude, and acceptance of pharmaceutical promotion among pharmacy and medical professionals. The survey is aimed to identify how doctors and pharmacy professionals are handling pharmaceutical promotion activities by company representatives and their assessment of the promotional practice. Participation in the survey is voluntary and we can assure you that the information you provide will be kept confidential and only be used for research purposes. The collected information will anonymously be recorded (no need to write your name) and only used for research purposes. As we go through the questionnaire, please feel free not to answer in part or at all if you do not wish to give additional information. However, your cooperation to answer all the questions is highly appreciated.

Part 1: Sociodemographic characteristics

1. Gender: A. Male B. Female
2. Age: ______
3. Profession: ____________________________
4. Educational level: ______________________
5. Years of experience: _________________
6. Residency (Name of city of residence): _____________________
7. Type of facility: _____________________________

**Part 2: Exposure and attitude to drug promotion**

1. Have you received any teaching in your studies about the ethics or effects of drug company promotion?  A. Yes  B. No
2. Have you ever received any teaching in your studies about how to handle or interpret drug promotional material and/or drug representatives (pharmaceutical company agents)?  A. Yes  B. No
3. Do you have a personal friendship with a medical representative?  
   A. Yes  B. No
4. Have you ever been approached by Pharmaceutical company representatives when attending a pharmacy placement/ward round (during your study)?  A. Yes  B. No
5. Have you ever been approached by pharmaceutical company representatives within your professional practice?  A. Yes  B. No
6. Are you familiar with the codes of ethics for pharmacist’s interaction with industry representatives?  A. Yes  B. No

**Part 3: Indicate your response to the following issues by ticking on the corresponding box (Agree, Disagree, Neutral)**

| S. No | Agree | Disagree | Neutral |
|-------|-------|----------|---------|
| 1.    | The information provided by drug representatives about their company's product can be trusted |  |  |
| 2.    | The information from drug representatives is important for the pharmacy and medical staff |  |  |
| 3.    | It is appropriate for pharmacy and medical staff to accept gifts from drug companies because drug companies have minimal influence on staff |  |  |
| 4.    | Most talks sponsored by drug companies are helpful and educational |  |  |

(continued)
Part 4: Indicate the appropriateness of the promotional gift by ticking one choice

| S. No | Agree | Disagree | Neutral |
|-------|-------|----------|---------|
| 5.    | Drug companies are a useful way to learn about new drugs |
| 6.    | Drug companies sponsored talks are often biased in favor of their products |
| 7.    | Gifts from drug companies to pharmacy professionals/doctors led to increased prices of medicines |
| 8.    | Receiving gifts or food from pharmaceutical representatives increases the chance that I will eventually sell or recommend/prescribe the drug company’s products |
| 9.    | Drug companies act unethically in promoting and advertising their products |
| 10.   | Information from pharmaceutical sales representatives would have more value if the representative was a pharmacy or other health care professional. |

| S. No | Appropriate | Inappropriate | Neutral |
|-------|-------------|---------------|---------|
| 1.    | Meal        |               |         |
| 2.    | Gift up to 500 ETB |           |         |
| 3.    | Gift 501–1000 ETB |          |         |
| 4.    | Gift >1000 ETB |            |         |
| 5.    | Drug sample |               |         |
| 6.    | Social trip |               |         |
| 7.    | International holiday |         |         |
| 8.    | Pen/notepad |               |         |
| 9.    | Conference registration fees |         |         |
| 10.   | Travel to a conference |          |         |
| 11.   | Stethoscope |               |         |
| 12.   | Textbook    |               |         |