The Effect of a Seminar Series on Third Year Students' Attitudes Toward the Interactions of Drug Companies and Physicians

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Abstract

Background
Medical students are frequently subjected to the influences of pharmaceutical companies including gifts and food. These interactions while seemingly trivial can lead to prescribing habits that are not in the best interests of patients. We have instituted a seminars series reviewing articles about these interactions.

Methods
A questionnaire was developed to evaluate changes in students' attitudes before and after the seminars. A control group who didn't take part in the seminars was also evaluated.

Results
Some groups of students had a statistically significant more cautious attitude towards pharmaceutical companies after the seminar. Female students were statistically less likely to accept gifts after the seminar series.

Conclusions
A seminar series concerning the influences of pharmaceutical companies on physicians can produce significant changes in some students' attitudes towards drug company gifts.

INTRODUCTION

The interaction between physicians and pharmaceutical companies is becoming an area of great concern to both the medical profession and the public.1 The acceptance of gifts from pharmaceutical representatives, the funding of CME activities, the payment for speaking, and the funding of research have all been viewed as possible sources of conflict of interest for physicians in their dealings with their patients.2,3 While numerous studies have demonstrated the effects of pharmaceutical firm's enticements on the prescribing behavior of physicians it is hoped that early intervention during medical school might allow the students to better understand the conflict of interest that occurs when gifts and other financial incentives are accepted . 4,5,6 Presently medical students' attitudes towards this interactions are often permissive and recommendations by the Accreditation Council on Graduate Education for stricter policies have not produced results at most medical schools.7 Medical students are felt to be at particular risk for unrecognized influence by pharmaceutical company marketing efforts. 8 A program at one medical school utilized pharmacist to play the role of pharmaceutical representatives to model a promotional presentation to medical students enabling the students to think critically about how these presentations might affect their eventual prescribing practices. A curriculum for family practice residents that consisted of a faculty-led debate and discussion of a review of physician-pharmaceutical industry interactions was found to promote more cautious attitudes toward pharmaceuticals marketing. 10 Such programs are very important and describe some methods that could be used to explore the complex issues involved with physician and pharmaceutical company interactions.

At Jefferson Medical College a series of 4 seminars were conducted with 3rd year medical students to explore their

attitudes towards pharmaceutical and physician interactions before and after a discussion of leading journal articles and current books on the topic. Articles were specifically chosen to represent as much as possible various outlooks on the issues. Topics such as the effect of gifts from pharmaceutical representatives and subsequent prescribing practices, the actual amount of money spent on drug development and the influence of pharmaceutical companies on medical journals were explored. Articles on such topics as the dangers of over governmental regulation and importance of developing new drugs were used to balance the discussions. Each student was assigned an article to present to his/her fellow students. Having the students conduct the presentations was found to be a very effective way of making sure that the students were fully engaged in the seminars. A faculty member(FWM) was present to serve as a moderator and to make sure that the discussion covered all of the key areas.

METHODS

The participants in this study were medical students who were taking their third-year Family Medicine Clerkship. About one-half of the students took their clerkship at Jefferson; the other half taking the clerkship at affiliated sites. As part of the curriculum at Jefferson, students were assigned articles, asked to write a summary and present this summary to the other students for about 20 minutes. The students led the discussions while one of us (FWM) served as a moderator. We expected that the students would gain greater insights into the issues regarding physician and drug company interactions. We developed a survey to document changes in this area. The students who took their Clerkship at affiliated sites acted as a comparison group.

The survey was distributed to all students at the beginning and at the end of their six-week Family Medicine Clerkship. Survey items asked about accepting gifts from pharmaceutical representatives, the cost of drug development, length of patent protection and related topics. There were also 11 attitude questions to which the students responded using a five-point Likert scale of agreement. An attitude score was created such that the higher the score, the more positive the attitude toward drug companies. For example, strongly disagreeing with “Drug companies spent too much money on marketing” was “worth” 5 points whereas strongly agreeing with this statement was “worth” only one point. In addition to their responses, the students also recorded their age, gender and planned specialty. Comparisons were made using these variables as well as the site of the clerkship. Fisher's Exact test and the Median test were used for analysis.

RESULTS

When analyzing the total attitude score from the 11 questions/statements in the survey we compared students completing their family medicine rotation at Jefferson to other affiliate sites, as well as age, gender, and expected specialty choice. Table I shows the results for comparing the students at Jefferson to students at other sites. There was no significant difference between the students in the pre-survey mean ($p=0.8927$), but there was a significant difference between the post-survey means. There was a difference of 1.5953 with a p-value of 0.0372. Students at other sites responded more positively in the post-survey, while students at Jefferson responded more negatively. There was no significant difference in total scores when comparing pre-survey total mean to post-survey total mean in either group.

When comparing students less than 25 years old to greater than 26 years old there were no significant differences found in mean total score.

A significant difference was found when comparing male to female students for mean total score (Table II). In the post-surveys, there was a difference of 1.65 with a p-value of 0.0329. Male students responded more positively in the post-survey, while females responded more negatively. There was no significant difference in the pre-survey total means.

The last comparison for the mean total score was done using students expected specialty choices that were divided by primary care, non-primary care, and no specialty choice selected yet (Table III). The pre-survey total means were 29.62, 31.63, and 32.21, respectively. When analyzed there was a significant difference with a p-value of 0.0177. There was no significant difference found for the post-survey means.

We analyzed several individual questions/statements that dealt with issues physicians face when considering practice ethics or in discussions with patients. These included topics that also appear in the popular press such as accepting gifts from companies, the cost of developing prescription medications, the price of prescription medications, and so forth.

With the question, “Do you accept gifts from drug representatives including even such items as pens or food?,” we compared students at different affiliate sites, gender, and

specialty choice. Students selected either yes or no for this question. All of the results are found in Table IV. For students at Jefferson and other affiliate sites, significant differences were found between the pre-survey and post-survey results for some categories of students and not for others. For students at Jefferson, 94.78% of the students answered yes in the pre-survey, while only 86.46% answered yes in the post-survey (p=0.0832). This change was not statistically significant. For students at other affiliate sites there was a statistically significant change, 96.33% answered yes in the pre-survey, while 89.25% answered yes in the post-survey (p-value = 0.0245). When comparing males to females, there was a significant difference found among females, but not males. In the pre-survey results 95.54% answered yes compared to 86.73% in the post-survey group, with a p-value of 0.0188. When comparing expected specialty choice for this question, there was a significant difference found for students expecting to enter a primary care field. For the pre-survey, 100% of the students answered yes while only 86.49% of the students answered yes in the post-survey (p-value = 0.0230). There were no significant differences found in students expecting to enter non-primary care fields and students without an expected specialty choice.

The next statement analyzed was, “I generally have a positive attitude towards drug companies.” In this statement, we compared students at Jefferson to students at other affiliate sites. Students agreed, were neutral, or disagreed with the question based on the Likert scale. There were no significant differences found when comparing within the pre-survey results or post-survey results.

In another statement, “Drug company profits are justified by the expenses they incur from developing new medicines,” students answered similarly to the previous statement. There were no significant differences found when comparing within the pre-survey results or the post-survey results. There was a significant difference found when comparing the percent of changes between the pre-survey and post-survey results. For Jefferson students, 14.17% less students agreed with this statement in the post-survey, while 12.51% more disagreed. For students at other affiliate sites, 10.62% more students answered neutral, while 7.97% less students disagreed. The p-value for the comparison was 0.0245. This data can be found in Table V.

There were two questions within our survey that were free responses. The answers to these questions were discussed during the student seminars. The first question asks, “How much money does it cost on average for a drug company to develop a new drug?” Results were compared between students at Jefferson to students at other affiliate sites. For students at Jefferson, the median result in the pre-survey was 20 million and the post-survey response was 100 million. This difference was significant with a p-value of 0.0196. There was no significant difference found with the students at the other affiliate sites. These results can be found in Table VI.

The other question asks, “How many years does the patent on a new drug give the drug company exclusive rights to produce a drug?” There were no significant differences found when comparing the students at Jefferson to students at other clinical sites. These results can be found in Table VII.

The final question in the survey was based on the Likert scale and asked if students completing their rotation at Jefferson found the sessions on drug companies worthwhile. Students agreed with this question 63.36% of the time, while 29.7% of students disagreed.

Figure 1

Table 1: This table compares the total mean scores of the pre-survey and post-survey between students who completed their family medicine rotation at Jefferson to students completing their rotation at other affiliate sites.

	N	Pre Total Mean	Post Total Mean
Jefferson	120	31.625	30.925
Other sites	123	31.537	32.52
Difference		-0.088	1.5953
P-value		0.8927	0.0372

Figure 2

Table 2: This table compares the total mean scores of the pre-survey and post-survey between male and female students who completed their family medicine rotations at all clinical sites.

	N	Pre Total Mean	Post Total Mean
Female	120	31.133	30.875
Male	120	31.942	32.525
Difference		-0.808	1.65
P-value		0.2203	0.0329

Figure 3

Table 3: This table compares the total mean scores of the pre-survey and post-survey between students expecting to enter either a primary care field, a non-primary care field, or are undecided.

	Pre Total Mean	Post Total Mean
Primary Care	29.62	30.84
Non-primary care	31.63	32.47
Undecided	32.21	31.48
P-value	0.0177	0.3187

Figure 4

Table 4: This table compares the percent of students who responded yes in the pre-survey and the post-survey to the question: Â“Do you accept gifts from drug representatives including even such items as pens or food?Â” These comparisons are made between students completing their rotations at Jefferson to other affiliate sites, females to males, and to expected specialty choice.

	Pre 6 % Y	Post 6 %	% Differe	P-va
Jefferson	94.78	86.46	8.32	0.08
Other sites	96.33	89.25	7.08	0.02
Female	95.54	86.73	8.81	0.01
Male	95.50	89.01	6.49	0.15
Primary Care	100.00	86.49	13.51	0.02
Non-primary care	94.74	88.33	6.41	0.26
Undecided	94.34	88.04	6.30	0.18

Figure 5

Table 5: This table displays the results from the statement, Â“Drug company profits are justified by the expenses they incur from developing new medicines.Â” It compares the percent changes of students' responses between the pre-survey and the post-survey of students completing their rotation at Jefferson to students at other affiliate sites.

Question 10	Agree	Neutral	Disagree	P-value
Jefferson	-14.17	1.66	12.51	
Other sites	-2.65	10.62	-7.97	
				0.0245

Figure 6

Table 6: This table compares the responses of the following question between students completing their rotation at Jefferson to students at other affiliate sites: “How much money does it cost on average for a drug company to develop a new drug

		Pre 18 Median	Post 18 Median	Change	P-value
Jefferson		20,000,000	100,000,000	80,000,000	0.0196
Other sites		50,000,000	20,000,000	-30,000,000	0.624

Figure 7

Table 7: This table compares the responses of the following question between students completing their rotation at Jefferson to students at other affiliate sites: Â“How many years does the patent on a new drug give the drug company exclusive rights to produce a drug?Â”

	Pre 19 Mean	Post 19 Mean
Jefferson	12.137	13.269
Other sites	12.222	11.867
Difference	0.0855	-1.402
P-value	0.9071	0.0852

CONCLUSION

After several years of moderating a seminar series with 3rd year medical students it is clear to us that most of the students have a very poor understanding of the influence pharmaceutical companies have upon physician behavior. Our data demonstrate that very few students are aware of patent lengths or the actual costs of developing and marketing drugs. A majority of more than 90% of the students accepts gifts such as pens and attends lunches provided by the pharmaceutical companies. There is little understanding among the students of the power of even seemingly trivial gifts on subsequent prescribing behavior. There is, however, good documentation in the literature of just how powerful the effects are. By the end of the seminar series the student are at least aware that these effects have been studied and reported in the literature. Those students who took the seminars at Jefferson were found to have a more cautious view of the pharmaceutical industry after the seminar than those who did not. The students interested in primary care who participated in the seminar were significantly less likely to accept gifts after the seminar series then those who did not take part in the seminars. Although, 86.49% still accepted them after the discussions this was less than 100% who did before. Students interested

in primary care not at Jefferson had no statistically significant change. Female medical students also showed a significant decrease in the acceptance of gifts if they attended the seminar series. Interestingly, although among all students those who accepted gifts declined both in the group at Jefferson and those at the other sites only the number for those at the other sites obtained statistical significance. Overall the results suggests that a planned intervention can change the attitudes of at least some students. Our study couldn't assess how long lasting the effects are, but at least some change is possible.

By having the students present the studies to each others our seminars insure that the students take ownership of the issues. We have found that students tend to pay better attention in the seminars when they are doing the presenting and not being lectured to. Additionally, some of the most interested students go beyond the required readings to bring in additional studies to enhance their discussions. Clearly, not everyone sees these complex issues in the same manner and some students proudly proclaim at the end of the sessions that they still intend to accept gifts and go to pharmaceutical lunches.

We hope at least that they understand the real issues involved and realize that this behavior can have harmful effects on patient wellbeing.

Students are exposed to tremendous amounts of influence from pharmaceutical companies including free gifts, free food, sponsored CME events and personal solicitations. Students are often not prepared to fully understand the power of these activities to affect their subsequent prescribing behaviors as physicians in ways that are not beneficial to patient care. It is imperative that medical educators develop and study teaching strategies that will allow the students to better see the consequences of pharmaceutical company activities on patient welfare. Our seminar series provide an example of once such teaching method.

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