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Awareness and Attitudes of the Lebanese Population with regards to Physician - Pharmaceutical Company Interaction: a survey Study

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Abstract

Objective: To assess the awareness of the general public in Lebanon, and their attitudes towards these interactions.

Setting: Primary health care clinics and shopping malls in the greater Beirut area.

Participants: 263 participants completed the questionnaire, 62% of which were female and 38% were male. Eligible participants were Arabic- or English-speaking adults (age ≥ 18 years) residing in Lebanon for at least five years.

Primary and secondary outcome measures: awareness, attitudes and beliefs of the general public

Results: 263 out of 295 invited individuals (89% response rate) completed the questionnaire. While the majority of participants were aware of pharmaceutical company presence (or absence) in physicians' offices (range of 71% to 76% across questions), smaller percentages were aware of gift-related practices of physicians (range of 26% to 69% across questions). Forty percent thought that accepting small gifts or meals by physicians is wrong/unethical. The percentage of participants reporting lower trust in physicians due to their participation in various pharmaceutical company-related activities ranged from 12% to 45% (the highest percentage being for large gifts). Participants who reported receiving free medication samples were significantly more likely to consider physicians' acceptance of small gifts as "not a problem" than "unethical" (OR=1.53; p=0.044).

Conclusion: Participants in our survey were generally more aware of pharmaceutical company presence (or absence) in physicians' offices than of gift-related practices of physicians. While the level of trust was not affected for the majority of participants for various types of interactions, it was affected the most for accepting large gifts.

Strengths and Limitations

- To our knowledge, this is the first survey on this topic to be conducted in the Middle East region.
- One of the strengths of our study is the inclusion of both patients (from primary health care clinics) and non-patients (from malls). This increases the external validity of our findings.
- We conducted a pilot test in order to ensure thorough understanding of the questions among participants and used a validated questionnaire.
- The one limitation is that the translated Arabic version was not formally validated.

Introduction

The interaction between pharmaceutical companies and physicians is a common practice in health (1). These interactions include offering presents, financial support, and other beneficial favors to physicians (2). While pharmaceutical companies claim that these interactions serve to educate and inform physicians of their products, there is growing concern that patient outcomes are at risk as a result of these interactions (3). Indeed, there is evidence that such interactions may lead to increased prescriptions, as well as prescription of more expensive drugs that do not demonstrate increased usefulness (4).

These interactions create a conflict of interest for physicians between the perceived obligations towards a pharmaceutical company and the best interests of their patients (3). Additionally, physician-pharmaceutical company interactions may affect the general public's trust in their physicians. Lack of trust in the healthcare system has been shown to lead to worse patient outcomes and decreased patient satisfaction (1).

There is an overall increased awareness about physician-pharmaceutical company interactions, especially in areas where research and attention to this matter is surging (1). However, while many research studies have focused on the attitudes and views of physicians concerning this topic, there have been relatively fewer studies focusing on the views of the general public (2). None of those studies have been conducted in Lebanon.

The objective of this study was to investigate the awareness and attitudes of the Lebanese general population concerning physician-pharmaceutical company interactions.

Methods

Study population

Eligible participants included Arabic- and English-speaking adults (age ≥ 18 years) residing in Lebanon for at least five years. We recruited two types of participants:

- Individuals in the waiting rooms of primary health care clinics. Our sampling frame consisted of the list of primary health care clinics in the greater Beirut area provided by the ministry of public health.
- Individuals in shopping malls. Our sampling frame consisted of the list of malls in the greater Beirut area provided by the Directory of Exports and Industrial Firm in Lebanon.

We excluded individuals working as staff in recruitment sites. The principal investigator contacted the eligible primary health care clinics and shopping mall directors asking for permission to distribute the surveys in their premises. The Institutional Review Board (IRB) at the American University of Beirut approved this study.

Survey tool

We adopted our survey tool from a validated, self-administered questionnaire designed by Green, MJ (refer to Appendix A) (2). We translated the questionnaire from English to Arabic and then back translated it to English (Arabic version available on demand). The survey included 40 questions addressing the following:

- Demographic characteristics (n=8);
- Awareness (n=13);
- Attitudes (n=11);
- Beliefs (n= 8)

Data collection

We collected data between January and March of 2015. Members of the research team were present in the waiting areas and shopping malls to invite non-staff individuals to participate in the survey. They were given consent forms, given ample time to read and sign it. The Institutional Review Board (IRB) at the American University of Beirut approved this consent procedure. Researchers handed out surveys to consented participants according to their language preference. The team members were available to answer questions, gave participants the privacy to fill the surveys, and gave them appropriate time to complete it.

Data Analysis

One team member entered data into SPSS statistical software and a second one verified them. We conducted a descriptive analysis of all variables. After assessing the distribution of answers, and similar to the approach by Green et al (2), we collapsed some of the answer options (See appendix A). We calculated percentages for the categorical variables and then presented the data in a table format for the demographics section and in graphs for each of three categories (awareness, attitudes, and beliefs). Also, we conducted a stratified analysis by type of participant. As we found significant differences for only two out of 32 variables (excluding demographic questions), we report here overall results for all participants.

In addition, we conducted a regression analysis to assess the association between the attitudes regarding the appropriateness of physicians accepting small gifts and the following demographic characteristics: age, sex, education, receiving free medical samples, and use of prescribed medication.

Sample Size Calculation

We calculated the sample size according to the following formula: N=(z)2(p)(q)/ (0.05)2. We identified no studies on this topic conducted in Lebanon, so we estimated the level of awareness to be close to that in Turkey (80%) (p=0.8) (5). This yielded a sample size of N=246). Finally, the target recruitment size was equal between the 2 groups of participants (individuals at primary health care clinics and mall attendees).

Results

We invited individuals in the waiting rooms of 5 primary health care clinics and in the food courts of 4 shopping malls in greater Beirut. Out of 295 invited individuals, 263 participated and completed the questionnaire (89% response rate). Individuals declined participating either for getting called by the physician in the primary care clinic setting, or for being short of time in the mall setting.

Participants' characteristics

Table 1 shows the demographic characteristics of participants. The age range for the majority of respondents was 18–49 years (79%). They were predominantly female (62%), and 48% had a degree less than high school. The majority had a low annual household income (less than 10,000$) (71%), and reported currently using prescription medications (77%).

Awareness of gifts

Figure 1 reports the participants' awareness of pharmaceutical company presence in physicians' offices. A majority of participants were aware of whether or not (answered 'yes' or 'no' as opposed to 'I don't know') there were drug company advertisements (76%), items with logos on them (73%), drug representatives (71%), and patient education materials (75%) present in the physicians' waiting room. However, only 35% indicated they knew whether or not office staff ate lunches paid by the drug companies.

Figure 2 shows the respondents' level of awareness of a number of gift-related practices of physicians. A minority of participants knew whether or not their physician accepted large gifts >100$ (29%), went on trips paid by the drug companies (30%), accepted small gifts <100$ (31%), conducted research for drug companies (32%), or accepted drug company meals (26%). However, more participants were aware whether or not physicians attended drug companies' social activities (41%), gave lectures for the drug companies (46%), and used drug company pens or notepads (69%).

Attitudes about Gifts

Figure 3 shows the percentage of participants who agreed with a series of statements about physicians' acceptance of small gifts or meals: accepting small gifts or meals influences physicians' prescribing behaviors (44%), the practice is wrong/unethical (40%), accepting meals makes patients wait too long (34%), it is acceptable as long as gifts are of little monetary value (39%), and it is not problematic (46%).

In a multinomial logistic regression analysis, participants who reported receiving free medication samples were significantly more likely to consider it "not a problem" than

"wrong/unethical" when asked about the appropriateness of physicians accepting small gifts (OR=1.53; p=0.044).

Figure 4 shows the participants' attitudes about various professionals, including doctors, accepting these small gifts or meals. The percentage of respondents reporting it was 'wrong/unethical' for doctors to accept gifts from drug company representatives (45%) was lower than that for judges to accept gifts from lawyers (66%), sports referees to accept gifts from players whose games they officiate (59%), and politicians to accept gifts from lobbyists (69%).

Impact on Trust in Physicians

Figure 5 reports the percentage of participants reporting lower trust in physicians related to their participation in various activities: using drug company pens or notepads (12%), accepting gifts >100$ (45%), going on trips paid by the drug company (30%), and accepting gifts <100$ (38%).

Discussion

We aimed to investigate the awareness and attitudes of the Lebanese general population concerning physician-pharmaceutical company interactions. While the majority of participants were aware of pharmaceutical company presence (or absence) in physicians' offices, smaller percentages were aware of gift-related practices of physicians. A minority thought that accepting small gifts or meals by physicians is wrong/unethical and reported lower trust in physicians due to their participation in various pharmaceutical company-related activities. Receiving free medication samples was associated with considering physicians' acceptance of small gifts as "not a problem".

An interesting finding is the higher level of awareness in relation to pharmaceutical company presence (or absence) in physicians' offices compared to that of gift-related practices of physicians. One likely explanation is that the company presence in the clinic is typically noticeable (e.g., drug company advertisements, items and education material with drug company logos on them). On the contrary, most of the interactions of physicians with drug companies are not (e.g., conduct research for the drug company, personal gifts, going on trips). This highlights the need for transparency and disclosure by physicians.

The fact that a minority of respondents thought that accepting small gifts or meals by physicians is wrong, suggests that the public does not consider this issue from an ethical perspective. Given that such interactions may indeed have ethical implications, there is a need for discussion of the issue at the societal level.

While we cannot state whether or not a majority of the participants believe the nature of this interaction is unethical, it is evident that some individuals (40%) would be opposed to this practice and believe it affects their physician's prescribing behavior (44%). Interestingly, the question addressing the ethicality of similar practices (accepting meals and small gifts) with other professions indicated that the respondents might have different standards or expectations across professions. Fewer participants thought that physicians' acceptance of meals or small gifts from pharmaceutical companies was wrong compared to equivalent situations with judges, referees, and politicians.

The results regarding the impact of the specific practices on the level of trust in physicians among patients possibly showed that relatively few participants made a connection between these practices and their physicians' behaviors. As other studies have indicated (4), the fear of these interactions lies in the possibility of influencing the prescribing behavior by selecting drugs that aren't as optimal as they are practical. Further research regarding the extent of this impact on prescribing behavior is necessary in order to assess the general public's concern for it.

Other studies, such as the one from which we adopted our survey tool (2), had similar results with regards to the awareness, attitudes and beliefs. The main difference was that participants in that study indicated a greater decrease in their level of trust upon knowing that their physician was accepting monetary gifts as well as going on trips paid for by drug companies. These findings might suggest that the Lebanese population may be less aware than the US one of the potential harm of these interactions.

We are aware of other studies that have assessed similar outcomes in other countries. A 2008 study conducted in the USA found that 82% of the participants were aware of the presence of pens or notepads in physicians' offices, as compared to 69% in our study (2). The percentages of participants who were aware of physicians accepting gifts >100$, gifts <100$, and trip invitations were respectively 12%, 16%, and 34% in the USA, and 29%, 31%, and 30% in Lebanon.

The percentage of participants who believed gifts and interactions between physicians and pharmaceutical companies affect physician's prescribing behavior was 41% in the USA in 2009, which is comparable to the 44% in our study. In Pakistan, 88% of

patients attending outpatient clinics in 2000 agreed it is appropriate for doctors to accept gifts from pharmaceutical companies (6). In Turkey, 71% of patients admitted to primary health care centers in 2004 agreed that accepting gifts from the drug companies is not ethical.

Finally, the percentages participants reporting lower trust in physicians related to their acceptance of gifts >100$ and to trips paid by the drug company were respectively "less than 50%" and 58% (2008) in the US survey, as compared to 45% and 30% in our survey.

Conclusion

In terms of policy implications, there is a definite need to raise awareness among the Lebanese population the potentially negative impacts of physician-industry interactions on the quality and cost of their healthcare. On a broader level, there is a need for system-level interventions to regulate physician-industry interactions (7). These may include self-regulation (e.g., voluntary codes of practice), and governmental regulations. The ultimate aim would be to minimize any negative effects of the physician-pharmaceutical company interactions and ultimately improve patient outcomes. Future research should assess the actual extent of the interaction in Lebanon, as well as the effect of raising awareness among the general population on their attitudes towards this interaction.

Contributorship statement

Contributors EAA, AHA, SBB, AAD, JOD, JME, and LSS contributed to the conception and design of the search strategy and to the data abstraction, data synthesis and manuscript drafting. AHA, SBB, AAD, JOD, JME, and LSS were responsible for interpretation of results. EAA, AHA, SBB, AAD, JOD, JME, and LSS were responsible for manuscript review and approval.

Competing Interests

None to declare.

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Data Sharing Statement

No additional data are available.

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Figures

Figure 1: Awareness of pharmaceutical company presence in physicians' offices

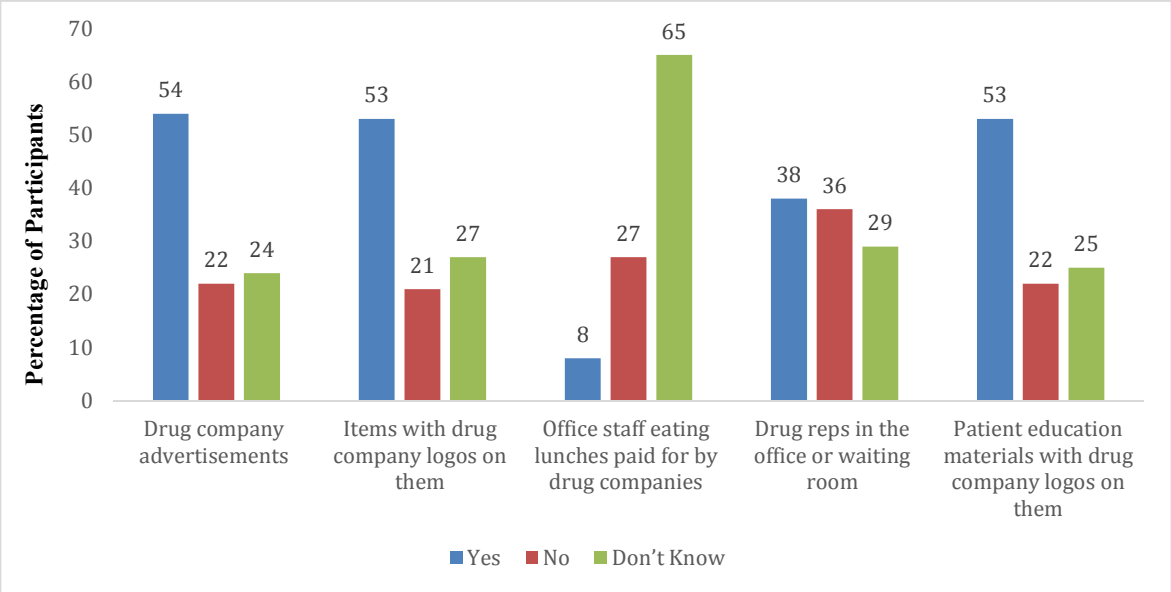


Figure 2: Knowledge of physician engagement in a variety of activities with pharmaceutical companies

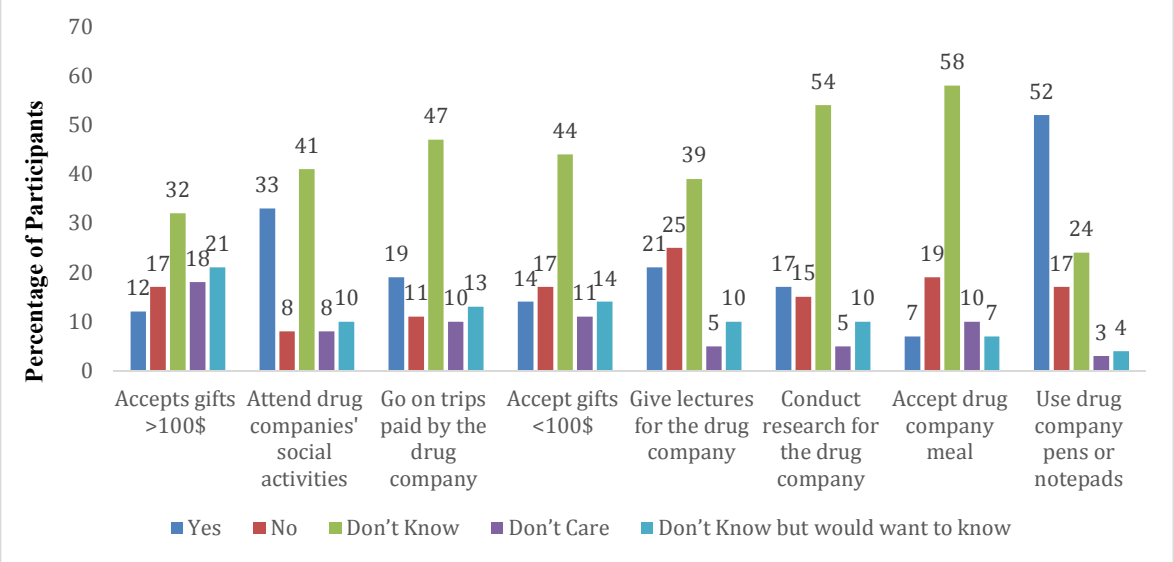


Figure 3: Attitude towards physicians accepting small gifts or meals

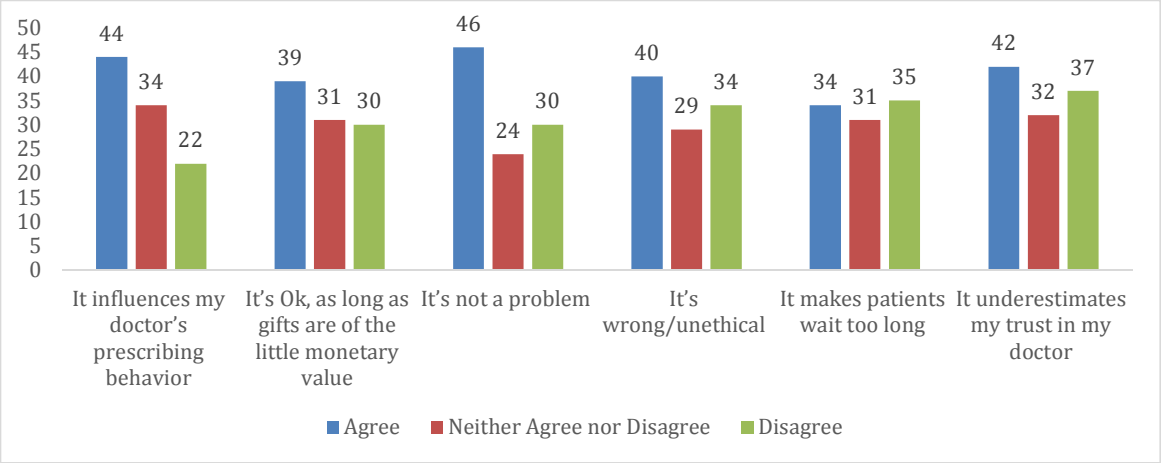


Figure 4: Attitudes about various professionals accepting gifts or meals

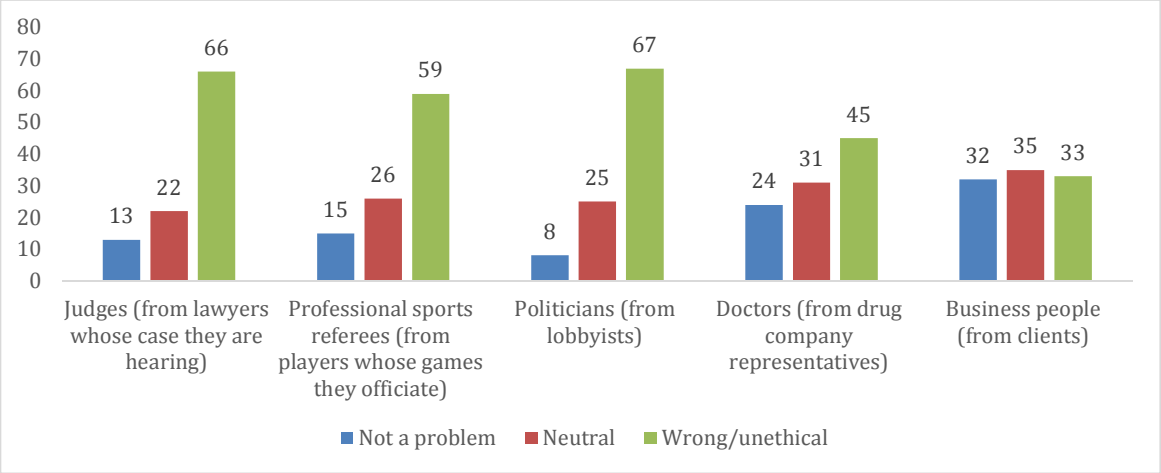
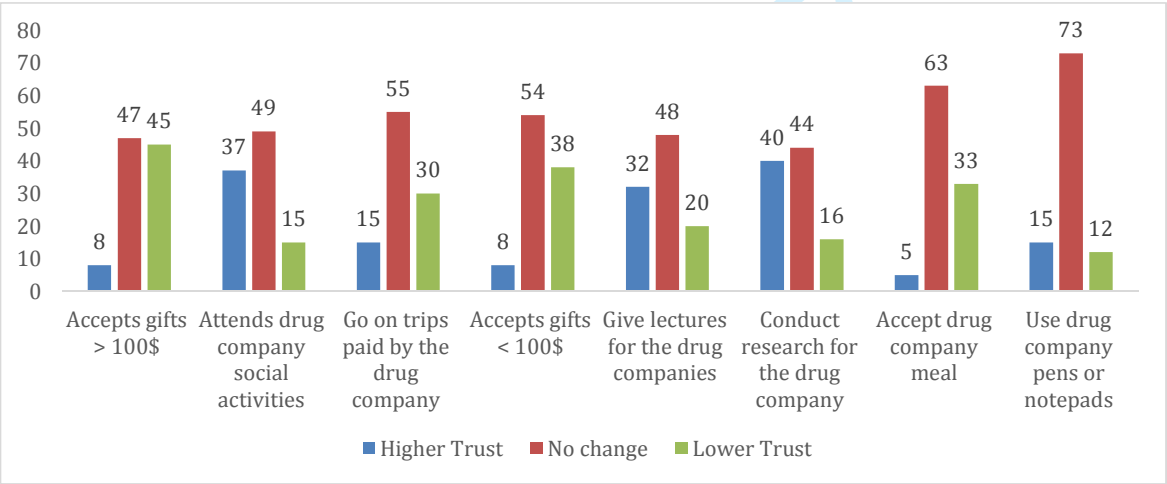


Figure 5: Effect of physician participation in various activities on patient trust



Tables

Table 1: Demographics

Characteristics (N=263)	Frequency (Percentage)
Age[1]	
18–49 years	206 (79)
50–64 years	40 (15)
65–80 years	12 (5)
Sex[1]	
Female	163 (62)
Education[1]	
Less than high school graduate	124 (48)
High school graduate or some college	70 (27)
College graduate or more	64 (25)
Annual household income[1]	
< $10,000	167 (71)
$10,000–$30,000	58 (25)
>$30,000	10 (4)
Have personal health care provider[4]	193 (74)
Satisfied with health care provider[5]	173 (72)
Received free medication samples in past year[6]	96 (37)
Currently use prescription medications[1]	202 (77)

1 n=262, 2 n=258, 3 n=235, 4 n=261, 5 n=242, 6 n=259

Table 2: Awareness of pharmaceutical company presence in physicians' offices

	Yes Frequency (%)	No Frequency (%)	Don't Know Frequency (%)
Drug company advertisements[1]	139 (54)	58 (22)	62 (24)
Items with drug company logos on them[2]	136 (53)	53 (21)	69 (27)
Office staff eating lunches paid for by drug companies[3]	21 (8)	70 (27)	170 (65)
Drug reps in the office or waiting room[1]	97 (38)	94 (36)	68 (29)
Patient education materials with drug company logos on them[1]	136 (53)	58 (22)	65 (25)

1 n=259, 2 n=258, 3 n=261

Table 3: Knowledge of physician engagement in a variety of activities with pharmaceutical companies

Activity	Yes Frequency (%)	No Frequency (%)	Don't Know Frequency (%)	Don't Care Frequency (%)	Don't know but would want to know Frequency (%)
Accepts gifts >100$[1]	31 (12)	43 (17)	84 (32)	47 (18)	55 (21)
Attend drug companies' social activities[2]	86 (33)	20 (8)	106 (41)	20 (8)	27 (10)
Go on trips paid by the drug company[3]	49 (19)	29 (11)	124 (47)	27 (10)	33 (13)
Accept gifts <100$[3]	37 (14)	45 (17)	114 (44)	29 (11)	37 (14)
Give lectures for the drug company[4]	55 (21)	65 (25)	101 (39)	14 (5)	26 (10)
Conduct research for the drug company[4]	43 (17)	38 (15)	142 (54)	13 (5)	25 (10)
Accept drug company meal[4]	18 (7)	49 (19)	150 (58)	25 (10)	19 (7)
Use drug company pens or notepads[4]	136 (52)	44 (17)	62 (24)	8 (3)	11 (4)

1 n=260, 2 n=259, 3 n=262, 4 n=261

Table 4: Effect of physician participation in various activities on patient trust

	Higher Trust Frequency (%)	**No change Frequency (%)**	**Lower Trust Frequency (%)**
Accepts gifts > 100$[1]	21 (8)	117 (47)	112 (45)
Attends drug company social activities[2]	92 (37)	123 (49)	37 (15)
Go on trips paid by the drug company[3]	36 (15)	138 (55)	75 (30)
Accepts gifts < 100$[4]	20 (8)	136 (54)	95 (38)
Give lectures for the drug companies[4]	79 (32)	121 (48)	51 (20)
Conduct research for the drug company[1]	101 (40)	110 (44)	39 (16)
Accept drug company meal[5]	12 (5)	160 (63)	83 (33)
Use drug company pens or notepads[6]	34.4 (15)	188 (73)	30 (12)

1 n=250, 2 n=252, 3 n=249, 4 n=251, 5 n=255, 6 n=256

Table 5: Attitudes towards physicians accepting small gifts or meals

	Agree Frequency (%)	**Neither Agree nor Disagree Frequency (%)**	**Disagree Frequency (%)**
It influences my doctor's prescribing behavior[1]	113 (44)	87 (34)	57 (22)
It's Ok, as long as gifts are of the little monetary value[2]	101 (39)	80 (31)	76 (30)
It's not a problem[3]	115 (46)	60 (24)	76 (30)
It's wrong/unethical[4]	94 (40)	74 (29)	87 (34)
It makes patients wait too long[4]	86 (34)	80 (31)	89 (35)
It underestimates my trust in my doctor[1]	108 (42)	81 (32)	68 (37)

1 n=260, 2 n=257, 3 n=251, 4 n=255

Table 6: Attitudes about various professionals accepting small gifts or meals

	Not a problem **Frequency (%)**	**Neutral** **Frequency (%)**	**Wrong/unethical** **Frequency (%)**
Judges (from lawyers whose case they are hearing)[1]	33 (13)	56 (22)	169 (66)
Professional sports referees (from players whose games they officiate)[2]	40 (15)	67 (26)	152 (59)
Politicians (from lobbyists)[1]	20 (8)	65 (25)	173 (67)
Doctors (from drug company representatives)[1]	62 (24)	81 (31)	115 (45)
Business people (from clients)[3]	83 (32)	90 (35)	84 (33)

1 n=258, 2 n=259, 3 n=257

Appendix A

Survey

Demographics

1. Age
   a. 18-49 b. 50-64 c. 65-80 d. >81
2. Sex
   a. Male b. Female
3. Education
   a. <high school graduate
   b. high school graduate or some college
   c. college graduate or more
4. Annual Household Income
   a. <10 000 $
   b. 10 000 $ - 30 000 $
   c. >30 000 $
5. Do you have a personal health care provider?
   a. Yes
   b. No
6. If yes, are you satisfied with health care provider?
   a. Yes
   b. No
7. Did you receive free medication samples in past year?
   a. Yes
   b. No
8. Are you currently using prescription medications?
   a. Yes
   b. No

Awareness

9. Are the following present in the exam room, waiting room, or other areas of your physician's' office?

a. Drug company advertisements
   1. Yes
   2. No
   3. Don't Know
b. Items with drug company logos on them
   1. Yes
   2. No
   3. Don't Know
c. Office staff eating lunches paid for by drug companies
   1. Yes

2. No
3. Don't Know

d. Drug reps in the office or waiting room
   1. Yes
   2. No
   3. Don't Know

e. Patient education materials with drug company logos on them
   1. Yes
   2. No
   3. Don't Know

10. Knowledge of Physician Engagement in a Variety of Activities With Pharmaceutical Companies. Does your doctor___?

a. accepts gift >100$
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

b. attend drug co. social activities
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

c. go on trips paid by the drug company
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

d. accept gifts <100$
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

e. give lectures for the drug company
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

f. conduct research for the drug company
   1. Yes
   2. No

3. Don't Know
4. Don't care
5. Don't know but would want to know

g. accept drug company meal
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

h. use drug company pens or notepads
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

Belief

11. Effect of Physician Participation in Various Activities on Patient Trust. How will each of the following affect your level of trust in your physician?

a. accepts gift >100$
1. Higher trust
2. No change
3. Lower trust

b. attend drug co. social activities
1. Higher trust
2. No change
3. Lower trust

c. go on trips paid by the drug company
1. Higher trust
2. No change
3. Lower trust

d. accept gifts <100$
1. Higher trust
2. No change
3. Lower trust

e. give lectures for the drug company
1. Higher trust
2. No change
3. Lower trust

f. conduct research for the drug company
1. Higher trust
2. No change

3. Lower trust

g. accept drug company meal
   1. Higher trust
   2. No change
   3. Lower trust

h. use drug company pens or notepads
   1. Higher trust
   2. No change
   3. Lower trust

Attitude

12. What is your attitude towards your physician accepting small gifts or meal.

a. it influences my doctor's prescribing behavior
   1. agree
   2. Neither agree nor disagree
   3. disagree

b. it's Ok, as long as gifts are of the little monetary value
   1. agree
   2. Neither agree nor disagree
   3. disagree

c. it's not a problem
   1. agree
   2. Neither agree nor disagree
   3. disagree

d. It's wrong/unethical
   1. agree
   2. Neither agree nor disagree
   3. disagree

e. it makes patients wait too long
   1. agree
   2. Neither agree nor disagree
   3. disagree

f. it underestimates my trust in my doctor
   1. agree
   2. Neither agree nor disagree
   3. disagree

Attitudes about Various Professionals Accepting Gifts or Meal

13. How proper do you think it is for each of the following to accept meals or small gifts from those listed?

a. Judges (from lawyers whose case they are hearing)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

b. Professional sports referees (from players whose games they officiate)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

c. Politicians (from lobbyists)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

d. Doctors (from drug company representatives)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

e. Business people (from clients)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

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Awareness and Attitudes of the Lebanese Population with regards to Physician - Pharmaceutical Company Interaction: a survey Study

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Abstract

Objective: To assess the awareness of the general public in Lebanon, and their attitudes towards these interactions.

Setting: Primary health care clinics and shopping malls in the Greater Beirut Area.

Participants: 263 participants completed the questionnaire, 62% of which were female and 38% were male. Eligible participants were Arabic- or English-speaking adults (age ≥ 18 years) residing in Lebanon for at least five years.

Primary and secondary outcome measures: awareness, attitudes and beliefs of the general public

Results: 263 out of 295 invited individuals (89% completion rate) completed the questionnaire. While the majority of participants were aware of pharmaceutical company presence (or absence) in physicians' offices (range of 71% to 76% across questions), smaller percentages were aware of gift-related practices of physicians (range of 26% to 69% across questions). Forty percent thought that accepting small gifts or meals by physicians is wrong/unethical. The percentage of participants reporting lower trust in physicians due to their participation in various pharmaceutical company-related activities ranged from 12% to 45% (the highest percentage being for large gifts). Participants who reported receiving free medication samples were significantly more likely to consider physicians' acceptance of small gifts as "not a problem" than "unethical" (OR=1.53; p=0.044).

Conclusion: Participants in our survey were generally more aware of pharmaceutical company presence (or absence) in physicians' offices than of gift-related practices of physicians. While the level of trust was not affected for the majority of participants for various types of interactions, it was affected the most for accepting large gifts.

Strengths and Limitations

- To our knowledge, this is the first survey on this topic to be conducted in the Middle East region.
- One of the strengths of our study is the inclusion of both patients (from primary health care clinics) and non-patients (from malls). This increases the external validity of our findings.
- We conducted a pilot test in order to ensure thorough understanding of the questions among participants and used a validated questionnaire.
- One of the limitations is that the translated Arabic version was not formally validated.
- Another limitation is that our sample is recruited from the Greater Beirut Area, exclusive of other Lebanese areas.

Introduction

The interaction between pharmaceutical companies and physicians is a common practice in health (1). These interactions include offering presents, financial support, and other beneficial favors to physicians (1). Pharmaceutical companies claim that these interactions serve to educate and inform physicians of their products (2). However, a systematic review of the literature suggested that such interactions are associated with higher prescribing frequency, higher prices, and lower quality of drugs prescribed (3).

These interactions create a conflict of interest for physicians between the perceived obligations towards a pharmaceutical company and the best interests of their patients (4). Additionally, physician-pharmaceutical company interactions may affect the general public's trust in their physicians. Lack of trust in the healthcare system has been shown to be associated with decreased patient satisfaction and lower adherence to treatment and screening recommendations (5,6,7).

We have not identified any published data about the extent and nature of interaction between physicians and pharmaceutical companies in Lebanon. However, we have recently collected data (unpublished) showing that these interactions are common and involve a variety of incentives including stationary equipment, furniture and travel support. In response to concerns about these interactions, the Lebanese Ministry of Public Health published a code of ethics for medicinal products promotion on May 31st, 2016. (8)

Due to its potential effect on patient care, a number of studies have tried to assess the knowledge, beliefs and attitudes of patients towards this relationship (9,10,11). A

recently published systematic review found a lower awareness amongst patients of physicians' receipt of personal gifts relative to office-use gifts (eg. stationery) (12). Also, there is greater acceptability of the office-use gifts over personal gifts (12). The systematic review analyzed data from 20 studies, none of which were conducted in Lebanon, indicating a knowledge gap about the patients' perspectives in Lebanon.

The objective of this study was to investigate the awareness and attitudes of the Lebanese general population concerning physician-pharmaceutical company interactions.

Methods

Study population

Eligible participants included Arabic- and English-speaking adults (age ≥ 18 years) residing in Lebanon for at least five years. We recruited two types of participants:

- Individuals in the waiting rooms of primary health care clinics. Our sampling frame consisted of the list of primary health care clinics in the Greater Beirut Area provided by the ministry of public health.
- Individuals in shopping malls. Our sampling frame consisted of the list of malls in the Greater Beirut Area provided by the Directory of Exports and Industrial Firm in Lebanon.

We excluded individuals working as staff in recruitment sites. The principal investigator contacted the eligible primary health care clinics and shopping mall directors asking for permission to distribute the surveys in their premises. The Institutional Review Board (IRB) at the American University of Beirut approved this study.

Participant recruitment

First, we phoned the directors of primary health care clinics and shopping malls to obtain approval for conducting our study on their premises.

Then, over several days, members of the team presented to the clinics where they approached potential participants and recruited them in a sequential manner. Similarly, members of the team visited malls where they randomly approached individuals and invited them to participate. The team members handed the survey to eligible individuals who consented to participate. They gave them the needed time and the privacy to complete the survey

Survey tool

We adopted our survey tool from a validated, self-administered questionnaire designed by Green, MJ (refer to Appendix A) (9). We translated the questionnaire from English to Arabic and then back translated it to English (Arabic version available on demand). The survey included 40 questions addressing the following:

- Demographic characteristics (n=8);
- Awareness (n=13);
- Attitudes (n=11);
- Beliefs (n= 8)

Data collection

We collected data between January and March of 2015. Members of the research team were present in the waiting areas and shopping malls to invite non-staff individuals to participate in the survey. They were given consent forms, given ample time to read and sign it. The Institutional Review Board (IRB) at the American

University of Beirut approved this consent procedure. Researchers handed out surveys to consented participants according to their language preference. The team members were available to answer questions, gave participants the privacy to fill the surveys, and gave them appropriate time to complete it.

Data Analysis

One team member entered data into SPSS statistical software and a second one verified them. We conducted a descriptive analysis of all variables. After assessing the distribution of answers, and similar to the approach by Green et al (9), we collapsed some of the answer options (See appendix A). We calculated percentages for the categorical variables and then presented the data in a table format for the demographics section and in graphs for each of three categories (awareness, attitudes, and beliefs). Also, we conducted a stratified analysis by type of participant. As we found significant differences for only two out of 32 variables (excluding demographic questions), we report here overall results for all participants.

In addition, we conducted a regression analysis to assess the association between the attitudes regarding the appropriateness of physicians accepting small gifts and the following demographic characteristics: age, sex, education, receiving free medical samples, and use of prescribed medication.

Sample Size Calculation

We calculated the sample size according to the following formula: N=(z)2(p)(q)/ (0.05)2. We identified no studies on this topic conducted in Lebanon, so we estimated the level of awareness to be close to that in Turkey (80%) (p=0.8) (11). This yielded a sample size of N=246) (table 1). Finally, the target recruitment size was equal

between the 2 groups of participants (individuals at primary health care clinics and mall attendees).

Results

We invited individuals in the waiting rooms of 5 primary health care clinics and in the food courts of 4 shopping malls in Greater Beirut. Out of 295 individuals who agreed to participate 263 fully completed the questionnaire (89% completion rate) (table1). Individuals declined participating either for getting called by the physician in the primary care clinic setting, or for being short of time in the mall setting.

Participants' characteristics

Table 1 shows the demographic characteristics of participants. The age range for the majority of respondents was 18–49 years (79%). They were predominantly female (62%), and 48% had an educational level less than high school. The majority had a low annual household income (less than US$10,000) (71%), and reported currently using prescription medications (77%) (table 1).

Awareness of gifts

Figure 1 reports the participants' awareness of pharmaceutical company presence in physicians' offices. A majority of participants were aware of whether or not (answered 'yes' or 'no' as opposed to 'I don't know' and "I don't care") the following were present in the physicians' waiting room: drug company advertisements (76%), items with logos on them (73%), and patient education materials (75%). Seventy-one percent was aware that drug representatives visit the clinic. However, only 35% indicated they knew whether or not office staff ate lunches paid by the drug companies (table 2).

Figure 2 shows the respondents' level of awareness of a number of gift-related practices of physicians. A minority of participants knew whether or not their physician accepted large gifts >US$100 (29%), went on trips paid by the drug companies (30%), accepted small gifts <US$100 (31%), conducted research for drug companies (32%), or accepted drug company meals (26%). However, more participants were aware whether or not physicians attended drug companies' social activities (41%), gave lectures for the drug companies (46%), and used drug company pens or notepads (69%). These figures exclude the number of participants who responded either 'don't know' or 'don't care' (table 3).

Attitudes about Gifts

Figure 3 shows the percentage of participants who agreed with a series of statements about physicians' acceptance of small gifts or meals and those who disagreed: accepting small gifts or meals influences physicians' prescribing behaviors (44% agreed, 22% disagreed), the practice is wrong/unethical (40% agreed, 34% disagreed), accepting meals makes patients wait too long (34% agreed, 35% disagreed), it is acceptable as long as gifts are of little monetary value (39% agreed, 30% disagreed), and it is not problematic (46% agreed, 30% disagreed) (table 5).

In a multinomial logistic regression analysis, participants who reported receiving free medication samples were significantly more likely to consider it "not a problem" than "wrong/unethical" when asked about the appropriateness of physicians accepting small gifts (OR=1.53; p=0.044).

Figure 4 shows the participants' attitudes about various professionals, including doctors, accepting these small gifts or meals. The percentage of respondents reporting it was 'wrong/unethical' for doctors to accept gifts from drug company

representatives (45%) was lower than that for judges to accept gifts from lawyers (66%), sports referees to accept gifts from players whose games they officiate (59%), and politicians to accept gifts from lobbyists (69%) (table 6).

Impact on Trust in Physicians

Figure 5 reports the percentage of participants reporting lower trust in physicians related to their participation in various activities: using drug company pens or notepads (12%), accepting gifts >US$100 (45%), going on trips paid by the drug company (30%), and accepting gifts <US$100 (38%) (table 4). It is worth noting that there is a substantial percentage of participants who reported that they had more trust in their physician if he/she had a relationship with pharmaceutical companies. This was mainly clear with regards to physicians conducting research for the pharmaceutical company (40% had an increased trust) (table 4). We hypothesize that this is due to the belief that close interaction between the two leads to enhanced physician's awareness of the newest pharmaceutical innovations.

Discussion

We aimed to investigate the awareness and attitudes of the Lebanese general population concerning physician-pharmaceutical company interactions. While the majority of participants were aware of pharmaceutical company presence (or absence) in physicians' offices, smaller percentages were aware of gift-related practices of physicians. A minority thought that accepting small gifts or meals by physicians is wrong/unethical and reported lower trust in physicians due to their participation in various pharmaceutical company-related activities. Receiving free medication samples was associated with considering physicians' acceptance of small gifts as "not a problem".

Although we restricted our eligibility to residents of the Greater Beirut Area, we believe our sample is fairly representative of the general Lebanese population. Indeed, based on data reported in the World Factbook (13), about 44% of the Lebanese population resides in the Greater Beirut Area. Moreover, representativeness is improved by the inclusion of both patients (from primary health care clinics) and the general public (from malls).

An interesting finding is the higher level of awareness in relation to pharmaceutical company presence (or absence) in physicians' offices compared to that of gift-related practices of physicians. One likely explanation is that the company presence in the clinic is typically noticeable (e.g., drug company advertisements, items and education material with drug company logos on them). On the contrary, most of the interactions of physicians with drug companies are not (e.g., conduct research for the drug company, personal gifts, going on trips). This highlights the need for transparency and disclosure by physicians.

The fact that a minority of respondents thought that accepting small gifts or meals by physicians is wrong, suggests that the public either does not consider this issue from an ethical perspective or does not consider it ethically wrong.

While we cannot state whether or not a majority of the participants believe the nature of this interaction is unethical, it is evident that some individuals (40%) would be opposed to this practice and believe it affects their physician's prescribing behavior (44%) (table 5). Interestingly, the question addressing the ethicality of similar practices (accepting meals and small gifts) with other professions indicated that the

respondents might have different standards or expectations across professions. Fewer participants thought that physicians' acceptance of meals or small gifts from pharmaceutical companies was wrong compared to equivalent situations with judges, referees, and politicians (table 6).

The fact that a minority of participants reported lower trust in response to the participation of physicians in various activities suggests that relatively few of them made a connection between physicians' practices and their behaviors. As other studies have indicated (10), patients' mistrust is related to the possibility that physicians select drugs that are more expensive, less efficacious cause higher side effects.

Other studies, such as the one from which we adopted our survey tool (9), had similar results with regards to the awareness, attitudes and beliefs. The main difference was that participants in that study indicated a greater decrease in their level of trust upon knowing that their physician was accepting monetary gifts as well as going on trips paid for by drug companies. As an illustration, upon investigating the change in the level of trust when pharmaceutical companies offer paid trips to physicians, 55% of the Lebanese population showed no change in the level of trust, while 30% reported lower trust (table 4). Conversely, the study conducted on an American sample showed that 58% reported a decrease in the level of trust in physicians accepting paid trips by pharmaceutical companies, while 38% had no change in their level of trust. These findings might suggest that the Lebanese population may be less aware of the potential harm of these interactions than the American population.

We are aware of other studies that have assessed similar outcomes in other countries. A 2008 study conducted in the USA found that 82% of the participants were aware of

the presence of pens or notepads in physicians' offices, as compared to 69% in our study (9). The percentages of participants who were aware of physicians accepting gifts >US$100, gifts <US$100, and trip invitations were respectively 12%, 16%, and 34% in the USA, and 29%, 31%, and 30% in Lebanon (table 3).

The percentage of participants who believed gifts and interactions between physicians and pharmaceutical companies affect physicians' prescribing behavior was 41% in the USA in 2009, which is comparable to the 44% in our study (table 5). In Turkey, 71% of patients admitted to primary health care centers in 2004 agreed that accepting gifts from the drug companies is not ethical (11). In Pakistan, only 9% of patients attending outpatient clinics in 2000 agreed it is inappropriate for doctors to accept gifts from pharmaceutical companies. (14)

Finally, the percentages participants reporting lower trust in physicians related to their acceptance of gifts >US$100 and to trips paid by the drug company were respectively "less than 50%" and 58% (2008) in the US survey, as compared to 45% and 30% in our survey (table 4).

Conclusion

In terms of policy implications, there is a definite need to raise awareness among the Lebanese population the potentially negative impacts of physician-industry interactions on the quality and cost of their healthcare. On a broader level, there is a need for system-level interventions to regulate physician-industry interactions (15). These may include self-regulation (e.g., voluntary codes of practice), and governmental regulations. The ultimate aim would be to minimize any negative

effects of the physician-pharmaceutical company interactions and ultimately improve patient outcomes. Future research should assess the actual extent of the interaction in Lebanon, as well as the effect of raising awareness among the general population on their attitudes towards this interaction.

Contributorship statement

Contributors EAA, AHA, SBB, AAD, JOD, JME, and LSS contributed to the conception and design of the search strategy and to the data abstraction, data synthesis and manuscript drafting. AHA, SBB, AAD, JOD, JME, and LSS were responsible for interpretation of results. EAA, AHA, SBB, AAD, JOD, JME, and LSS were responsible for manuscript review and approval.

Competing Interests

None to declare.

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Data Sharing Statement

No additional data are available.

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Tables:

Characteristics (N=263)	Frequency (Percentage)
Age[1]	
18–49 years	206 (79)
50–64 years	40 (15)
65–80 years	12 (5)
Sex[1]	
Female	163 (62)
Education[1]	
Less than high school graduate	124 (48)
High school graduate or some college	70 (27)
College graduate or more	64 (25)
Annual household income[1]	
< US$10,000	167 (71)
US$10,000–US$30,000	58 (25)
>US$30,000	10 (4)
Have personal health care provider[4]	193 (74)
Satisfied with health care provider[5]	173 (72)
Received free medication samples in past year[6]	96 (37)
Currently use prescription medications[1]	202 (77)

Table 1: Demographics

1 n=262, 2 n=258, 3 n=235, 4 n=261, 5 n=242, 6 n=259

Table 2: Awareness of pharmaceutical company presence in physicians' offices

	Yes Frequency (%)	No Frequency (%)	Don't Know Frequency (%)
Drug company advertisements[1]	139 (54)	58 (22)	62 (24)
Items with drug company logos on them[2]	136 (53)	53 (21)	69 (27)
Office staff eating lunches paid for by drug companies[3]	21 (8)	70 (27)	170 (65)
Drug reps in the office or waiting room[1]	97 (38)	94 (36)	68 (29)
Patient education materials with drug company logos on them[1]	136 (53)	58 (22)	65 (25)

1 n=259, 2 n=258, 3 n=261

Table 3: Knowledge of physician engagement in a variety of activities with pharmaceutical companies

Activity	Yes Frequency (%)	No Frequency (%)	Don't Know Frequency (%)	Don't Care Frequency (%)	Don't know but would want to know Frequency (%)
Accepts gifts >US$100[1]	31 (12)	43 (17)	84 (32)	47 (18)	55 (21)
Attend drug companies' social activities[2]	86 (33)	20 (8)	106 (41)	20 (8)	27 (10)
Go on trips paid by the drug company[3]	49 (19)	29 (11)	124 (47)	27 (10)	33 (13)
Accept gifts <US$100[3]	37 (14)	45 (17)	114 (44)	29 (11)	37 (14)
Give lectures for the drug company[4]	55 (21)	65 (25)	101 (39)	14 (5)	26 (10)
Conduct research for the drug company[4]	43 (17)	38 (15)	142 (54)	13 (5)	25 (10)
Accept drug company meal[4]	18 (7)	49 (19)	150 (58)	25 (10)	19 (7)

Use drug company pens or notepads[4]	136 (52)	44 (17)	62 (24)	8 (3)	11 (4)

1 n=260, 2 n=259, 3 n=262, 4 n=261

Table 4: Effect of physician participation in various activities on patient trust

	Higher Trust Frequency (%)	**No change Frequency (%)**	**Lower Trust Frequency (%)**
Accepts gifts > US$100[1]	21 (8)	117 (47)	112 (45)
Attends drug company social activities[2]	92 (37)	123 (49)	37 (15)
Go on trips paid by the drug company[3]	36 (15)	138 (55)	75 (30)
Accepts gifts < US$100[4]	20 (8)	136 (54)	95 (38)
Give lectures for the drug companies[4]	79 (32)	121 (48)	51 (20)
Conduct research for the drug company[1]	101 (40)	110 (44)	39 (16)
Accept drug company meal[5]	12 (5)	160 (63)	83 (33)
Use drug company pens or notepads[6]	34.4 (15)	188 (73)	30 (12)

1 n=250, 2 n=252, 3 n=249, 4 n=251, 5 n=255, 6 n=256

Table 5: Attitudes towards physicians accepting small gifts or meals

	Agree Frequency (%)	**Neither Agree nor Disagree Frequency (%)**	**Disagree Frequency (%)**
It influences my doctor's prescribing behavior[1]	113 (44)	87 (34)	57 (22)
It's Ok, as long as gifts are of the little monetary value[2]	101 (39)	80 (31)	76 (30)
It's not a problem[3]	115 (46)	60 (24)	76 (30)
It's wrong/unethical[4]	94 (40)	74 (29)	87 (34)
It makes patients wait too long[4]	86 (34)	80 (31)	89 (35)

It underestimates my trust in my doctor[1]	108 (42)	81 (32)	68 (37)

1 n=260, 2 n=257, 3 n=251, 4 n=255

Table 6: Attitudes about various professionals accepting small gifts or meals

	Not a problem **Frequency (%)**	**Neutral** **Frequency (%)**	**Wrong/unethical** **Frequency (%)**
Judges (from lawyers whose case they are hearing)[1]	33 (13)	56 (22)	169 (66)
Professional sports referees (from players whose games they officiate)[2]	40 (15)	67 (26)	152 (59)
Politicians (from lobbyists)[1]	20 (8)	65 (25)	173 (67)
Doctors (from drug company representatives)[1]	62 (24)	81 (31)	115 (45)
Business people (from clients)[3]	83 (32)	90 (35)	84 (33)

1 n=258, 2 n=259, 3 n=257

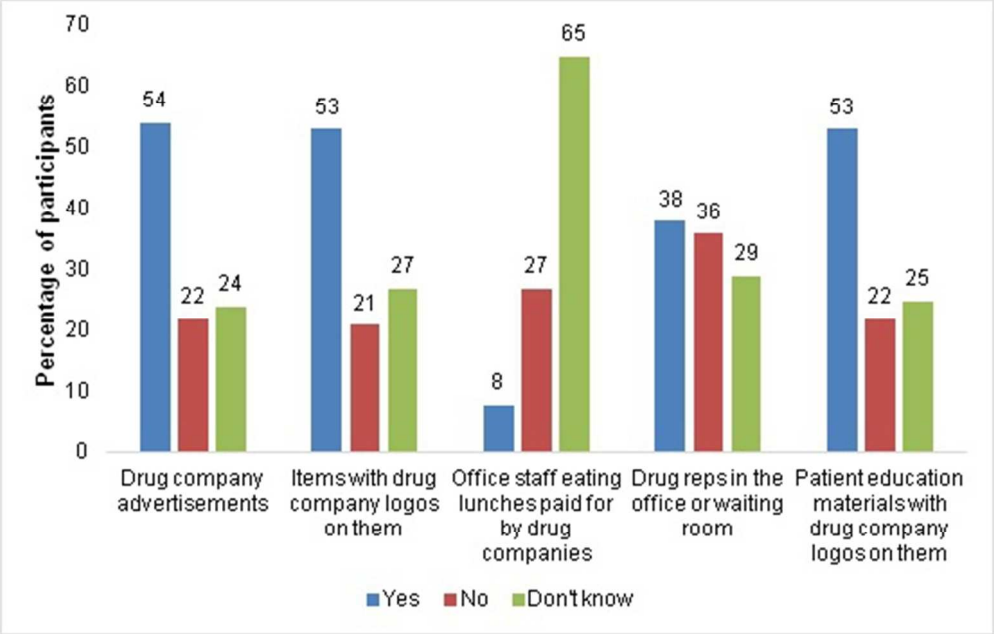

Figure 1: Awareness of pharmaceutical company presence in physicians' offices

47x30mm (300 x 300 DPI)

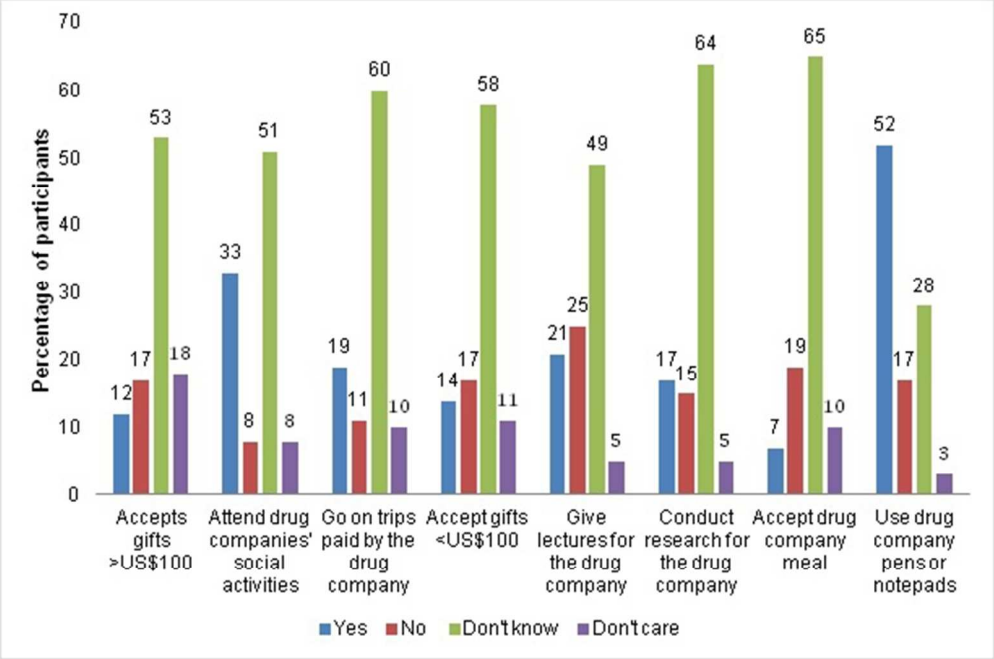

Figure 2: Knowledge of physician engagement in a variety of activities with pharmaceutical companies

52x34mm (300 x 300 DPI)

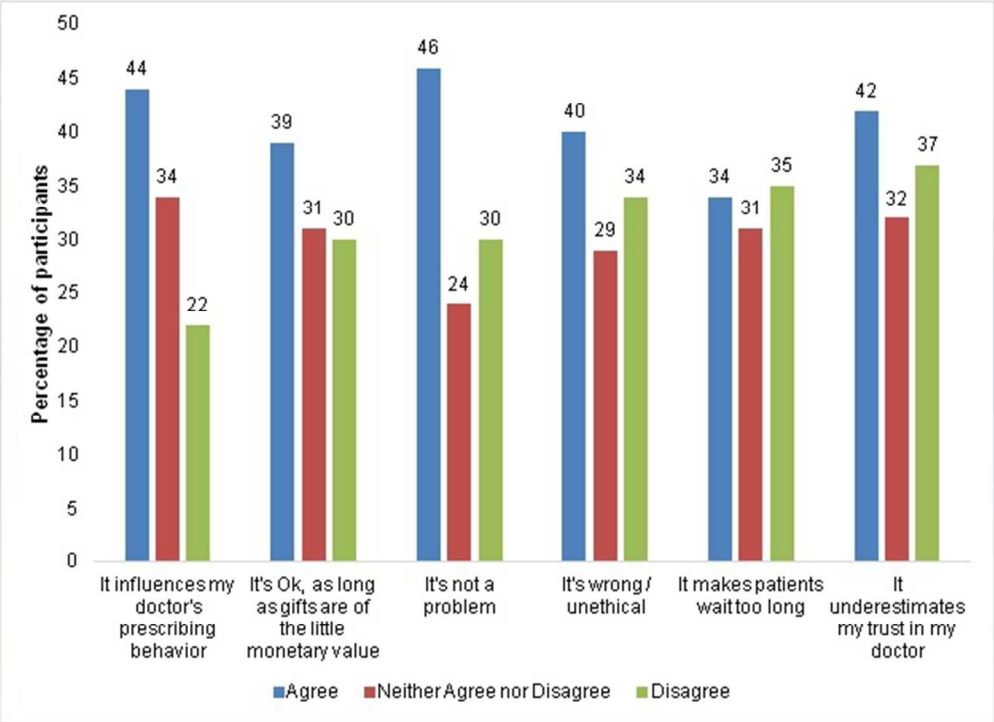

Figure 3: Attitude towards physicians accepting small gifts or meals

53x38mm (300 x 300 DPI)

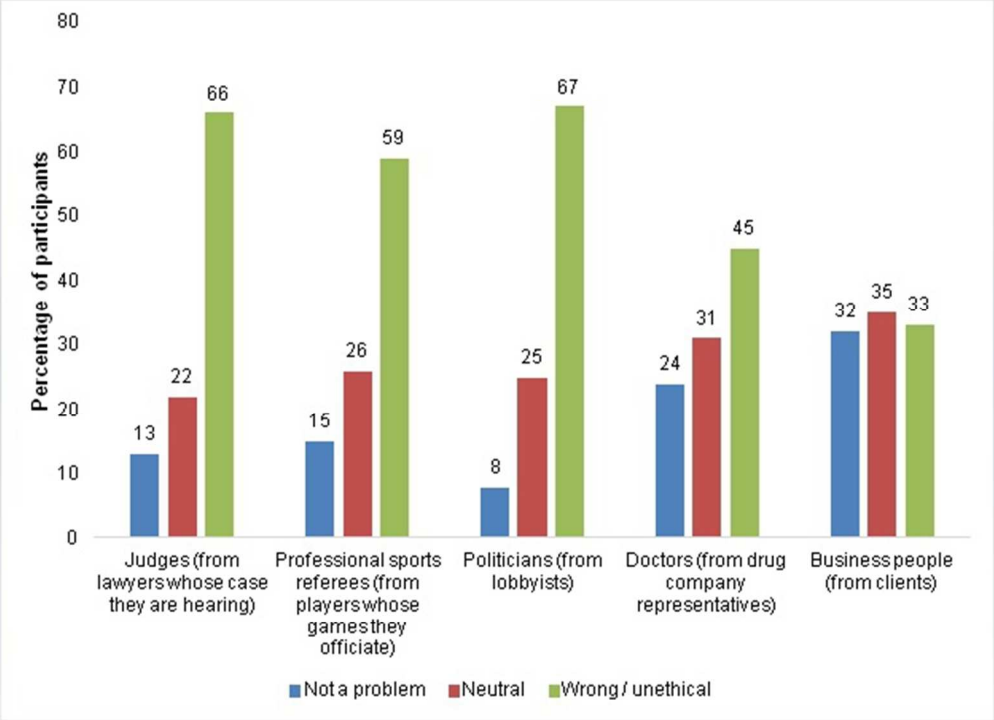

Figure 4: Attitudes about various professionals accepting gifts or meals

53x38mm (300 x 300 DPI)

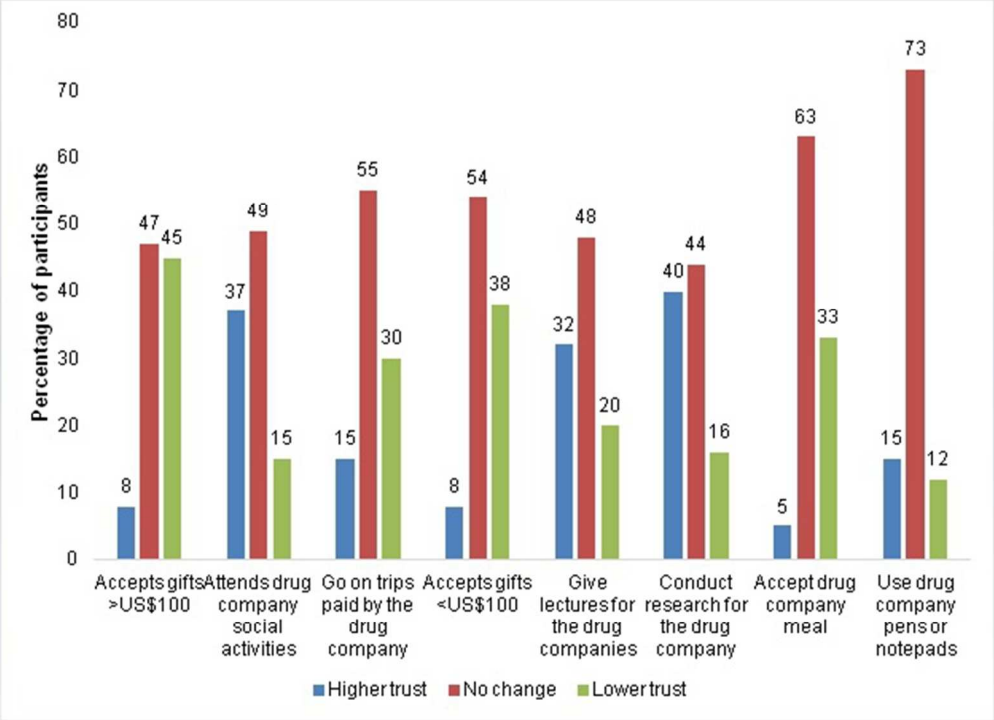

Figure 5: Effect of physician participation in various activities on patient trust

53x38mm (300 x 300 DPI)

Appendix A

Survey

Demographics

1. Age
   a. 18-49 b. 50-64 c. 65-80 d. >81
2. Sex
   a. Male b. Female
3. Education
   a. <high school graduate
   b. high school graduate or some college
   c. college graduate or more
4. Annual Household Income
   a. <10 000 $
   b. 10 000 $ - 30 000 $
   c. >30 000 $
5. Do you have a personal health care provider?
   a. Yes
   b. No
6. If yes, are you satisfied with health care provider?
   a. Yes
   b. No
7. Did you receive free medication samples in past year?
   a. Yes
   b. No
8. Are you currently using prescription medications?
   a. Yes
   b. No

Awareness

9. Are the following present in the exam room, waiting room, or other areas of your physician's' office?

   a. Drug company advertisements
      1. Yes
      2. No
      3. Don't Know
   b. Items with drug company logos on them
      1. Yes
      2. No
      3. Don't Know
   c. Office staff eating lunches paid for by drug companies
      1. Yes

2. No
3. Don't Know

d. Drug reps in the office or waiting room
1. Yes
2. No
3. Don't Know

e. Patient education materials with drug company logos on them
1. Yes
2. No
3. Don't Know

10. Knowledge of Physician Engagement in a Variety of Activities With Pharmaceutical Companies. Does your doctor___?

a. accepts gift >100$
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

b. attend drug co. social activities
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

c. go on trips paid by the drug company
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

d. accept gifts <100$
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

e. give lectures for the drug company
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

f. conduct research for the drug company
1. Yes
2. No

3. Don't Know
4. Don't care
5. Don't know but would want to know

g. accept drug company meal
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

h. use drug company pens or notepads
1. Yes
2. No
3. Don't Know
4. Don't care
5. Don't know but would want to know

Belief

11. Effect of Physician Participation in Various Activities on Patient Trust. How will each of the following affect your level of trust in your physician?

a. accepts gift >100$
1. Higher trust
2. No change
3. Lower trust

b. attend drug co. social activities
1. Higher trust
2. No change
3. Lower trust

c. go on trips paid by the drug company
1. Higher trust
2. No change
3. Lower trust

d. accept gifts <100$
1. Higher trust
2. No change
3. Lower trust

e. give lectures for the drug company
1. Higher trust
2. No change
3. Lower trust

f. conduct research for the drug company
1. Higher trust
2. No change

3. Lower trust

g. accept drug company meal
   1. Higher trust
   2. No change
   3. Lower trust

h. use drug company pens or notepads
   1. Higher trust
   2. No change
   3. Lower trust

Attitude

12. What is your attitude towards your physician accepting small gifts or meal.

a. it influences my doctor's prescribing behavior
   1. agree
   2. Neither agree nor disagree
   3. disagree

b. it's Ok, as long as gifts are of the little monetary value
   1. agree
   2. Neither agree nor disagree
   3. disagree

c. it's not a problem
   1. agree
   2. Neither agree nor disagree
   3. disagree

d. It's wrong/unethical
   1. agree
   2. Neither agree nor disagree
   3. disagree

e. it makes patients wait too long
   1. agree
   2. Neither agree nor disagree
   3. disagree

f. it underestimates my trust in my doctor
   1. agree
   2. Neither agree nor disagree
   3. disagree

Attitudes about Various Professionals Accepting Gifts or Meal

13. How proper do you think it is for each of the following to accept meals or small gifts from those listed?

a. Judges (from lawyers whose case they are hearing)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

b. Professional sports referees (from players whose games they officiate)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

c. Politicians (from lobbyists)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

d. Doctors (from drug company representatives)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

e. Business people (from clients)
    1. Not a problem
    2.
    3. Neutral
    4.
    5. Wrong/unethical

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Awareness and Attitudes of the Lebanese Population with regards to Physician - Pharmaceutical Company Interaction: a survey Study

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Awareness and Attitudes of the Lebanese Population with regards to Physician - Pharmaceutical Company Interaction: a survey Study

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Abstract

Objective: To assess the awareness and attitudes of the general public in Lebanon regarding the interactions between physicians and pharmaceutical companies.

Setting: Primary health care clinics and shopping malls in the Greater Beirut Area.

Participants: 263 participants completed the questionnaire, 62% of which were female and 38% were male. Eligible participants were Arabic- or English-speaking adults (age ≥ 18 years) residing in Lebanon for at least five years.

Primary and secondary outcome measures: awareness, attitudes and beliefs of the general public

Results: 263 out of 295 invited individuals (89% completion rate) completed the questionnaire. While the majority of participants were aware of pharmaceutical company presence (or absence) in physicians' offices (range of 71% to 76% across questions), smaller percentages were aware of gift-related practices of physicians (range of 26% to 69% across questions). Forty percent thought that accepting small gifts or meals by physicians is wrong/unethical. The percentage of participants reporting lower trust in physicians due to their participation in various pharmaceutical company-related activities ranged from 12% to 45% (the highest percentage being for large gifts). Participants who reported receiving free medication samples were significantly more likely to consider physicians' acceptance of small gifts as "not a problem" than "unethical" (OR=1.53; p=0.044).

Conclusion: Participants in our survey were generally more aware of pharmaceutical company presence (or absence) in physicians' offices than of gift-related practices of physicians. While the level of trust was not affected for the majority of participants for various types of interactions, it was affected the most for accepting large gifts.

Strengths and Limitations

- To our knowledge, this is the first survey on this topic to be conducted in the Middle East region.
- One of the strengths of our study is the inclusion of both patients (from primary health care clinics) and non-patients (from malls). This increases the external validity of our findings.
- We conducted a pilot test in order to ensure thorough understanding of the questions among participants and used a validated questionnaire.
- One of the limitations is that the translated Arabic version was not formally validated.
- Another limitation is that our sample is recruited from the Greater Beirut Area, exclusive of other Lebanese areas.

Introduction

The interaction between pharmaceutical companies and physicians is a common practice in health (1). These interactions include offering gifts, financial support, and other beneficial favors to physicians (1). Pharmaceutical companies claim that these interactions serve to educate and inform physicians of their products (2). However, a systematic review of the literature suggested that such interactions are associated with higher prescribing frequency, higher prices, and lower quality of drugs prescribed (3).

These interactions create a conflict of interest for physicians between the perceived obligations towards a pharmaceutical company and the best interests of their patients (4). Additionally, physician-pharmaceutical company interactions may affect the general public's trust in their physicians. Lack of trust in the healthcare system has been shown to be associated with decreased patient satisfaction and lower adherence to treatment and screening recommendations (5,6,7).

We have not identified any published data about the extent and nature of interaction between physicians and pharmaceutical companies in Lebanon. However, we have recently collected data (unpublished) showing that these interactions are common and involve a variety of incentives including stationary equipment, furniture and travel support. In response to concerns about these interactions, the Lebanese Ministry of Public Health published a code of ethics for medicinal products promotion on May 31st, 2016. (8)

Due to its potential effect on patient care, a number of studies have tried to assess the knowledge, beliefs and attitudes of patients towards this relationship (9,10,11). A recently published

systematic review found a lower awareness amongst patients of physicians' receipt of personal gifts relative to office-use gifts (eg. stationery) (12). Also, there is greater acceptability of the office-use gifts over personal gifts (12). The systematic review analyzed data from 20 studies, none of which were conducted in Lebanon, indicating a knowledge gap about the patients' perspectives in Lebanon.

The objective of this study was to investigate the awareness and attitudes of the Lebanese general population concerning physician-pharmaceutical company interactions.

Methods

Study population

Eligible participants included Arabic- and English-speaking adults (age ≥ 18 years) residing in Lebanon for at least five years. We recruited two types of participants:

- Individuals in the waiting rooms of primary health care clinics. Our sampling frame consisted of the list of primary health care clinics in the Greater Beirut Area provided by the ministry of public health.
- Individuals in shopping malls. Our sampling frame consisted of the list of malls in the Greater Beirut Area provided by the Directory of Exports and Industrial Firm in Lebanon.

We excluded individuals working as staff in recruitment sites. The principal investigator contacted the eligible primary health care clinics and shopping mall directors asking for permission to distribute the surveys in their premises. The Institutional Review Board (IRB) at the American University of Beirut approved this study.

Participant recruitment

First, we phoned the directors of primary health care clinics and shopping malls to obtain approval for conducting our study on their premises.

Then, over several days, members of the team presented to the clinics where they approached potential participants and recruited them in a sequential manner. Similarly, members of the team visited malls where they randomly approached individuals and invited them to participate.

Survey tool

We adopted our survey tool from a validated, self-administered questionnaire designed by Green, MJ (refer to Appendix A) (9). We translated the questionnaire from English to Arabic and then back translated it to English (Arabic version available on demand). The survey included 40 questions addressing the following:

- Demographic characteristics (n=8);
- Awareness (n=13);
- Attitudes (n=11);
- Beliefs (n= 8)

Data collection

We collected data between January and March of 2015. Members of the research team were present in the waiting areas and shopping malls and handed the survey to eligible individuals who consented to participate. The Institutional Review Board (IRB) at the American University of Beirut approved this consent procedure.

The team members gave the participants the needed time and privacy to complete the survey. They distributed the surveys according to the participants' language preference and were available to answer any questions.

Data Analysis

One team member entered data into SPSS statistical software and a second one verified them. We conducted a descriptive analysis of all variables. After assessing the distribution of answers, and similar to the approach by Green et al (9), we collapsed some of the answer options (See appendix A). We calculated percentages for the categorical variables and then presented the data in a table format for the demographics section and in graphs for each of three categories (awareness, attitudes, and beliefs). Also, we conducted a stratified analysis by type of participant. As we found significant differences for only two out of 32 variables (excluding demographic questions), we report here overall results for all participants.

In addition, we conducted a regression analysis to assess the association between the attitudes regarding the appropriateness of physicians accepting small gifts and the following demographic characteristics: age, sex, education, receiving free medical samples, and use of prescribed medication.

Sample Size Calculation

We calculated the sample size according to the following formula: N=(z)2(p)(q)/ (0.05)2. We identified no studies on this topic conducted in Lebanon, so we estimated the level of awareness to be close to that in Turkey (80%) (p=0.8) (11). This yielded a sample size of N=246). Finally, the target recruitment size was equal between the 2 groups of participants (individuals at primary health care clinics and mall attendees).

Results

We invited individuals in the waiting rooms of 5 primary health care clinics and in the food courts of 4 shopping malls in Greater Beirut. Out of 295 individuals who agreed to participate 263 fully completed the questionnaire (89% completion rate). Individuals declined participating either for getting called by the physician in the primary care clinic setting, or for being short of time in the mall setting.

Participants' characteristics

Table 1 shows the demographic characteristics of participants. The age range for the majority of respondents was 18–49 years (79%). They were predominantly female (62%), and 48% had an educational level less than high school. The majority had a low annual household income (less than US$10,000) (71%), and reported currently using prescription medications (77%).

Awareness of gifts

Figure 1 reports the participants' awareness of pharmaceutical company presence in physicians' offices. A majority of participants were aware of whether or not (answered 'yes' or 'no' as opposed to 'I don't know') the following were present in the physicians' waiting room: drug company advertisements (76%), items with logos on them (74%), and patient education materials (75%). Seventy-four percent was aware that drug representatives visit the clinic. However, only 35% indicated they knew whether or not office staff ate lunches paid by the drug companies.

Figure 2 shows the respondents' level of awareness of a number of gift-related practices of physicians. A minority of participants knew whether or not their physician accepted large gifts >US$100 (29%), went on trips paid by the drug companies (30%), accepted small gifts <US$100 (31%), conducted research for drug companies (32%), or accepted drug company meals (26%).

However, more participants were aware whether or not physicians attended drug companies' social activities (41%), gave lectures for the drug companies (46%), and used drug company pens or notepads (69%). These figures exclude the number of participants who responded either 'don't know' or 'don't care'.

Attitudes about Gifts

Figure 3 shows the percentage of participants who agreed with a series of statements about physicians' acceptance of small gifts or meals and those who disagreed: accepting small gifts or meals influences physicians' prescribing behaviors (44% agreed, 22% disagreed), the practice is wrong/unethical (40% agreed, 34% disagreed), accepting meals makes patients wait too long (34% agreed, 35% disagreed), it is acceptable as long as gifts are of little monetary value (39% agreed, 30% disagreed), and it is not problematic (46% agreed, 30% disagreed).

We used a multinomial logistic regression analysis to explore what factors are associated with the perceptions of the appropriateness of physicians accepting small gifts. We found that participants who reported receiving free medication samples were significantly more likely to consider it "not a problem" (OR=1.53; p=0.044; reference category: considering it "wrong/unethical").

Figure 4 shows the participants' attitudes about various professionals, including doctors, accepting these small gifts or meals. The percentage of respondents reporting it was 'wrong/unethical' for doctors to accept gifts from drug company representatives (45%) was lower than that for judges to accept gifts from lawyers (66%), sports referees to accept gifts from players whose games they officiate (59%), and politicians to accept gifts from lobbyists (69%).

Impact on Trust in Physicians

Figure 5 reports the percentage of participants reporting lower trust in physicians related to their participation in various activities: using drug company pens or notepads (12%), accepting gifts >US$100 (45%), going on trips paid by the drug company (30%), and accepting gifts <US$100 (38%). It is worth noting that there is a substantial percentage of participants who reported that they had more trust in their physician if he/she had a relationship with pharmaceutical companies. This was mainly clear with regards to physicians conducting research for the pharmaceutical company (40% had an increased trust).

Discussion

We aimed to investigate the awareness and attitudes of the Lebanese general population concerning physician-pharmaceutical company interactions. While the majority of participants were aware of pharmaceutical company presence (or absence) in physicians' offices, smaller percentages were aware of gift-related practices of physicians. A minority thought that accepting small gifts or meals by physicians is wrong/unethical and reported lower trust in physicians due to their participation in various pharmaceutical company-related activities. Receiving free medication samples was associated with considering physicians' acceptance of small gifts as "not a problem".

An interesting finding is the higher level of awareness in relation to pharmaceutical company presence (or absence) in physicians' offices compared to that of gift-related practices of physicians. One likely explanation is that the company presence in the clinic is typically noticeable (e.g., drug company advertisements, items and education material with drug company logos on them). On the contrary, most of the interactions of physicians with drug companies are

not (e.g., conduct research for the drug company, personal gifts, going on trips). This highlights the need for transparency and disclosure by physicians.

We are aware of other studies that have assessed similar outcomes in other countries. A 2008 study conducted in the USA found that 82% of the participants were aware of the presence of pens or notepads in physicians' offices, as compared to 69% in our study (9). The percentages of participants who were aware of physicians accepting gifts >US$100, gifts <US$100, and trip invitations were respectively 12%, 16%, and 34% in the USA, and 29%, 31%, and 30% in Lebanon.

The fact that a minority of respondents thought that accepting small gifts or meals by physicians is wrong, suggests that the public either does not consider this issue from an ethical perspective or does not consider it ethically wrong.

While we cannot state whether or not a majority of the participants believe the nature of this interaction is unethical, it is evident that some individuals (40%) would be opposed to this practice and believe it affects their physician's prescribing behavior (44%). Interestingly, the question addressing the ethicality of similar practices (accepting meals and small gifts) with other professions indicated that the respondents might have different standards or expectations across professions. Fewer participants thought that physicians' acceptance of meals or small gifts from pharmaceutical companies was wrong compared to equivalent situations with judges, referees, and politicians.

The percentage of participants who believed gifts and interactions between physicians and pharmaceutical companies affect physicians' prescribing behavior was 41% in the USA in 2009,

which is comparable to the 44% in our study (10). In Turkey, 71% of patients admitted to primary health care centers in 2004 agreed that accepting gifts from the drug companies is not ethical (11). In Pakistan, only 9% of patients attending outpatient clinics in 2000 agreed it is inappropriate for doctors to accept gifts from pharmaceutical companies (14).

The fact that a minority of participants reported lower trust in response to the participation of physicians in various activities suggests that relatively few of them made a connection between physicians' practices and their behaviors. As other studies have indicated (10), patients' mistrust is related to the possibility that physicians select drugs that are more expensive, less efficacious and cause higher side effects. Notably, there is a substantial percentage of participants who reported that they had more trust in their physician if he/she had a relationship with pharmaceutical companies. We hypothesize that this is due to the belief that close interaction between the two leads to enhanced physician's awareness of the newest pharmaceutical innovations.

In contrast to our study, participants in a study conducted in the USA indicated a greater decrease in their level of trust upon knowing that their physician was accepting monetary gifts as well as going on trips paid for by drug companies. As an illustration, upon investigating the change in the level of trust when pharmaceutical companies offer paid trips to physicians, 55% of the Lebanese population showed no change in the level of trust, while 30% reported lower trust. Conversely, the study conducted on the American sample showed that 58% reported a decrease in the level of trust in physicians accepting paid trips by pharmaceutical companies, while 38% had no change in their level of trust (9). These findings might suggest that the Lebanese population may be less aware of the potential harm of these interactions than the American population.

As a comparison, the percentages of participants reporting lower trust in physicians related to their acceptance of gifts >US$100 and to trips paid by the drug company were respectively "less than 50%" and 58% (2008) in the US survey, as compared to 45% and 30% in our survey (9).

We have used a convenient sampling approach by restricting our eligibility to residents of the Greater Beirut Area. The resulting high proportion of female and young (18-49) individuals among participants, may have introduced sampling bias. Still, our sample is fairly representative of the general Lebanese population. Indeed, based on data reported in the World Factbook (13), about 44% of the Lebanese population resides in the Greater Beirut Area. Moreover, representativeness is improved by the inclusion of both patients (from primary health care clinics) and the general public (from malls).

In terms of policy implications, there is a definite need to raise awareness among the Lebanese population about the potentially negative impacts of physician-industry interactions on the quality and cost of their healthcare. On a broader level, there is a need for system-level interventions to regulate physician-industry interactions (15). These may include self-regulation (e.g., voluntary codes of practice), and governmental regulations. The ultimate aim would be to minimize any negative effects of the physician-pharmaceutical company interactions and ultimately improve patient outcomes. Future research should assess the actual extent of the interaction in Lebanon, as well as the effect of raising awareness among the general population on their attitudes towards this interaction.

Conclusion

While the majority of participants were aware of pharmaceutical company presence in physicians' offices, smaller percentages were aware of gift-related practices of physicians. A minority thought that accepting small gifts or meals by physicians is wrong/unethical and reported lower trust in physicians due to their participation in various pharmaceutical company-related activities.

Contributorship statement

Contributors EAA, AHA, SBB, AAD, JOD, JME, and LSS contributed to the conception and design of the search strategy and to the data abstraction, data synthesis and manuscript drafting. AHA, SBB, AAD, JOD, JME, and LSS were responsible for interpretation of results. EAA, AHA, SBB, AAD, JOD, JME, and LSS were responsible for manuscript review and approval.

Competing Interests

None to declare.

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Data Sharing Statement

No additional data are available.

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Tables:

Table 1: Demographics

Characteristics (N)	Frequency (Percentage)
Age (263)	
18–49 years	206 (79)
50–64 years	41 (15)
65–80 years	16 (6)
Sex (258)	
Female	163 (63)
Education (258)	
Less than high school graduate	124 (48)
High school graduate or some college	70 (27)
College graduate or more	64 (25)
Annual household income (235)	
< US$10,000	167 (71)
US$10,000–US$30,000	58 (25)
>US$30,000	10 (4)
Have personal health care provider (261)	193 (74)
Satisfied with health care provider (242)	173 (71)
Received free medication samples in past year (259)	96 (37)
Currently use prescription medications (262)	202 (77)

Figure Legends:

Figure 1: Awareness of pharmaceutical company presence in physicians' offices

Figure 2: Knowledge of physician engagement in a variety of activities with pharmaceutical companies

Figure 3: Attitude towards physicians accepting small gifts or meals

Figure 4: Attitudes about various professionals accepting gifts or meals

Figure 5: Effect of physician participation in various activities on patient trust

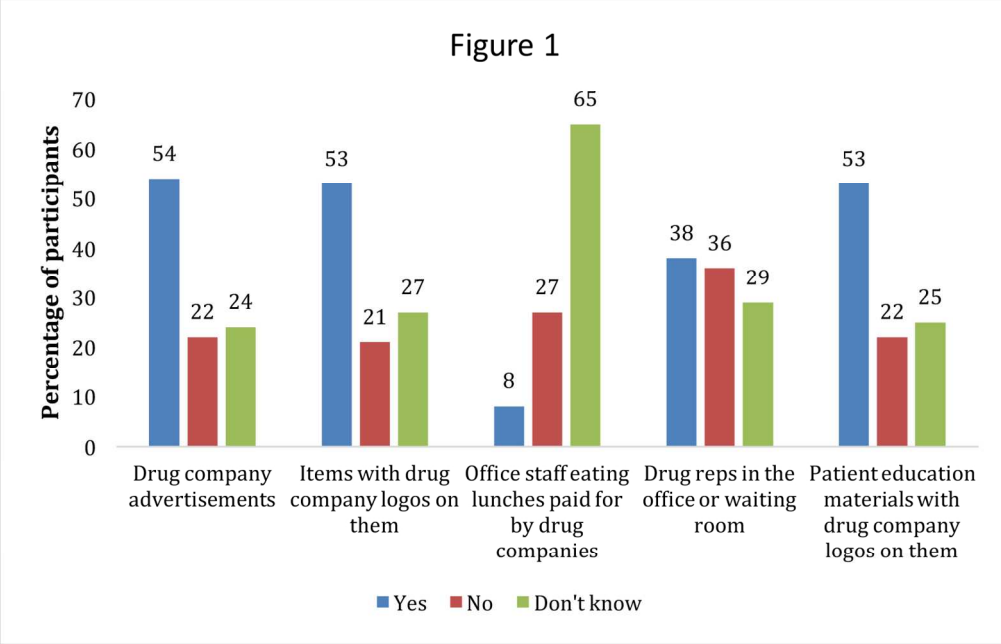

Figure 1: Awareness of pharmaceutical company presence in physicians' offices

43383x28092mm (1 x 1 DPI)

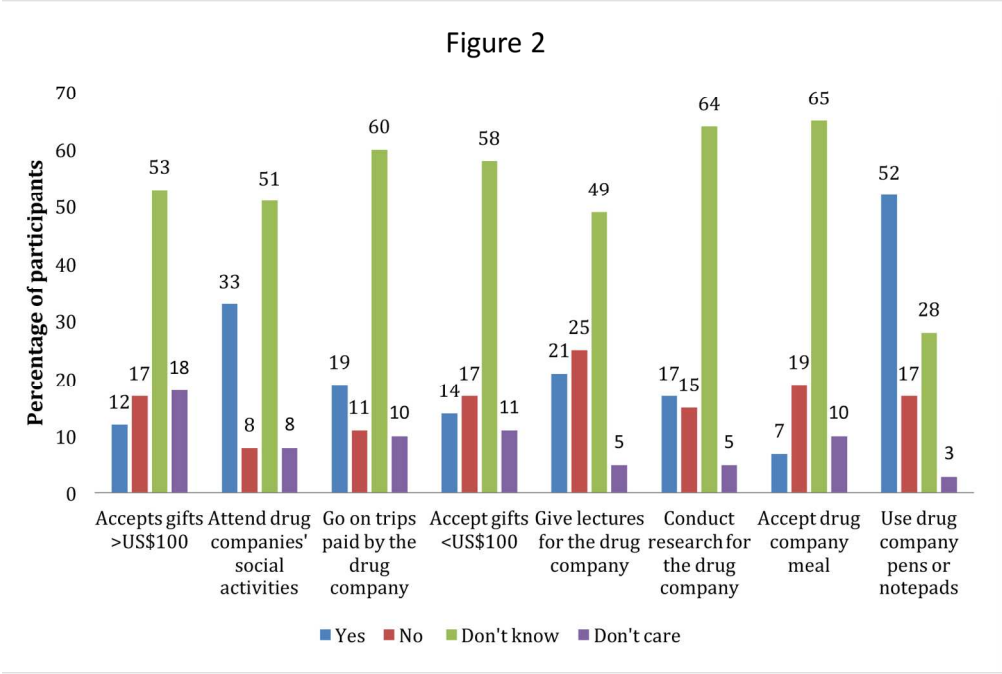

Figure 2: Knowledge of physician engagement in a variety of activities with pharmaceutical companies

159x107mm (300 x 300 DPI)

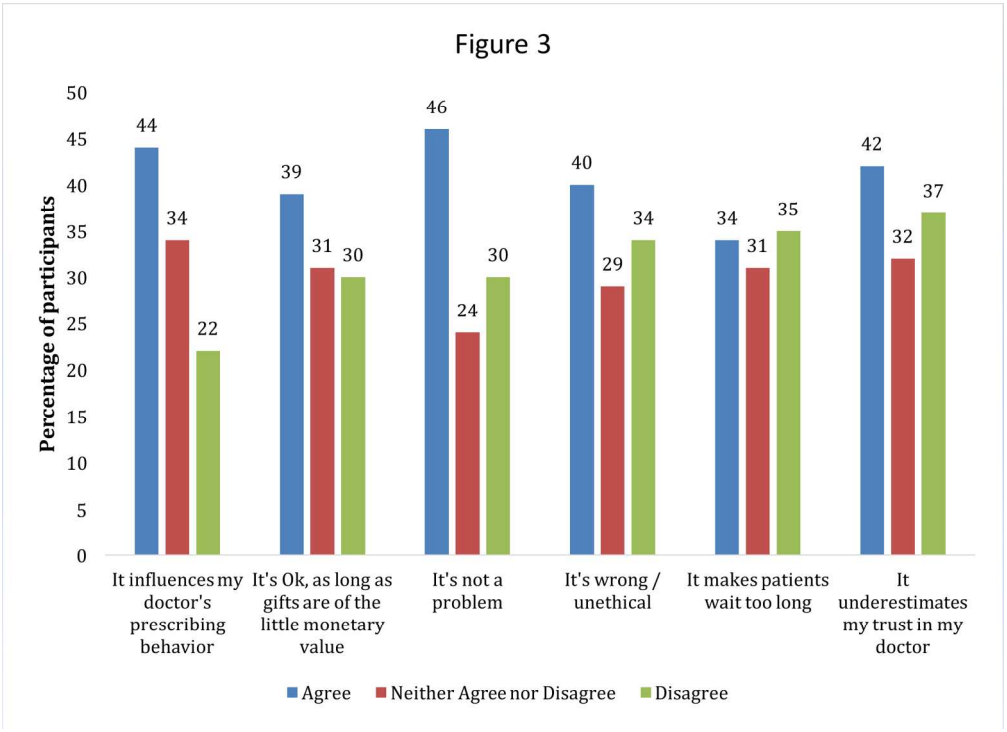

Figure 3: Attitude towards physicians accepting small gifts or meals

49580x35915mm (1 x 1 DPI)

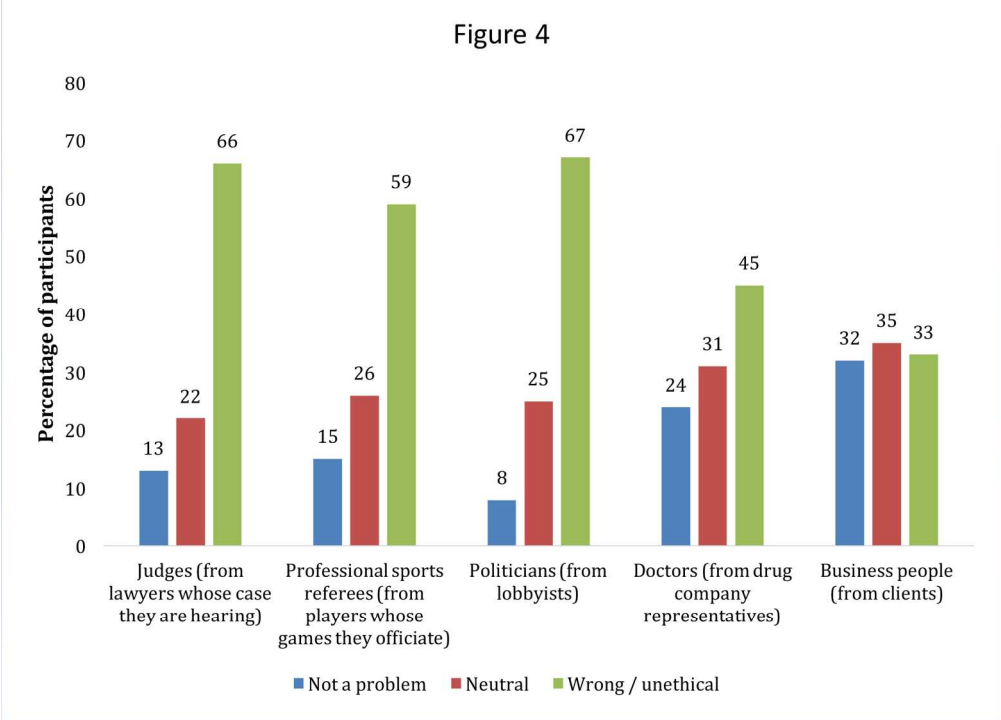

Figure 4: Attitudes about various professionals accepting gifts or meals

49580x35687mm (1 x 1 DPI)

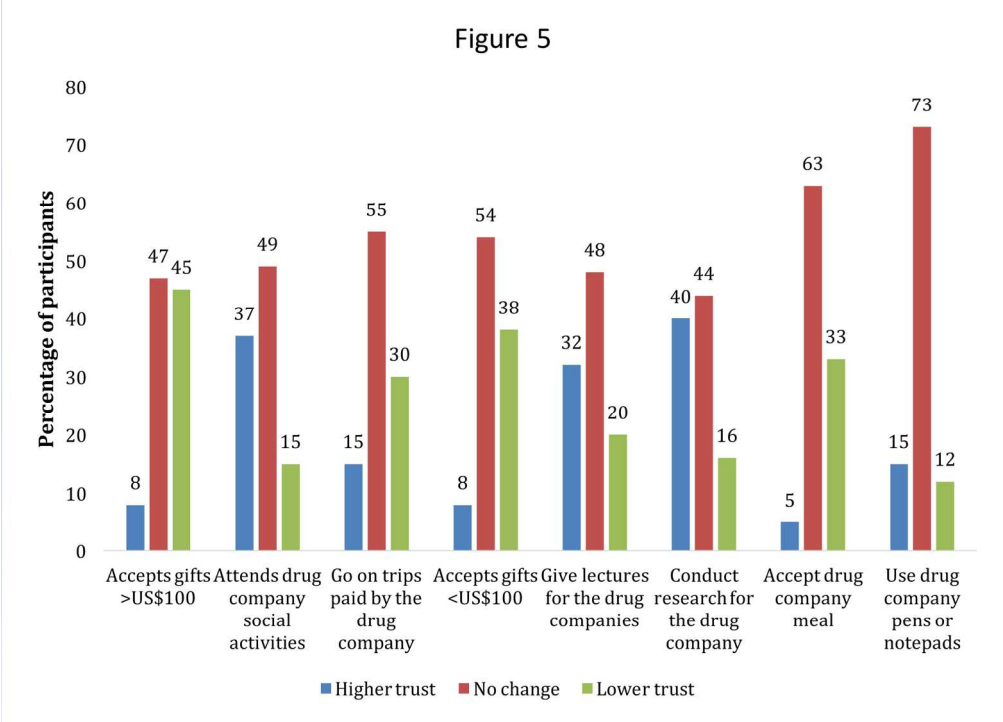

Figure 5: Effect of physician participation in various activities on patient trust

49453x35839mm (1 x 1 DPI)

Appendix A

Survey

Demographics

1. Age
   a. 18-49 b. 50-64 c. 65-80 d. >81
2. Sex
   a. Male b. Female
3. Education
   a. <high school graduate
   b. high school graduate or some college
   c. college graduate or more
4. Annual Household Income
   a. <10 000 $
   b. 10 000 $ - 30 000 $
   c. >30 000 $
5. Do you have a personal health care provider?
   a. Yes
   b. No
6. If yes, are you satisfied with health care provider?
   a. Yes
   b. No
7. Did you receive free medication samples in past year?
   a. Yes
   b. No
8. Are you currently using prescription medications?
   a. Yes
   b. No

Awareness

9. Are the following present in the exam room, waiting room, or other areas of your physician's' office?

a. Drug company advertisements
   1. Yes
   2. No
   3. Don't Know

b. Items with drug company logos on them
   1. Yes
   2. No
   3. Don't Know

c. Office staff eating lunches paid for by drug companies
   1. Yes
   2. No
   3. Don't Know

d. Drug reps in the office or waiting room
   1. Yes
   2. No
   3. Don't Know

e. Patient education materials with drug company logos on them
   1. Yes
   2. No
   3. Don't Know

10. Knowledge of Physician Engagement in a Variety of Activities with Pharmaceutical Companies. Does your doctor___?

a. accepts gift >100$
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

b. attend drug co. social activities
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

c. go on trips paid by the drug company
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

d. accept gifts <100$
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

e. give lectures for the drug company
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

f. conduct research for the drug company
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

g. accept drug company meal
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

h. use drug company pens or notepads
   1. Yes
   2. No
   3. Don't Know
   4. Don't care
   5. Don't know but would want to know

Belief

11. Effect of Physician Participation in Various Activities on Patient Trust. How will each of the following affect your level of trust in your physician?

a. accepts gift >100$
   1. Higher trust
   2. No change
   3. Lower trust

b. attend drug co. social activities
   1. Higher trust
   2. No change
   3. Lower trust

c. go on trips paid by the drug company
   1. Higher trust
   2. No change
   3. Lower trust

d. accept gifts <100$
   1. Higher trust
   2. No change
   3. Lower trust

e. give lectures for the drug company
   1. Higher trust
   2. No change
   3. Lower trust

f. conduct research for the drug company
    1. Higher trust
    2. No change
    3. Lower trust

g. accept drug company meal
    1. Higher trust
    2. No change
    3. Lower trust

h. use drug company pens or notepads
    1. Higher trust
    2. No change
    3. Lower trust

Attitude

12. What is your attitudes towards your physician accepting small gifts or meal.

a. it influences my doctor's prescribing behavior
    1. agree
    2. Neither agree nor disagree
    3. disagree
b. it's Ok, as long as gifts are of the little monetary value
    1. agree
    2. Neither agree nor disagree
    3. disagree

c. it's not a problem
    1. agree
    2. Neither agree nor disagree
    3. disagree

d. It's wrong/unethical
    1. agree
    2. Neither agree nor disagree
    3. disagree

e. it makes patients wait too long
    1. agree
    2. Neither agree nor disagree
    3. disagree

f. it underestimates my trust in my doctor
    1. agree
    2. Neither agree nor disagree
    3. disagree

Attitudes about Various Professionals Accepting Gifts or Meal

13. How proper do you think it is for each of the following to accept meals or small gifts from those listed?

a. Judges (from lawyers whose case they are hearing)

1. Not a problem
2.
3. Neutral
4.
5. Wrong/unethical

b. Professional sports referees (from players whose games they officiate)

1. Not a problem
2.
3. Neutral
4.
5. Wrong/unethical

c. Politicians (from lobbyists)

1. Not a problem
2.
3. Neutral
4.
5. Wrong/unethical

d. Doctors (from drug company representatives)

1. Not a problem
2.
3. Neutral
4.
5. Wrong/unethical

e. Business people (from clients)

1. Not a problem
2.
3. Neutral
4.
5. Wrong/unethical

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation
Title and abstract	1	√(*a*) Indicate the study's design with a commonly used term in the title or the abstract
		√ (*b*) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2	√Explain the scientific background and rationale for the investigation being reported
Objectives	3	√State specific objectives, including any prespecified hypotheses
Methods		
Study design	4	√Present key elements of study design early in the paper
Setting	5	√Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6	√ (*a*) Give the eligibility criteria, and the sources and methods of selection of participants
Variables	7	√Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*	√For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	√Describe any efforts to address potential sources of bias
Study size	10	√Explain how the study size was arrived at
Quantitative variables	11	√Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12	√ (*a*) Describe all statistical methods, including those used to control for confounding
		√ (*b*) Describe any methods used to examine subgroups and interactions
		√ (*c*) Explain how missing data were addressed
		√ (*d*) If applicable, describe analytical methods taking account of sampling strategy
		√ (*e*) Describe any sensitivity analyses
Results		
Participants	13*	√ (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed
		√ (b) Give reasons for non-participation at each stage
		√ (c) Consider use of a flow diagram
Descriptive data	14*	√ (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders
		√ (b) Indicate number of participants with missing data for each variable of interest
Outcome data	15*	√Report numbers of outcome events or summary measures
Main results	16	√ (*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		√ (*b*) Report category boundaries when continuous variables were categorized
		√ (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	√Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses

Discussion		
Key results	18	√Summarise key results with reference to study objectives
Limitations	19	√Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20	√Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalisability	21	√Discuss the generalisability (external validity) of the study results
Other information		
Funding	22	√Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.