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Medical students' exposure to and attitudes towards product promotion and incentives from the pharmaceutical industry in 2019: a national cross-sectional study in France

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ABSTRACT

Objectives To measure medical students' exposure to pharmaceutical product promotion and incentives nationwide, and to evaluate students' attitudes towards the pharmaceutical industry, access to education on promotional strategies and knowledge of institutional policies about drug company-student relationships.

Design Cross-sectional survey based on a 48-item anonymous questionnaire.

Setting All 37 French medical schools, from March to April 2019.

Participants French medical students in their 4th year of study and beyond, having studied exclusively in France.

Main outcome measure Cumulative frequency of students' exposure to pharmaceutical product promotion and incentives.

Secondary outcome measures Exposure within the last 6 months, attitudes regarding interactions with the industry, access to education on pharmaceutical product promotion and incentives and knowledge of institutional policies.

Results 6280 responses were analysed (10.4% out of a total of 60 550 eligible students). 5992 students (96.3% poststratification, 99% CI (96.1% to 96.5%)) had already been exposed to pharmaceutical product promotion and incentives and 4650 (78.1%, 99% CI (77.7% to 78.6%)) within the last 6 months. 5140 students (85.4%, 99% CI (84.8% to 85.8%)) had met a pharmaceutical representative. Regarding attitudes, 2195 students (36.8%, 99% CI (36.0% to 37.5%)) thought receiving a gift could influence their own prescriptions while 3252 (53.6%, 99% CI (53.1% to 54.2%)) thought it could influence their colleagues' prescriptions. 4533 students (76.0%, 99% CI (75.6% to 76.5%)) reported never having attended any lecture on promotional strategies. Exposure seemed to depend on the year of study and specialty. 5122 (88.1%, 99% CI (87.7% to 88.4%)) did not know whether their faculty had a policy regarding drug company-student interactions.

Conclusion In France in 2019, medical students' exposure to pharmaceutical product promotion and incentives remains considerable and starts early during medical training. Education on promotional strategies and institutional policies should be improved to ensure

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This is currently the largest nationwide study on French medical students' exposure to and attitudes towards pharmaceutical product promotion and incentives.

⇒ It provides information on all French medical schools and almost all medical specialties and years of seniority, enabling comparisons between them.

⇒ It occurs at a crucial time with regard to recent institutional and educational improvements in France, enabling the impact of these reforms to be monitored over time.

⇒ This observational and cross-sectional study could be subject to recall bias and does not enable conclusions to be drawn on changes in students' attitudes over time.

⇒ The response rate was quite low compared with other international studies, which means that the generalisation of results must be cautious.

responsible and ethical behaviour in prescribing medications.

INTRODUCTION

Physicians' interactions with the pharmaceutical industry have been described in numerous studies worldwide in the last two decades.[1–4] There is evidence that drug company-physician interactions alter physicians' prescribing behaviour.[5 6] They have been shown to increase prescription of recently marketed drugs with no clear benefit over existing drugs,[7 8] of drugs that are inconsistent with evidence-based guidelines[9] or drugs that are costlier.[1 10–12] On the other hand, these interactions seem to lead to lesser prescription of generic drugs.[13 14] Consequently, evidence is accumulating on the undue influence of product promotion and incentives on medical practice, an important

issue since it can lead to a risk for patients' health and for the sustainability of the health system.

Furthermore, interactions between medical students and the pharmaceutical industry in the form of product promotion and incentives are widespread, from meeting pharmaceutical representatives (PRs) to educational events. Several studies have shown that early exposure to marketing generates a more positive attitude towards promotional strategies, and these interactions have given rise to serious concern.[15–17] Most of the 32 studies in the systematic review by Austad *et al* concluded that students across 16 different countries were frequently exposed to these promotions and incentives, even in their preclinical years.[18] The education of medical students and medical schools' conflict-of-interest (COI) policies play crucial roles in preparing future practitioners to react to promotional strategies.[19 20] With this in mind, the American Medical Students Association (AMSA) developed the first scorecard to assess medical school policies on COI, updated in 2014 with more stringent criteria. Fourteen COI policy domains were scored from 0 (poor or no policy) to 3 (model policy). This evaluation contributed to considerable improvement in COI policies in American medical schools.[21] Canada and Australia followed suit with their own assessments of medical school COI policies.[20 22]

In 2012, Etain *et al* carried out a survey on 2101 French students about their attitudes towards product promotion and incentives and their knowledge of the notion of COI.[23] It showed that 79.4% of clinical students (years 4–6) and 96.6% of residents (year 7 to graduation) had already had contacts with a PR. Using the AMSA scorecard and the criteria proposed by Shnier *et al*, French medical school COI policies were evaluated in a similar way and medical schools were graded for the first time in January 2017.[20 24] In November 2017, the 'Conférence des Doyens des Facultés de Médecine' (CDM, national body representing the Deans of French medical schools) ratified a Charter stating the need for education on 'ethics, medical deontology and scientific integrity', improving transparency and cooperation with teaching hospitals for the implementation of COI policies.[25] A further assessment of medical school policies in 2018 reported new initiatives, including the implementation of this Charter, but with few real practical improvements.[26]

At the same time, the French legislative context is also changing, with for instance the promulgation in 2011 of a law prohibiting promotional gifts to doctors and compelling the pharmaceutical industry to declare financial links with physicians on an online register, in the wake of the French benfluorex (Mediator) scandal,[27] along with other more recent legislation.[28]

Hence, it seems relevant to study the evolution of French medical students' exposure to pharmaceutical product promotion and incentives to evaluate the effects of these institutional and legislative measures, as there has been no more recent large-scale study than that by Etain *et al*.[23]

Consequently, the main objective of this study was to evaluate medical students' exposure to pharmaceutical product promotion and incentives. The secondary objectives were to describe students' attitudes towards drug marketing, to look for determinants of exposure and attitudes, to evaluate students' access to education on product promotion and incentives and their knowledge of medical school policies.

METHODS
Study design
A cross-sectional observational survey was conducted, using a self-administered questionnaire, designed for all French medical students in their fourth year of study and above. The statistical analysis plan was registered on OpenScienceFramework on 1 August 2019 (osf.io/72mha).

Population
French medical studies are divided into three levels:
► Years 1–3: known as 'preclinical studies', corresponding to general and theoretical courses taking place mainly in university. Students come to hospital to learn how to examine patients for only a few hours a month.
► Years 4–6: are devoted to 'clinical studies'. Students spend half of their time at the hospital in different units. These students will be referred to as 'clinical students' for the purpose of this article.
► Year 7 to graduation: corresponding to 'residency'. From that moment, students study their specialty, spend most of their time at the hospital and can prescribe medication. Most specialties last 3 or 4 years. A few, such as surgical specialties, last 5 or 6 years. These students will be referred to as 'residents' for the purpose of this article.

Thus, contacts with healthcare settings (including hospital wards and medical practices) mostly begin during clinical studies and increase during residency. These two groups of students were therefore considered to be the most relevant for the purpose of this study.

Every clinical student and resident in all French medical schools was eligible. Those who completed the first two parts of the questionnaire entirely (personal characteristics and exposure to pharmaceutical product promotion and incentives) were included. Those who had studied abroad during their clinical studies but were attending residency programmes in France were excluded. This exclusion was decided secondarily, since the responses of these students did not solely reflect exposure to pharmaceutical product promotion and incentives and access to education on this matter in France, which could have altered the results. This measure was added to the initial statistical analysis plan after data collection.

Most of the results are presented according to the following student categories: clinical students, primary

care residents and other residents. For some specific analyses, residents were also divided into four groups:

► Group 1: primary care residents.
► Group 2: residents in medical specialties other than primary care who regularly prescribe drugs: *allergology, anaesthesiology and intensive care, dermatology, endocrinology and nutrition, gerontology, medical gynaecology, haematology, hepatology and gastroenterology, infectious disease, cardiology, internal medicine, rehabilitation, vascular disease, emergencies, nephrology, neurology, medical oncology, paediatrics, pneumology, psychiatry, rheumatology.*
► Group 3: residents in surgical specialties.
► Group 4: residents in medical specialties who do not prescribe drugs: *radiology, radiotherapy, public health, medical genetics, medical biology, nuclear medicine, anatomic pathology and occupational medicine.*

Patient and public involvement
We did not include patients as study participants. Patients were not involved in the research question nor in the study design. We do not plan to involve patients in the dissemination of the results.

Questionnaire design
On the basis of previous international studies,[15 29 30] a 48-item self-administered questionnaire was drafted on Limesurvey. The survey was pilot-tested on a sample of 12 medical students from various specialties and levels of seniority, and a few changes were made thereafter. The questionnaires were slightly adjusted with conditional questions according to 'clinical student' or 'resident' status (eg, only residents were asked about their specialty during their residency programme, since clinical students had not yet chosen a specialty). Participants were required to answer each question before moving on to the next part of the questionnaire and could not go back to change previous answers. The resulting questionnaire is available in online supplemental appendix document 1.

Data collection
For confidentiality reasons, we could not obtain the medical students' email addresses directly. The questionnaire was therefore sent to the administration departments of all 37 medical schools in France, who issued it to students using their email addresses as notified to the schools. Many of these departments confirmed by email that they had sent the questionnaire. A few departments refused to send it and others did not answer in spite of many reminders. Consequently, the questionnaire was also sent to student and resident associations in every locality and specialty to ensure it reached as many students as possible. Reminders were sent after 3 and 6 weeks. The survey ran from 1 March to 30 April 2019, a timeframe avoiding any changes in residency or academic year.

Outcome measures
The data collected can be grouped into the following categories: exposure to pharmaceutical promotion, students' attitudes ('appropriateness' and 'scepticism') and data on student training, medical school and teaching hospital policies.

Exposure to pharmaceutical product promotion and incentives
For 10 situations of frequent potential exposure to incentives and promotions from the pharmaceutical and medical equipment industries, students were asked how often they had participated in events or accepted gifts or invitations since the beginning of their clinical studies, on a four-category scale ('never', 'once to 5 times', '6 to 10 times', '>10 times'). Cumulative exposure (CE)—that is, the proportion of students exposed at least once to one of the situations—was then calculated. Similarly, exposure to these situations within the last 6 months was also measured.

Then the answers to the 10 situations were scored ('never' was scored 0, '1–5 times' was scored 1, '6–10 times' was scored 2, '>10 times' was scored 3) so as to establish a CE score for each student, by summing the 10 scores. The index obtained, ranging from 0 to 30, was adjusted to reflect the students' experiences according to the year of study.

Perceived 'appropriateness' of gifts and funding received from the pharmaceutical industry
Five instances of gifts and funding offers were presented to the students, and they were asked whether or not they felt it was appropriate to accept them. Students answered the questionnaire using a 4-point Likert scale to which scores were associated ('strongly agree' and 'agree' were scored 1, 'disagree' or 'strongly disagree' were scored 0). The points for each item were summed, defining an appropriateness score ranging from 0 to 5. This index was used to evaluate their level of acceptance of gift and funding offers from the pharmaceutical industry (0 meant minimal acceptance and 5 meant full acceptance).

Students' 'scepticism' about the influence of pharmaceutical product promotion and incentives
Seven statements about the pharmaceutical industry were presented to the students using a 4-point Likert scale. The items consisted of two statements for which agreement did not amount to scepticism, and five statements where agreement pointed to scepticism about drug company marketing strategies (ie, pharmaceutical marketing contacts that could have an influence on future behaviour). The answers to the seven items were then scored (for the first two items, 'strongly agree' or 'agree' were scored 0, 'disagree' or 'strongly disagree'=1; and the reverse for the five following items). The points for each item were summed, defining a scepticism score ranging from 0 to 7. This index ranked the students' levels of scepticism regarding relationships between physicians and the industry in the area of promotional strategies (0 related to minimal scepticism, 7 to full scepticism).

Curricular content on pharmaceutical product promotion, incentives and interpersonal aspects

Students were asked if they had ever attended lectures on pharmaceutical promotional strategies, and if so whether they were optional or compulsory. Finally, perceived attitudes among senior physicians regarding promotion and incentives were collected.

Knowledge of medical school and teaching hospital policies

Finally, we asked about the medical students' knowledge of medical school and teaching hospital policies and about pharmaceutical industry interactions and COI policies.

Statistical analysis

To ensure the survey sample had characteristics that reflected most of the target population and to limit bias, analyses were conducted using poststratification weights based on a 2019 data register of French medical students supplied by the French Ministry of Higher Education and Scientific Research and the French national health professional demographic observatory (ONDPS). The criteria were medical school and year of study. To calculate the poststratification weights, the proportion of subjects in each stratum in this data register was divided by the proportion of the same group in the sample. Descriptive characteristics of the raw sample data and the target population are shown in the appendix for an assessment of their representativeness. All other reported data used poststratification weighting.

Continuous variables were compared using Student's t-test or analysis of variance for the normally distributed variables. Kruskal-Wallis or Wilcoxon tests were used for other variables. Categorical variables (such as binary variables) were compared between groups using the χ^2 test or Fisher's exact test. Depending on the variables considered, comparisons were made between clinical students, primary care residents and other residents, and sometimes between the different categories of residents, as specified in the 'Population' section.

In order to explore the impact of the incentive for students to meet PRs on their exposure to and attitudes about pharmaceutical promotion, comparisons of the correlations coefficients between the different scores were made using Fisher's z transformation.

The significance threshold was set at 0.01 for all statistical tests because of the large sample and in order to have stronger evidence in favour of an alternative hypothesis. Therefore, we present the 99% CIs around the estimates.

A post hoc analysis was performed to estimate the association between the CE score and potential confounding factors (covariates: age, gender, region, breakdown into year of study, education, appropriateness and scepticism scores) identified as being associated with the outcome. We selected any covariate with a significant test result in univariate analysis (threshold p=0.25). Then a multivariate linear analysis was performed using a step-by-step strategy to retain the most parsimonious model, and the application conditions of the final model were checked.

Statistical analyses were performed on SAS V.9.4 (SAS Institute, Cary, North Carolina, USA) using 'WEIGHT' statement for poststratification weighting.

Ethical considerations

The medical students and residents were informed of the aim of this study in the emailed invitation to participate, and were free to answer or not, anonymously. At the end of the questionnaire, they were invited to give their contact details if they wanted to receive the published results.

RESULTS

In this section, after describing the characteristics of the population, data on students' exposure to pharmaceutical promotion and incentives (main results) will be presented first, followed by data on their attitudes towards it. The last two subsections will examine potential determinants of this exposure and the educational and institutional aspects mentioned in the 'Outcome measures' section.

Population

In all, 6573 students from 37 medical schools responded, 3728 clinical students (14.4% of all 25 903 French clinical students) and 2845 residents (8.2% of the 34 647 French residents in all specialties). These total numbers were official estimations provided by the French Ministry of Higher Education and the ONDPS for January 2019. Two hundred sixty-four were excluded because they did not fill in the exposure part of the questionnaire, and so were 29 residents because they had studied abroad during their clinical studies.

Concerning the clinical students, 28 administrative departments in the 36 French medical schools confirmed they had sent the questionnaire to students, 2 declined and 6 never responded to our request. Concerning the residents, 24 out of 37 medical school administrative departments stated they had sent the questionnaire at least once, 1 explicitly declined and 12 never responded. Among clinical student associations, 16 out of 36 officially agreed to send the questionnaire to their members, 1 declined and 19 did not answer solicitations despite reminders. Sixteen associations of primary care residents out of 28 agreed to disseminate the survey, 2 declined and 10 did not answer. Eleven associations of non-primary care residents out of 28 agreed to disseminate the questionnaire, 1 declined and 16 did not answer. It is likely that some administrative departments or associations circulated the questionnaire without actually answering the request messages. Consequently, the exact number of students reached is unknown. Finally, 6280 responses were included (10.4% of the 60 550 French clinical students and residents) (figure 1).
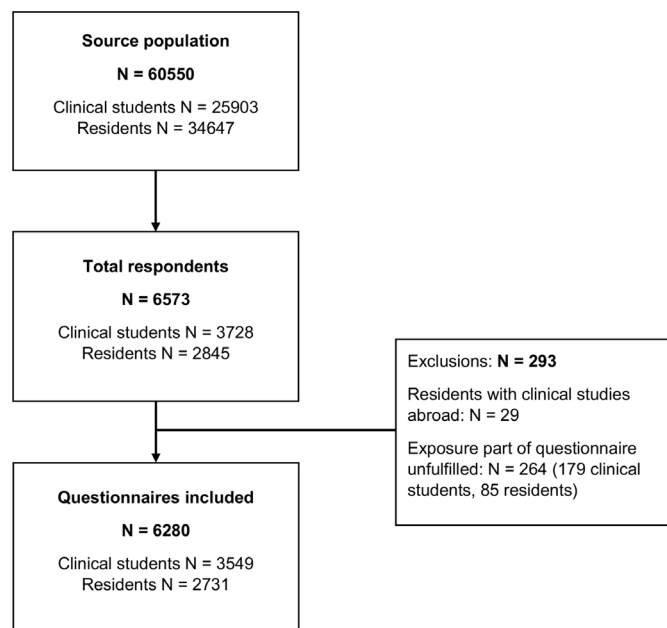
Figure 1 Recruitment of students.

The respondents' average age was 26.2 years and 4066 were women (65.4%, 99% CI (64.9% to 65.9%)) (post-stratified data). The average age of French medical students beyond the 4th year of study calculated on the data provided by the ONDPS was 24.5 and 35 113 (58.0%) were women. The population characteristics are presented in table 1 (online supplemental appendix tables 1 and 2).

Exposure to pharmaceutical product promotion and incentives
Cumulative exposure
Five thousand nine hundred ninety-two students (96.3%, 99% CI (96.1% to 96.5%)) reported having been exposed at least once to one of the 10 situations since the beginning of their clinical studies. Among the 288 students (3.7%, 99% CI (3.5% to 3.9%)) who reported no exposure, 11 (0.9%, 99% CI (0.6% to 1.2%)) were residents (table 2).

The average CE score was 7.1±14.1 across all students, and 9.6±15.2 across residents alone. Among residents, the average CE score was 8.9±12.3 for primary care residents, 10.2±17.5 for group 2 residents (specialties with frequent drug prescriptions), 12.1±15.4 for surgical specialty residents and 8.1±14.9 for group 4 residents (specialties with no drug prescriptions).

Concerning the types of product promotion and incentive, the two most common exposure situations reported by students were meeting a PR and receiving an advertising document about a drug from a PR, regardless of student or resident status (85.4%, 99% CI (85.0% to 85.8%) of the total and 83.7%, 99% CI (83.3% to 84.1%) of the total, respectively). In third place came receiving a low-value advertising gift for clinical students and primary care residents (69.4%, 99% CI (68.6% to 70.1%) and 85.2%, 99% CI (84.4% to 86.0%), respectively) and having a meal paid for by a drug company for other

residents (91.0%, 99% CI (90.4% to 91.5%)). In contrast, having a subscription to a medical journal paid for by the pharmaceutical industry was quite rare for a student or resident (3.4%, 99% CI (3.2% to 3.6%)). Attending a drug company-funded grand round or being funded to attend conferences or grand rounds was more common for residents in specialties other than primary care (respectively 82.1%, 99% CI (81.4% to 82.8%) vs 56.0%, 99% CI (54.9% to 57.0%) for primary care residents, and 40.0%, 99% CI (39.1% to 41%) vs 8.2%, 99% CI (7.7% to 8.8%) for primary care residents). See figure 2 and the online supplemental appendix table 3 for full dataset.

Exposure within the last 6 months
Four thousand six hundred fifty (78.1%, 99% CI (77.7% to 78.6%)) students reported having been exposed at least once to one of the 10 situations proposed within the last 6 months, including 2246 clinical students (64.4%, 99% CI (63.6% to 65.1%)). Among the residents exposed in the last 6 months, 1162 (88.7%, 99% CI (88.0% to 89.4%)) were primary care residents, 878 (89.4%, 99% CI (88.7% to 90.1%)) were residents from group 2, 197 (98.0%, 99% CI (97.1% to 98.7%)) were surgical residents (group 3), and 167 (79.0%, 99% CI (76.9% to 81.0%)) were residents from group 4.

Student attitudes
Appropriateness
Three thousand eight hundred ten students (63.3%, 99% CI (62.3% to 64.3%)) considered it was appropriate for a physician to receive funding to attend conferences or sponsored grand rounds (answered 'agree' or 'strongly agree'). Three thousand three hundred seventy-seven students (58.1%, 99% CI (57.0% to 59.0%)) found free meals appropriate (figure 3). Three thousand two hundred thirty-one (54.1%, 99% CI (53.1% to 55.0%)) found it appropriate to receive gifts of small medical equipment. The mean appropriateness score among students was 2.2±5.2. The detailed answers to each proposal are presented in online supplemental table 4.

There was a correlation between exposure and appropriateness scores: R=0.16 (99% CI (0.14 to 0.19)). This means that students who were more favourable towards pharmaceutical promotion and incentives were more exposed, but the association was weak and of limited significance.

We found differences in average appropriateness scores across categories of students (see table 3).

Scepticism
Five thousand four hundred fifty-eight students (90.7%, 99% CI (90.4% to 91.8%)) considered that information provided by promotion and incentives by the drug industry was likely to be biased (responses 'agree' or 'strongly agree'). However, 3675 students (61.6%, 99% CI (60.9% to 62.4%)) considered that information from PRs was a useful way of learning about new drugs (figure 4). Two thousand one hundred ninety-five students (36.8%,

Table 1 Sociodemographic characteristics of the respondents

	All n=6280	Clinical students n=3549	Primary care residents n=1335	Other residents n=1396
Age in years (mean±SD)	26.2±10.1	24.0±7.2	27.7±9.8	28.1±9.1
Gender (n, % poststratification)				
Female	4066 (65.4%)	2290 (65.3%)	930 (69.7%)	846 (62.1%)
Male	2214 (34.6%)	1259 (34.7%)	405 (30.3%)	550 (37.9%)
Year of study (n, % poststratification)				
4–6	3549 (56.5%)	3549 (56.5%)	–	–
7–9	2189 (34.9%)	–	1288 (96.5%)	901 (64.5%)
10–12	542 (8.6%)	–	47 (3.5%)	495 (35.5%)
Medical school (n, % poststratification)				
Paris	1021 (20.4%)	806 (22.9%)	54 (9.9%)	161 (25.2%)
Lille	169 (6.8%)	70 (7.2%)	50 (6.9%)	49 (6.1%)
Lyon	222 (5.0%)	149 (5.9%)	52 (6.6%)	21 (2.7%)
Bordeaux	303 (4.9%)	137 (4.8%)	85 (5.4%)	81 (4.7%)
Aix-Marseille	108 (4.6%)	59 (4.5%)	30 (6.6%)	19 (3.3%)
Nancy	349 (3.9%)	260 (4.2%)	62 (5.6%)	27 (2.2%)
Toulouse	164 (3.9%)	108 (3.4%)	2 (0.3%)	54 (7.2%)
Montpellier	195 (3.6%)	55 (3.1%)	103 (6.1%)	37 (2.4%)
Strasbourg	134 (3.5%)	83 (3.6%)	40 (5.2%)	11 (2.0%)
Rennes	445 (3.0%)	251 (2.8%)	109 (3.6%)	85 (2.6%)
Nantes	270 (3.0%)	110 (3.2%)	50 (1.8%)	110 (3.6%)
Rouen	161 (3.0%)	94 (2.7%)	38 (4.3%)	29 (2.3%)
Tours	157 (2.9%)	112 (3.3%)	17 (1.6%)	28 (3.3%)
Angers	417 (2.7%)	180 (2.7%)	141 (3.6%)	96 (2.1%)
Amiens	263 (2.7%)	209 (2.9%)	7 (0.7%)	47 (3.8%)
Caen	175 (2.7%)	86 (2.6%)	34 (2.3%)	55 (3.2%)
Grenoble	272 (2.6%)	194 (2.2%)	68 (5.4%)	10 (0.9%)
Besançon	201 (2.5%)	93 (2.4%)	53 (2.5%)	55 (2.5%)
Reims	195 (2.4%)	52 (2.9%)	36 (1.2%)	107 (2.7%)
Clermont-Ferrand	186 (2.4%)	112 (2.3%)	31 (2.8%)	43 (2.2%)
Dijon	87 (2.3%)	5 (2.0%)	23 (1.5%)	59 (3.3%)
Brest	187 (2.2%)	99 (2.2%)	51 (2.6%)	37 (1.9%)
Saint-Etienne	168 (1.9%)	94 (1.7%)	28 (1.9%)	46 (2.3%)
Nice	113 (1.9%)	30 (1.9%)	55 (2.7%)	28 (1.4%)
Limoges	150 (1.5%)	71 (1.7%)	27 (1.1%)	52 (1.6%)
Antilles-Guyane	64 (1.5%)	30 (0.9%)	15 (1.5%)	19 (2.2%)
Poitiers	38 (1.5%)	0 (0.0%)	29 (4.1%)	9 (1.4%)
La Réunion/Océan Indien	66 (0.8%)	–	45 (2.1%)	21 (0.8%)

99% CI (36.0% to 37.5%)) considered that receiving a gift could influence their own prescription behaviour and 3252 (53.6%, 99% CI (53.1% to 54.2%)) thought it could impact their colleagues' behaviours. Two thousand seven hundred seventy-six students (45.2%, 99% CI (44.7% to 45.8%)) thought medical schools should prevent any interaction between students and PRs. Three thousand two hundred fifty-eight students (53.8%, 99% CI (53.2% to 54.3%)) believed that information received from PRs was often biased but at the same time that it was also useful for their education. Among the 4003 students who found small gifts inappropriate, 2982 (76.8%, 99% CI (76.2% to 77.4%)) had already received at least one, and 1579 (42.6%, 99% CI (41.9% to 43.3%)) within the last 6 months. The detailed answers to each proposal are presented in online supplemental appendix table 5.

Table 2 Characteristics of exposure to pharmaceutical promotion and incentives per student category

	All n=6280	Clinical students n=3549	Primary care residents n=1335	Other residents n=1396	P value
CE to pharmaceutical product promotion and incentives (n, % poststratification, 99% CI)					
No exposure	288 (3.7%) (3.5% to 3.9%)	277 (7.9%) (7.5% to 8.4%)	2 (0.2%) (0.1% to 0.3%)	9 (0.7%) (0.5% to 0.9%)	<0.001*
Exposure of any nature	5992 (96.3%) (96.1% to 96.5%)	3272 (92.1%) (91.6% to 92.5%)	1333 (99.8%) (99.7% to 99.9%)	1387 (99.3%) (99.1% to 99.5%)	
CE score (mean±SD)					
	7.1±14.1	4.0±7.1	8.9±12.3	10.1±17.3	<0.001†
Number of situations to which students had been exposed at least once (n, % poststratification, 99% CI). Medians are in bold, quartiles are underlined					
0	288 (3.7%) (3.5% to 3.9%)	277 (7.9%) (7.5% to 8.4%)	2 (0.2%) (0.1% to 0.3%)	9 (0.7%) (0.5% to 0.9%)	<0.001‡
1	325 (3.9%) (3.7% to 4.1%)	311 (8.3%) (7.9% to 8.8%)	6 (0.3%) (0.2% to 0.4%)	8 (0.7%) (0.5% to 0.9%)	
2	555 (7.4%) (7.1% to 7.7%)	509 (14.8%) (14.2% to 15.4%)	18 (1.2%) (1.0% to 1.5%)	28 (2.1%) (1.8% to 2.4%)	
3	864 (11.4%) (11.0% to 11.7%)	726 (19.8%) (19.1% to 20.4%)	85 (6.4%) (5.9% to 6.9%)	53 (3.7%) (3.4% to 4.1%)	
4	1170 (17.6%) (17.2% to 18.0%)	823 (24.5%) (23.8% to 25.2%)	179 (14.6%) (13.8% to 15.3%)	168 (10.4%) (9.8% to 10.9%)	
5	1164 (19.2%) (18.8% to 19.6%)	563 (15.1%) (14.5% to 15.7%)	273 (21.6%) (20.7% to 22.5%)	328 (23.1%) (22.3% to 23.9%)	
6	915 (16.8%) (16.4% to 17.2%)	247 (6.9%) (6.5% to 7.3%)	340 (25.1%) (24.1% to 26.0%)	328 (24.1%) (23.3% to 25.0%)	
7	629 (12.2%) (11.8% to 12.6%)	71 (2.2%) (2.0% to 2.4%)	269 (18.8%) (17.9% to 19.6%)	289 (20.9%) (20.1% to 21.7%)	
8	289 (6.1%) (5.9% to 6.4%)	18 (0.5%) (0.4% to 0.6%)	134 (10.2%) (9.6% to 10.9%)	137 (10.8%) (10.2% to 11.4%)	
9	69 (1.3%) (1.2% to 1.4%)	3 (0.1%) (0.0% to 0.1%)	24 (1.4%) (1.1% to 1.6%)	42 (3.0%) (2.7% to 3.3%)	
10	12 (0.3%) (0.2% to 0.3%)	1 (0.0%) (0.0% to 0.1%)	5 (0.4%) (0.2% to 0.5%)	6 (0.5%) (0.4% to 0.7%)	

The CE score is the sum of the answers to the 10 exposure situations assessed on a four-category scale, ranging from 0 (no exposure) to 30 (maximum exposure). Comparisons were made between subgroups of students (including residents) with the following tests.
*Kruskal-Wallis test.
†Analysis of variance.
‡Fisher's exact test.
CE, cumulative exposure.

The average scepticism score was 4.0±5.4 (see table 4).

There was a correlation between exposure and scepticism: R=−0.15 (99% CI (−0.18 to −0.12)). This means that the more sceptical were the students, the less often had they been exposed, but here too, the association was weak and of uncertain significance.

Potential determinants of exposure

In this section, the students' statements about the factors they believed influence their attitudes towards pharmaceutical promotion and incentives will be presented first, especially with regard to the influence of interpersonal relationships. The multivariate model, which provides more objective information, will be considered in a second step.

Declarative factors

Two thousand seven hundred eighty students (49.1%, 99% CI (48.5% to 49.7%)) reported that the frequency of their meetings with PRs depended on their own decision. Four thousand five hundred ninety-five students (78.4%, 99% CI (78.0% to 78.9%)) reported that it depended on the local habits in their hospital or in the physicians' office. Four hundred thirty-two students (7.7%, 99%
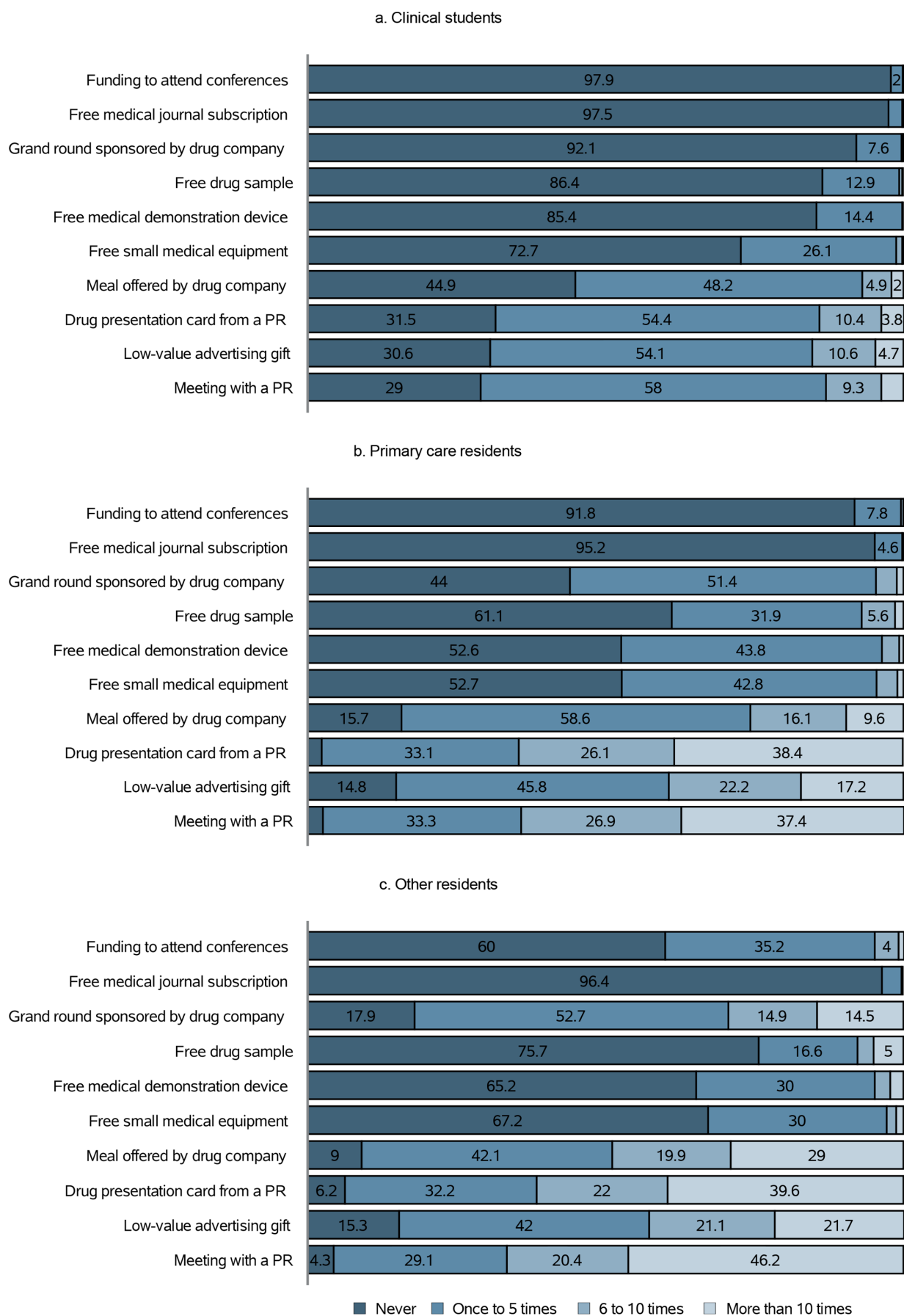
a. Clinical students

Category	Never	Once to 5 times	6 to 10 times	More than 10 times
Funding to attend conferences	97.9	2		
Free medical journal subscription	97.5			
Grand round sponsored by drug company	92.1	7.6		
Free drug sample	86.4	12.9		
Free medical demonstration device	85.4	14.4		
Free small medical equipment	72.7	26.1		
Meal offered by drug company	44.9	48.2	4.9	2
Drug presentation card from a PR	31.5	54.4	10.4	3.8
Low-value advertising gift	30.6	54.1	10.6	4.7
Meeting with a PR	29	58	9.3	

b. Primary care residents

Category	Never	Once to 5 times	6 to 10 times	More than 10 times
Funding to attend conferences	91.8	7.8		
Free medical journal subscription	95.2	4.6		
Grand round sponsored by drug company	44	51.4		
Free drug sample	61.1	31.9	5.6	
Free medical demonstration device	52.6	43.8		
Free small medical equipment	52.7	42.8		
Meal offered by drug company	15.7	58.6	16.1	9.6
Drug presentation card from a PR		33.1	26.1	38.4
Low-value advertising gift	14.8	45.8	22.2	17.2
Meeting with a PR		33.3	26.9	37.4

c. Other residents

Category	Never	Once to 5 times	6 to 10 times	More than 10 times
Funding to attend conferences	60	35.2	4	
Free medical journal subscription	96.4			
Grand round sponsored by drug company	17.9	52.7	14.9	14.5
Free drug sample	75.7	16.6	5	
Free medical demonstration device	65.2	30		
Free small medical equipment	67.2	30		
Meal offered by drug company	9	42.1	19.9	29
Drug presentation card from a PR	6.2	32.2	22	39.6
Low-value advertising gift	15.3	42	21.1	21.7
Meeting with a PR	4.3	29.1	20.4	46.2

■ Never ■ Once to 5 times ■ 6 to 10 times □ More than 10 times

Figure 2 Exposure of medical students to each type of pharmaceutical product promotion and incentive. Numbers are percentages.

A

Clinical students

	Strongly disagree	Disagree	Agree	Strongly agree
A gift (more than 50€)	57.2	27.6	10.1	5.1
A gift (less than 50€)	36.3	28.3	27.8	7.6
Free small medical equipment	22.6	21.3	41	15
Free meal	21.1	21.4	41.7	15.8
Grand rounds or conferences funding	18.6	16.9	40	24.4

B

Primary care residents

	Strongly disagree	Disagree	Agree	Strongly agree
A gift (more than 50€)	65.1	25.3	5.9	3.7
A gift (less than 50€)	42.4	29.9	22.8	4.9
Free small medical equipment	31.9	25	32.4	10.8
Free meal	29.7	24.2	36.1	10.1
Grand rounds or conferences funding	30.9	22.6	32.4	14.1

C

c. Other residents

	Strongly disagree	Disagree	Agree	Strongly agree
A gift (more than 50€)	52.9	29.8	10.6	6.7
A gift (less than 50€)	33.5	29.1	28	9.3
Free small medical equipment	19.3	20.8	39.9	20.1
Free meal	14.2	17.7	42.6	25.5
Grand rounds or conferences funding	13.3	11.6	40.2	34.9

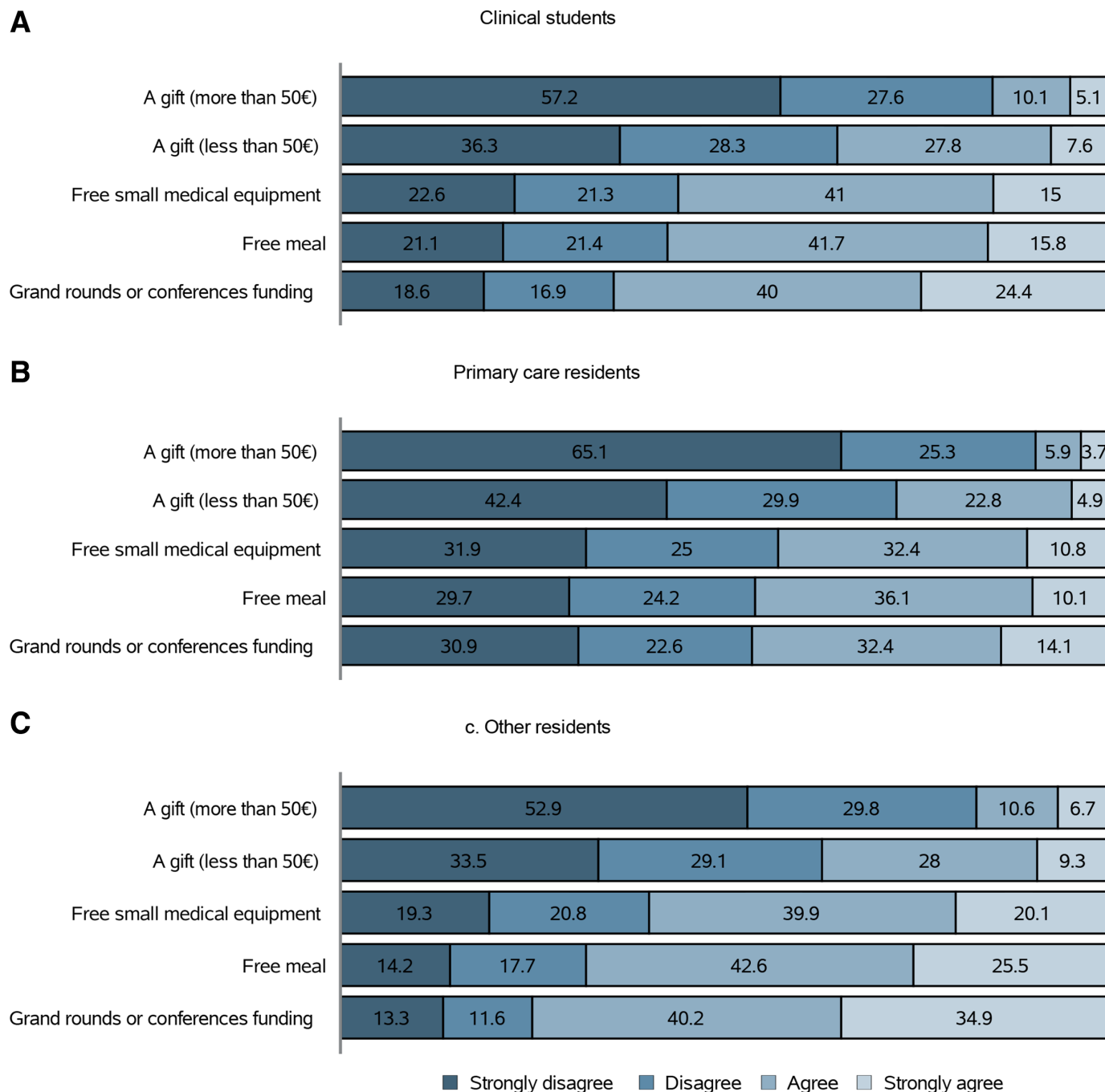■ Strongly disagree ■ Disagree ■ Agree □ Strongly agree

Figure 3 Appropriateness of gifts and promotional funding from the pharmaceutical industry as perceived by students. Each student was asked to assess whether they found it acceptable to receive each of the items proposed. Numbers are percentages.

CI (7.4% to 7.8%)) said they had refused to meet PRs, as they felt at risk of being judged or criticised by their colleagues.

Two thousand two hundred fifty-nine students (41.8%, 99% CI (41.0% to 42.5%)) reported that physicians around them had 'often' or 'very often' attended meetings with PRs in their presence. One thousand eight hundred sixty-two students (37.5%, 99% CI (36.6% to 38.3%)) reported having 'often' or 'very often' been asked by older practitioners or medical teaching staff to meet PRs. Among these were 685 clinical students (24.1%, 99% CI

(23.0% to 25.2%)), 495 primary care residents (39.7%, 99% CI (38.1% to 41.4%)) and 682 residents in other specialties (53.3%, 99% CI (51.7% to 55.0%)). Two thousand eight hundred twenty-one students (46.2%, 99% CI (45.6% to 46.7%)) indicated they had never been advised on how to deal with pharmaceutical product promotion and incentives by their internship supervisors.

Students who reported having 'often' or 'very often' been asked to meet PRs had a significantly higher correlation between exposure and appropriateness scores (R=0.19, 99% CI (0.13 to 0.25)) than those who had not

Table 3 Average appropriateness scores according to student categories

	Number	Appropriateness score (mean±SD)	P value
All	5992	2.2±5.2	<0.001*
Clinical students	3333	2.3±4.5	
Primary care residents	1306	1.7±5.6	
Other residents	1353	2.6±5.9	
Among residents	2659	2.2±5.9	<0.001*
Group 1 (primary care residents)	1306	1.7±5.6	
Group 2 (residents in medical specialties other than primary care who regularly prescribe drugs)	954	2.4±6.0	
Group 3 (surgical residents)	196	3.2±5.0	
Group 4 (residents in medical specialties who do not prescribe drugs)	203	2.7±5.8	

The appropriateness score was calculated by summing the answers to the five questions assessing the acceptance of gifts and incentives after reclassification into a binary variable (agree/do not agree). It ranged from 0 (meaning that gifts and incentives appeared to be totally inappropriate for the respondent) to 5 (meaning full acceptance of gifts and incentives by the respondent).
*Analysis of variance.

often been encouraged to attend meetings (R=0.12, 99% CI (0.08 to 0.16)) (p<0.001). This suggests that the exposure of the former increases more rapidly when their appropriateness score is higher than that of the latter. The reverse correlation between exposure and scepticism scores among students reporting having 'often' or 'very often' been asked to meet with PRs (R=−0.17, 99% CI (−0.23 to −0.11)) was a little higher than for students who had not (R=−0.12, 99% CI (−0.16 to −0.08)), but without statistical significance (p=0.086). As mentioned above, these correlations remain weak.

Multivariate analysis

Using a multivariate linear model, three factors appeared to be significantly associated with the extent of exposure that students reported, as measured by the CE score: region of study, year of study and appropriateness scores (p<0.001 for each). For the last two, the relationship was positive, meaning that the more advanced the students were in their years of study or the higher their appropriateness score, the higher the CE score (see online supplemental appendix table 6 for detailed results).

Educational and institutional aspects

Four thousand five hundred thirty-three students (76.0%, 99% CI (75.6% to 76.5%)) reported they had never received education on drug company-physician relationships or on pharmaceutical product promotion and incentives. This educational content was compulsory for 759 out of the 1215 respondents who had already attended lectures on the subject (64.0%, 99% CI (62.8% to 65.1%)). One hundred seventy-six primary care residents out of 1296 respondents (11.4%, 99% CI (10.7% to 12.1%)) reported receiving information on product promotion and incentives during their residency programme vs 62 residents from other specialties out of 1342 (5.2%, 99% CI (4.8% to 5.7%)) (p<0.001, Student's

t-test). Four thousand three hundred eighty-six students (73.5%, 99% CI (72.5% to 74.5%)) reported they did not feel adequately trained on how to interact with PRs.

Students who reported having received education on pharmaceutical product promotion and incentives had lower appropriateness scores and higher scepticism scores than the others (table 5).
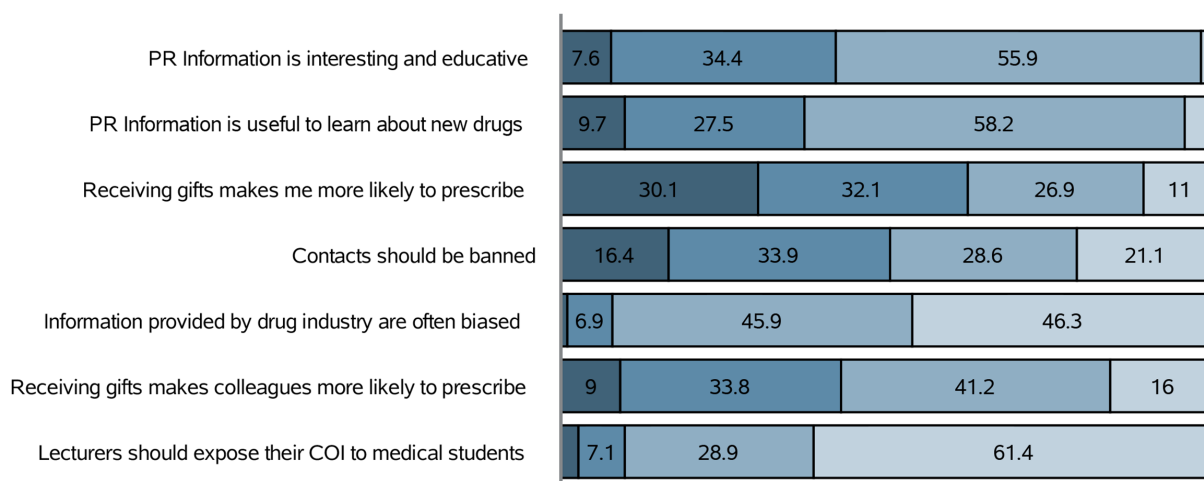
Five thousand one hundred twenty-two students (88.1%, 99% CI (87.7% to 88.4%)) did not know whether there was a policy regarding interactions between drug companies and medical students in their medical school. Five thousand two hundred thirty-three (89.7%, 99% CI (89.3% to 90.0%)) students did not know if such a policy existed in their hospitals. Four thousand nine hundred seventy-nine students (84.9 %, 99% CI (84.5% to 85.3%)) were unaware of the recent CDM ethics and deontology charter.
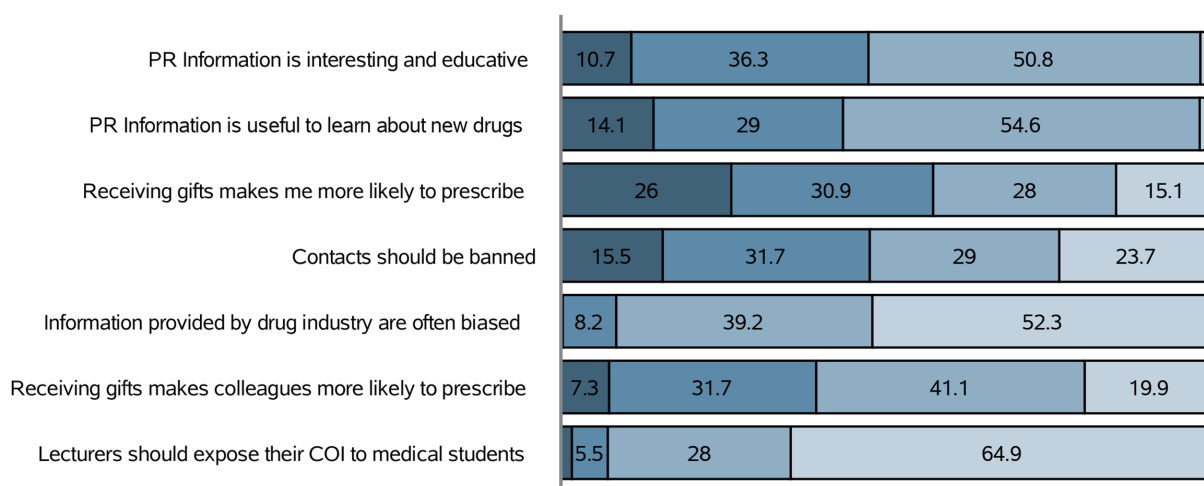
DISCUSSION

In 2019 in France, despite several institutional and legislative initiatives to guard medical students from pharmaceutical product promotion and incentives, 96.3% of them had already been exposed, including 78.1% in the 6 months before the survey, which seems a high level of exposure. Exposure to drug company marketing pressures appears to begin early in the curriculum. The amount of exposure appears to be linked to the level of acceptance of this type of promotional activity, and to the year of study, and it varies across regions. Although medical students still had favourable attitudes towards pharmaceutical product promotion and incentives, they appeared less favourable than in the previous survey in 2011[23]; 76.0% of them reported never having received any education on drug company-physician interactions or pharmaceutical product promotion and incentives. In
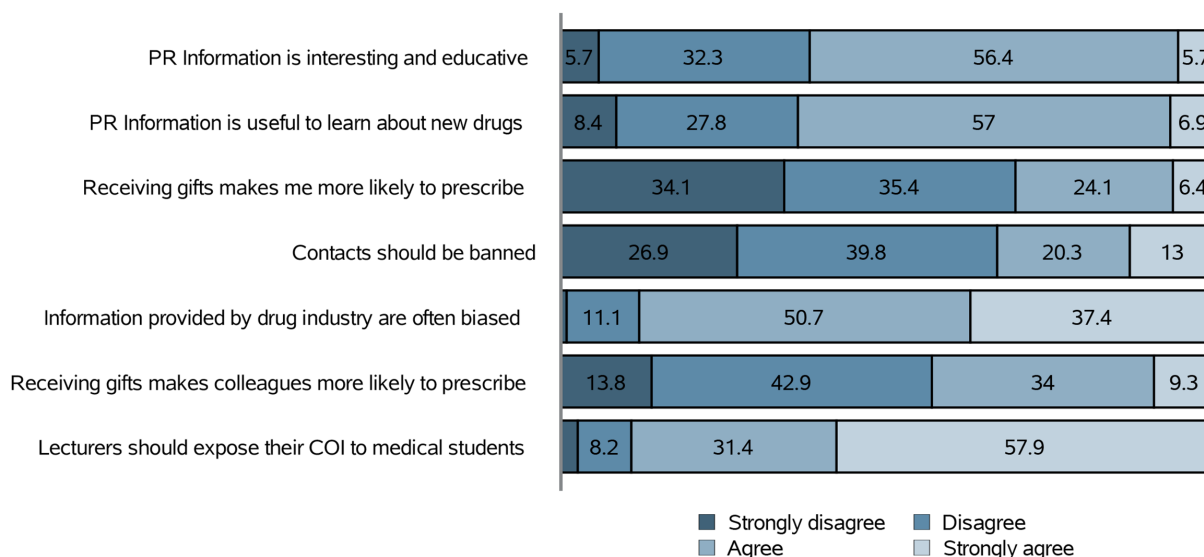
A Clinical students

Statement	Strongly disagree	Disagree	Agree	Strongly agree
PR Information is interesting and educative	7.6	34.4	55.9	
PR Information is useful to learn about new drugs	9.7	27.5	58.2	
Receiving gifts makes me more likely to prescribe	30.1	32.1	26.9	11
Contacts should be banned	16.4	33.9	28.6	21.1
Information provided by drug industry are often biased	6.9	45.9	46.3	
Receiving gifts makes colleagues more likely to prescribe	9	33.8	41.2	16
Lecturers should expose their COI to medical students	7.1	28.9	61.4	

B Primary care residents

Statement	Strongly disagree	Disagree	Agree	Strongly agree
PR Information is interesting and educative	10.7	36.3	50.8	
PR Information is useful to learn about new drugs	14.1	29	54.6	
Receiving gifts makes me more likely to prescribe	26	30.9	28	15.1
Contacts should be banned	15.5	31.7	29	23.7
Information provided by drug industry are often biased	8.2	39.2	52.3	
Receiving gifts makes colleagues more likely to prescribe	7.3	31.7	41.1	19.9
Lecturers should expose their COI to medical students	5.5	28	64.9	

C Other residents

Statement	Strongly disagree	Disagree	Agree	Strongly agree
PR Information is interesting and educative	5.7	32.3	56.4	5.7
PR Information is useful to learn about new drugs	8.4	27.8	57	6.9
Receiving gifts makes me more likely to prescribe	34.1	35.4	24.1	6.4
Contacts should be banned	26.9	39.8	20.3	13
Information provided by drug industry are often biased	11.1	50.7	37.4	
Receiving gifts makes colleagues more likely to prescribe	13.8	42.9	34	9.3
Lecturers should expose their COI to medical students	8.2	31.4	57.9	

Legend: ■ Strongly disagree ■ Disagree ■ Agree ■ Strongly agree

Figure 4 Students' scepticism about the influence of pharmaceutical product promotion and incentives. Students were asked whether they agreed or disagreed with the items proposed. Numbers are percentages.

Table 4 Average scepticism scores according to student categories

	Number	Scepticism score (mean±SD)	P value
All	5980	4.0±5.4	<0.001*
Clinical students	3324	4.1±4.5	
Primary care residents	1304	4.3±6.0	
Other residents	1352	3.6±6.5	
Among residents	2656	3.9±6.4	<0.001*
Group 1 (primary care residents)	1304	4.3±6.0	
Group 2 (residents of medical specialties other than primary care who regularly prescribe drugs)	953	3.7±6.6	
Group 3 (surgical specialties)	196	3.1±5.5	
Group 4 (residents of medical specialties who do not prescribe drugs)	203	3.5±6.4	

The scepticism score is calculated by summing the answers to the seven proposals after reclassification into a binary variable (agree/disagree), as defined in the 'Methods' section. It ranges from 0, meaning no scepticism (the student does not think that contacts with promotional activities could have an influence on future behaviour), to 7 (he or she thinks that it could have an influence on future behaviour).
*Analysis of variance.

addition, 84.9% of the students had no knowledge of the existing CDM Ethics Charter, 15 months after its approval.

Exposure to pharmaceutical product promotion and incentives
On local scale, in France, some recent research has shown fairly homogeneous exposure of medical students to product promotion and incentives: 93.0% of residents reported they had already met PRs in 2018 in the Centre-Val de Loire region, and 97.0% of clinical students and 100.0% of residents in Lyon in 2012.[31 32] Compared with the nationwide study by Etain et al, we observed stable levels of exposure during residency and slightly less exposure for clinical students concerning meetings with PRs and free lunches (a comparison of the main results is presented in online supplemental appendix table 7).[23] This result could indicate that exposure has recently begun to decrease, following new educational initiatives and institutional reforms.

The systematic review by Austad et al reported various levels of exposure across countries and regions, with a substantially higher exposure rate in the USA.[18] Our results seem consistent with the highest exposure rates reported in this study and other international studies.[29 33] For instance, 96.8% of third-year students had had a free

Table 5 Appropriateness and scepticism scores according to access to education on pharmaceutical industry incentives

	All	No education n=4533	Education n=1403	P value
Appropriateness score (mean±SD)				
N=5992	2.2±5.2	2.3±5.2	2.1±5.3	<0.001*
Scepticism score (mean±SD)				
N=5980	4.0±5.4	3.9±5.3	4.3±5.5	<0.001*

*Student's t-test.

lunch in the American study by Sierles et al while 73.9% of Norwegian sixth-year students had been exposed to product promotion and incentives in the study by Lea et al.[15 34]

However, the results concerning the types of exposure differed in some studies. Sierles et al and Bellin et al found that 89%–98% of American clinical students had accepted free lunches or snacks provided by the pharmaceutical industry, as compared with only 55.1% in our study.[15 35] Textbooks as gifts were also more frequent in the American studies.[18] These differences can be explained by cultural differences among students, and by different marketing strategies across countries. The cost of education in the USA—higher than in France—could also play a role.

Our results show increasing exposure to marketing between clinical student years and residency, which is consistent with the literature. The systematic review by Austad et al and the study by Etain et al reported the same trend.[18 23] This could be explained by the fact that residents are allowed to prescribe and constitute better targets for promotional products and incentives. It could also be accentuated by the fact that they spend all their time in hospital wards or medical offices.

Specialty residents who do not prescribe drugs (group 4) seemed to be less exposed to pharmaceutical product promotion and incentives than the others (group 2). This could suggest that those that do prescribe could be more specifically targeted by pharmaceutical promotions and incentives. Above all, surgical residents seemed to be the most exposed in our study, all situations considered. They also had the most favourable attitudes towards pharmaceutical marketing activities. This could be because of their considerable proximity with the medical equipment industry, inherent in surgical activities.

Regarding situations of exposure, we observed that primary care residents were not exposed to strictly

the same situations as residents in other specialties. In France, residents from specialties other than primary care spend more time in hospital wards and are invited to attend more conferences and grand rounds during their training than primary care residents, which could partly explain these results. As they are more often required to prescribe specific drugs that are more expensive and profitable for the industry, they may be subjected to more marketing pressure from the pharmaceutical industry.

Differences in exposure across medical schools were difficult to analyse because of the unequal distribution of the students, despite poststratification adjustment. Therefore, they are not presented in the current paper.

Attitudes towards product promotion and incentives

Perceived appropriateness, and to a lesser extent scepticism, differed according to student categories, and for residents according to their specialty. It is interesting to see that these results are consistent with those from previous studies.

Attitudes and exposure

The correlations between exposure and perceived appropriateness scores and between exposure and scepticism scores in our study suggest a link between high levels of exposure and more favourable attitudes towards pharmaceutical product promotion and incentives. However, as mentioned above, the strength of these associations is weak and their interpretation must be cautious. Furthermore, it is not possible to conclude on the direction of this association, and thus to say whether exposure to pharmaceutical promotion and incentives makes students more receptive towards it, or the opposite.

Gifts without educational purpose seemed to be less readily accepted than meals, funding to attend conferences or grand rounds, or medical equipment, and even less if their value was over €50. These findings are consistent with previous findings from several studies in other countries, such as the research by Sierles et al or that by Soyk et al.[15 16 29] This could be explained by several factors, such as a more marked perception of reciprocity than for other promotional benefits, often not perceived as situations of COI, and also by the reinforcement of French law regarding gifts since 2011.[28]

Primary care residents seemed less likely to consider that pharmaceutical product promotion and incentives were appropriate, and they were more sceptical than other residents, which is consistent with previous studies.[18 19] Since primary care residents reported receiving better education on physician-industry relationships, this difference could suggest an educational impact on attitudes towards product promotion and incentives from the pharmaceutical industry. Likewise, the results suggest that surgical residents accepted more pharmaceutical product promotion, medical equipment promotion and incentives and had more favourable attitudes towards drug and medical equipment industries than other residents. These differences also underline the fact that habits, and

interpersonal and cultural factors, necessarily different across specialties, have an influence on attitudes.

Unrecognised influence

As a population group, medical students seem to be exposed to influence. Indeed, while 5458 students (90.7%) admitted they thought information from PRs was often biased, half of them reported being willing to meet them. In this study, only 2195 students (36.8%) thought receiving gifts could influence their prescribing habits but 3252 (53.6%) thought it could have an influence on their colleagues. This phenomenon, called the 'illusion of unique invulnerability', is one of the first sources of vulnerability to drug marketing influence.[36 37] These results are however quite different from those reported by Etain et al, where only 2.0% of clinical students and 3.7% of residents perceived an influence on their own behaviour.[23] In this earlier study, response choices to these questions were binary, and the subject was explicitly the perception of COI situations, in part explaining the difference. It could also suggest that French students' awareness of the potential influence of pharmaceutical product promotion and incentives has recently been on the increase.

Determinants of exposure

This study tends to suggest that students who were encouraged by physicians to meet PRs were more likely to find gifts appropriate. Relationships with peers are potentially an important way of influencing attitudes regarding drug promotion and incentives, and for this reason, other studies should be performed to confirm this hypothesis. Most of the students reported that usual practice in their hospital or medical unit influenced the frequency of their meetings with PRs. It also underlines the importance of medical culture, the environment and possible peer pressure. Concerning the correlation between favourable attitudes and frequency of invitations from senior physicians to meet PRs, it suggests that students who were invited frequently had more favourable attitudes towards product promotion and incentives. Although the same precautions discussed above regarding the interpretation of correlation results apply to the strength of this association and causality, it is interesting to note that Sierles et al found similar results (R= −0.35 vs −0.185; p=0.18).[15] This also underlines the influence of peers and role models.

In addition to confirming greater exposure over the years of study, multivariate analyses showed that there was great geographical disparity in this exposure. The French Regions were the smallest geographical unit that could be used to perform this modelling in a statistically reliable manner. However, it is likely that exposure actually varies across different medical schools. Their grouping within regions has no logic other than geographical, which makes any direct comparison impossible to interpret. Therefore, in order to avoid any misuse of this raw data, we preferred to recode the name of each region in the table provided in the online supplemental appendix

1. The existence of this geographical disparity has already been found in the literature.[16 18]

Concerning the appropriateness and scepticism item scores, only appropriateness measures proved significantly associated with exposure in the multivariate analyses. The students' scales of values thus seem to play a more marked role than critical attitudes towards pharmaceutical product promotion and incentives in their exposure to them.

Education on pharmaceutical product promotion and incentives

In 2019, 76.0% of French medical students and residents reported that they had not attended any lectures on the industry's marketing techniques nor on the way to manage pharmaceutical product promotion and incentives, irrespective of the type or the amount of education. This is an important finding, considering that the lack of lectures for medical students and young physicians on this subject was underlined after the Benfluorex health scandal in 2010[27] and that the CDM ethics charter encourages interactive learning on the subject of medical integrity.[25] However, this charter is recent and its effects were probably not perceptible at the time of data collection, which is also what other authors seem to think.[26] It is also possible that these results are affected by recall bias.

Only 4.3% of the medical students reported having had a lecture on COI in the study by Etain *et al* vs 17.2% (99 % CI (16.6% to 17.7%)) in our study. This could suggest that the proportion of teaching devoted to education on COI and interactions with drug marketing representatives have nevertheless increased. Unfortunately, we do not have the details of the 2012 study results, which included preclinical students, making precise comparisons impossible.[23] Other studies have confirmed that new training courses on pharmaceutical product promotion and incentives have recently been introduced, mainly at local level and through individual initiatives.[26 38 39]

Institutional and teaching hospital policies

Furthermore, 84.9% of the students had no knowledge of an existing policy regarding drug company-medical student interactions in their medical school or in their respective teaching hospitals. Likewise, most students were still unaware of the existing CDM Ethics Charter, even 15 months after it was adopted by most of the French medical schools.[25] This could be explained by the fact that these policies are relatively new, insufficiently promoted and rarely implemented. A recent survey on COI policies in French teaching hospitals showed that in December 2017, 53.1% had adopted some rules and regulations, 12.5% had considered implementing a policy and only 6.3% had begun implementation.[26]

Policy reinforcement regarding pharmaceutical product promotion and incentives could have positive effects on students' attitudes. Indeed, international studies, especially in the USA, showed that graduates studying in schools with more stringent COI policies had fewer contacts with PRs,[40] exhibited lesser acceptance of gift incentives, were more sceptical[41] and prescribed fewer new medications and fewer heavily promoted medications with no clinical proof of superiority.[17 30] In France, there has so far been no study exploring medical practice according to previous COI policies in medical schools, and it would be interesting to carry out further studies on the matter.

Since July 2019, after our data collection, a new French health law banned any funding of medical students by the pharmaceutical industry for any kind of training activity.[42] Despite the implementation issues of this legislation. it underlines the topicality of the subject and reinforces the relevance of basic screening for exposure to pharmaceutical marketing product promotion and incentives in France.

Strengths and limitations of the study

This study is currently the largest investigation nationwide on French medical students' exposure to and attitudes towards pharmaceutical product promotion and incentives. In fact, most studies carried out surveys on around 200 students and up to 2101 with the study by Etain *et al*, which included preclinical students.[23] This is particularly crucial with regard to recent institutional and educational improvements in France, such as the CDM Ethics Charter or the above-mentioned 2019 legislation. The large number of responses, across all specialties, enabled comparisons between different population samples.

However, as the design of this study was cross-sectional, variations in exposure and in students' attitudes over time could not be observed. Nevertheless, it provides basic screening of students' exposure for future studies. The use of questionnaires subjected the study to a reporting bias and to issues concerning the reliability of recollected information. Since participation was on a voluntary basis, a selection bias could also have occurred. Given that some respondents could be more sensitive to the subject and thus less exposed to and more sceptical towards pharmaceutical product promotion and incentives, this could have minimised the exposure score and scores for favourable attitudes towards the pharmaceutical industry. In addition, the response rate was quite low compared with other international studies on the subject.[18] This can be explained in particular by the fact that students were solicited by an email relayed by the medical school administrations and student associations. As these students are already heavily solicited by this type of email, the risk that the message could go unnoticed was quite high despite the reminders. The generalisation of the results to all French medical students should therefore be cautious, even if corrective factors were applied to enhance representativeness. Nevertheless, it gives a good overview of the situation in France in 2019. Cumulative exposure, appropriateness and scepticism were described using summary scores, as this was a methodology already used in previous work, thus facilitating comparisons.[15 32] The use of these synthetic descriptors also facilitated comparisons between

students, and some of the statistical analyses. On the other hand, the pragmatic meaning of these scores can be difficult to apprehend, and other methods could have been used.

CONCLUSION

The present study provides a wide picture of medical students' exposure to and attitudes towards drug company product promotion and incentives in France in 2019. Exposure to pharmaceutical promotional strategies remains considerable and starts early in medical training, while the types of interaction depend on the year of study and the specialty.

In order to improve the quality of drug prescribing and to try to avoid undue influence of marketing strategies on medical practice, educational initiatives should be reinforced in medical schools and teaching hospitals. We suggest making them mandatory for all students.

Institutional policies regarding pharmaceutical product promotion, incentives and COI should also be reinforced and promoted. The 2017 CDM Ethics Charter is a step in the right direction, with more transparency, but its implementation, which seems limited for the moment, must become a priority on national level. In this process, we believe that the students themselves, through their representative associations, have a role to play. Finally, the new 2019 health law has raised hopes for profound changes in students' exposure to pharmaceutical product promotion and incentives, but we are now waiting to see if the results will be visible in the next few years.

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Medical students' exposure to and attitudes towards product promotion and incentives from the pharmaceutical industry in 2019: A national cross-sectional study in France.

Appendix: supplementary material

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Supplemental material

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Table 1: Sociodemographic characteristics of the respondents, supplementary material

	All n = 6280	Clinical students n = 3549	Primary care residents n = 1335	Other residents n = 1396
Year of study (n, % post-stratification)				
Year 4	1000 (14.8%)	1000 (33.9%)	-	-
Year 5	1217 (14.8%)	1217 (34.0%)	-	-
Year 6	1332 (14.0%)	1332 (32.1%)	-	-
Year 7	624 (14.4%)	-	360 (33.0%)	264 (19.7%)
Year 8	677 (14.2%)	-	367 (29.6%)	310 (21.7%)
Year 9	888 (14.0%)	-	561 (32.8%)	327 (18.6%)
Year 10	386 (9.4%)	-	27 (2.6%)	359 (27.8%)
Year 11	119 (3.7%)	-	7 (1.0%)	112 (10.9%)
Year 12	37 (0.6%)	-	13 (0.9%)	24 (1.3%)
Region (n, % post-stratification)				
Ile-de-France	1021 (20.4%)	806 (22.9%)	54 (9.9%)	161 (25.2%)
Auvergne-Rhône-Alpes	848 (11.9%)	549 (12.1%)	179 (16.7%)	120 (8.0%)
Grand-Est	678 (9.8%)	395 (10.8%)	138 (11.9%)	145 (7.0%)
Hauts-de-France	432 (9.5%)	279 (10.2%)	57 (7.7%)	96 (9.9%)
Nouvelle Aquitaine	491 (7.9%)	208 (6.4%)	141 (10.6%)	142 (7.7%)
Occitanie	359 (7.5%)	163 (6.5%)	105 (6.4%)	91 (9.6%)
Provence-Alpes-Côte-d'Azur + Corse	221 (6.6%)	89 (6.4%)	85 (9.2%)	47 (4.7%)
Pays-de-la-Loire	687 (5.7%)	290 (5.9%)	191 (5.4%)	206 (5.7%)
Normandie	336 (5.7%)	180 (5.3%)	72 (6.6%)	84 (5.4%)
Bretagne	632 (5.2%)	350 (5.0%)	160 (6.3%)	122 (4.5%)
Bourgogne-Franche-Comté	288 (4.7%)	98 (4.3%)	76 (4.0%)	114 (5.9%)
Centre-Val de Loire	157 (2.9%)	112 (3.3%)	17 (1.6%)	28 (3.3%)
Antilles Guyane	64 (1.5%)	30 (0.9%)	15 (1.5%)	19 (2.2%)
Ocean Indien	66 (0.8%)	-	45 (2.1%)	21 (0.8%)

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Table 2: Sociodemographic characteristics of the respondents (raw data) and of all French medical students (data source: French Ministry of higher education and scientific research, French national health professional demographic observatory).

	All	Clinical students	Primary care residents	Other residents
	n (sample) = 6 280 n (all) = 60 550	n (sample) = 3 549 n (all) = 25 903	n (sample) = 1 335	n (sample) = 1 396
			n (all) = 34 647	
Age in years (mean ± SD if available)				
Study sample	25.8 ± 3.2	24.2 ± 2.6	27.9 ± 2.8	28.0 ± 2.6
All	24.5	23.3	27.2	
Gender (n, raw %)				
Male				
Study sample	2 214 (35.3%)	1 259(35.5%)	405 (30.3%)	550 (39.4%)
All	25 437 (42.1%)	10 599 (41.0%)	14 838 (42.8%)	
Female				
Study sample	4 066 (64.7%)	2 290 (64.5%)	930 (69.7%)	846 (60.6%)
All	35113 (57.9%)	15304 (59.0%)	19809 (57.2%)	
Year of study (n, raw %)				
Year 4				
Study sample	1000 (15.9%)	1000 (28.2%)	-	-
All	8767 (14.5%)	8767 (33.8%)	-	-
Year 5				
Study sample	1217 (19.4%)	1217 (34.3%)	-	-
All	8525 (14.1%)	8525 (32.9%)	-	-
Year 6				
Study sample	1332 (21.2%)	1332 (37.5%)	-	-
All	8611 (14.2%)	8611 (33.2%)	-	-
Year 7				
Study sample	624 (9.9%)	-	360 (27.0%)	264 (18.9%)
All	8868 (14.6%)	-	8868 (25.6%)	
Year 8				
Study sample	677 (10.8%)	-	367 (27.5%)	310 (22.2%)
All	7465 (12.3%)	-	7465 (21.5%)	
Year 9				
Study sample	888 (14.1%)	-	561 (42.0%)	327 (23.4%)
All	10849 (17.9%)	-	10849 (31.3%)	
Year 10				
Study sample	386 (6.1%)	-	27 (2.0%)	359 (25.7%)
All	5180 (8.6%)	-	5180 (14.9%)	
Year 11				
Study sample	119 (1.9%)	-	7 (0.5%)	112 (8.0%)
All	2285 (3.8%)	-	2285 (6.6%)	
Year 12				
Study sample	37 (0.6%)	-	13 (1.0%)	24 (1.7%)
All	?	-	?	
Medical School, study sample (n, raw %)				
Paris	1021 (16.3%)	806 (22.7%)	54 (4.0%)	161 (11.5%)
Rennes	445 (7.1%)	251 (7.1%)	109 (8.2%)	85 (6.1%)
Angers	417 (6.6%)	180 (5.1%)	141 (10.6%)	96 (6.9%)
Nancy	349 (5.6%)	260 (7.3%)	62 (4.6%)	27 (1.9%)

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Supplemental material

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	All	Clinical students	Primary care residents	Other residents
Bordeaux	303 (4.8%)	137 (3.9%)	85 (6.4%)	81 (5.8%)
Grenoble	272 (4.3%)	194 (5.5%)	68 (5.1%)	10 (0.7%)
Nantes	270 (4.3%)	110 (3.1%)	50 (3.7%)	110 (7.9%)
Amiens	263 (4.2%)	209 (5.9%)	7 (0.5%)	47 (3.4%)
Lyon	222 (3.5%)	149 (4.2%)	52 (3.9%)	21 (1.5%)
Besançon	201 (3.2%)	93 (2.6%)	53 (4.0%)	55 (3.9%)
Montpellier	195 (3.1%)	55 (1.5%)	103 (7.7%)	37 (2.7%)
Reims	195 (3.1%)	52 (1.5%)	36 (2.7%)	107 (7.7%)
Brest	187 (3.0%)	99 (2.8%)	51 (3.8%)	37 (2.7%)
Clermont-Ferrand	186 (3.0%)	112 (3.2%)	31 (2.3%)	43 (3.1%)
Caen	175 (2.8%)	86 (2.4%)	34 (2.5%)	55 (3.9%)
Lille	169 (2.7%)	70 (2.0%)	50 (3.7%)	49 (3.5%)
Saint-Etienne	168 (2.7%)	94 (2.6%)	28 (2.1%)	46 (3.3%)
Toulouse	164 (2.6%)	108 (3.0%)	2 (0.1%)	54 (3.9%)
Rouen	161 (2.6%)	94 (2.6%)	38 (2.8%)	29 (2.1%)
Tours	157 (2.5%)	112 (3.2%)	17 (1.3%)	28 (2.0%)
Limoges	150 (2.4%)	71 (2.0%)	27 (2.0%)	52 (3.7%)
Strasbourg	134 (2.1%)	83 (2.3%)	40 (3.0%)	11 (0.8%)
Nice	113 (1.8%)	30 (0.8%)	55 (4.1%)	28 (2.0%)
Aix-Marseille	108 (1.7%)	59 (1.7%)	30 (2.2%)	19 (1.4%)
Dijon	87 (1.4%)	5 (0.1%)	23 (1.7%)	59 (4.2%)
La Réunion/Indian Ocean	66 (1.1%)	-	45 (3.4%)	21 (1.5%)
Antilles-Guyane	64 (1.0%)	30 (0.8%)	15 (1.1%)	19 (1.4%)
Poitiers	38 (0.6%)	0 (0.0%)	29 (2.2%)	9 (0.6%)

Region, study sample (n, raw %)

	All	Clinical students	Primary care residents	Other residents
Ile-de-France	1021 (16.3%)	806 (22.7%)	54 (4.0%)	161 (11.5%)
Auvergne-Rhône-Alpes	848 (13.5%)	549 (15.5%)	179 (13.4%)	120 (8.6%)
Pays-de-la-Loire	687 (10.9%)	290 (8.2%)	191 (14.3%)	206 (14.8%)
Grand-Est	678 (10.8%)	395 (11.1%)	138 (10.3%)	145 (10.4%)
Bretagne	632 (10.1%)	350 (9.9%)	160 (12.0%)	122 (8.7%)
Nouvelle Aquitaine	491 (7.8%)	208 (5.9%)	141 (10.6%)	142 (10.2%)
Hauts-de-France	432 (6.9%)	279 (7.9%)	57 (4.3%)	96 (6.9%)
Occitanie	359 (5.7%)	163 (4.6%)	105 (7.9%)	91 (6.5%)
Normandie	336 (5.4%)	180 (5.1%)	72 (5.4%)	84 (6.0%)
Bourgogne-Franche-Comté	288 (4.6%)	98 (2.8%)	76 (5.7%)	114 (8.2%)
Provence-Alpes-Côte-d'Azur + Corse	221 (3.5%)	89 (2.5%)	85 (6.4%)	47 (3.4%)
Centre-Val de Loire	157 (2.5%)	112 (3.2%)	17 (1.3%)	28 (2.0%)
Indian Ocean	66 (1.1%)	-	45 (3.4%)	21 (1.5%)
Antilles Guyane	64 (1.0%)	30 (0.8%)	15 (1.1%)	19 (1.4%)

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Table 3: Exposure of medical students to each type of pharmaceutical product promotion and incentives. Each student was asked to assess the frequency of exposure to each of the situations presented.

Situations (n, % post-stratification, 99% CI)	All n = 6280	Clinical students n = 3549	Primary care residents n = 1335	Other residents n = 1396	P value
Meeting with a pharmaceutical representative (since beginning of studies)					*< .001*
Never	1140 (14.6%) (14.2% to 15.0%)	1038 (29.0%) (28.3% to 29.7%)	37 (2.5%) (2.1% to 2.8%)	65 (4.3%) (3.9% to 4.7%)	
Once to 5 times	2859 (42.8%) (42.2% to 43.3%)	2038 (58.0%) (57.2% to 58.8%)	408 (33.3%) (32.3% to 34.3%)	413 (29.1%) (28.2% to 30.0%)	
6 to 10 times	1053 (17.1%) (16.7% to 17.5%)	344 (9.3%) (8.8% to 9.7%)	392 (26.9%) (25.9% to 27.9%)	317 (20.4%) (19.6% to 21.1%)	
More than 10 times	1228 (25.5%) (25.0% to 26.0%)	129 (3.7%) (3.4% to 4.1%)	498 (37.4%) (36.3% to 38.4%)	601 (46.2%) (45.3% to 47.2%)	
Meeting with a pharmaceutical representative (within the last six months)					*< .001*
Never	2735 (37.6%) (37.1% to 38.2%)	2119 (58.2%) (57.4% to 59.0%)	291 (19.6%) (18.7% to 20.4%)	325 (23.4%) (22.6% to 24.2%)	
Once to 5 times	2957 (49.9%) (49.4% to 50.5%)	1372 (40.3%) (39.5% to 41.1%)	807 (61.5%) (60.4% to 62.5%)	778 (54.2%) (53.3% to 55.2%)	
6 to 10 times	376 (7.9%) (7.7% to 8.2%)	43 (1.2%) (1.0% to 1.4%)	164 (13.1%) (12.4% - 13.9%)	169 (13.2%) (12.5% to 13.8%)	
More than 10 times	212 (4.5%) (4.3% to 4.7%)	15 (0.3%) (0.2% to 0.4%)	73 (5.8%) (5.3% to 6.3%)	124 (9.2%) (8.7% to 9.8%)	
Drug presentation card from a PR (since beginning of studies)					*< .001*
Never	1246 (16.3%) (15.9% to 16.7%)	1141 (31.5%) (30.7% to 32.3%)	30 (2.3%) (2.0% - 2.6%)	75 (6.2%) (5.7% to 6.6%)	
Once to 5 times	2850 (42.1%) (41.6% to 42.6%)	1928 (54.4%) (53.5% to 55.2%)	432 (33.1%) (32.1% to 34.1%)	490 (32.2%) (31.3% to 33.1%)	
6 to 10 times	1015 (18.0%) (17.5% to 18.4%)	346 (10.4%) (9.9% to 10.9%)	366 (26.1%) (25.2% to 27.1%)	303 (22.0%) (21.3% to 22.8%)	
More than 10 times	1169 (23.7%) (23.2% to 24.1%)	134 (3.8%) (3.5% to 4.1%)	507 (38.4%) (37.4% to 39.5%)	528 (39.6%) (38.7% to 40.5%)	
Drug presentation card from a PR (within the last six months)					*< .001*
Never	2874 (40.0%) (39.5% to 40.5%)	2182 (60.1%) (59.3% to 60.9%)	305 (20.2%) (19.3% to 21.1%)	387 (27.6%) (26.8% to 28.5%)	
Once to 5 times	2752 (47.1%) (46.6% to 47.7%)	1264 (37.1%) (36.3% to 37.9%)	737 (56.4%) (55.3% to 57.5%)	751 (53.8%) (52.9% to 54.8%)	
6 to 10 times	428 (8.3%) (8.0% to 8.6%)	78 (2.0%) (1.8% to 2.2%)	182 (14.4%) (13.7% to 15.2%)	168 (12.3%) (11.7% to 13.0%)	
More than 10 times	226 (4.5%) (4.3% to 4.8%)	25 (0.8%) (0.6% to 0.9%)	111 (9.0%) (8.4% to 9.6%)	90 (6.2%) (5.8% to 6.7%)	

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Situations (n, % post-stratification, 99% CI)	All n = 6280	Clinical students n = 3549	Primary care residents n = 1335	Other residents n = 1396	*P value*
Reception of advertising gift with low value (<u>since beginning of studies</u>)					*< .001*
Never	1506 (21.9%) (21.4% to 22.3%)	1068 (30.6%) (29.9% to 31.4%)	196 (14.8%) (14.0% to 15.6%)	242 (15.3%) (14.6% to 16.0%)	
Once to 5 times	3163 (48.2%) (47.7% to 48.7%)	1926 (54.1%) (53.3% to 54.9%)	630 (45.8%) (44.7% to 46.8%)	607 (42.0%) (41.0% to 42.9%)	
6 to 10 times	944 (16.8%) (16.4% to 17.2%)	385 (10.6%) (10.1% to 11.1%)	285 (22.2%) (21.3% to 23.1%)	274 (21.1%) (20.3% to 21.8%)	
More than 10 times	667 (13.2%) (12.8% to 13.6%)	170 (4.7%) (4.4% to 5.1%)	224 (17.2%) (16.4% to 18.1%)	273 (21.7%) (20.9% to 22.5%)	
Reception of advertising gift with low value (<u>within the last six months</u>)					*< .001*
Never	3564 (53.5%) (52.9% to 54.0%)	2280 (63.9%) (63.2% to 64.7%)	627 (44.9%) (43.8% to 46.0%)	657 (45.7%) (44.8% to 46.7%)	
Once to 5 times	2457 (41.3%) (40.8% to 41.8%)	1208 (34.1%) (33.3% to 34.9%)	616 (47.7%) (46.6% to 48.7%)	633 (46.3%) (45.3% to 47.3%)	
6 to 10 times	184 (3.7%) (3.5% to 3.9%)	43 (1.5%) (1.3% to 1.7%)	67 (5.3%) (4.9% to 5.8%)	74 (5.5%) (5.1% to 6.0%)	
More than 10 times	75 (1.5%) (1.4% to 1.6%)	18 (0.5%) (0.4% to 0.6%)	25 (2.1%) (1.8% to 2.4%)	32 (2.4%) (2.2% to 2.7%)	
Meal offered by drug company (<u>since beginning of studies</u>)					*< .001*
Never	2001 (26.3%) (25.9% to 26.8%)	1662 (44.9%) (44.1% to 45.7%)	213 (15.7%) (14.9% to 16.5%)	126 (9.0%) (8.5% to 9.6%)	
Once to 5 times	3091 (48.9%) (48.3% to 49.4%)	1667 (48.2%) (47.4% to 49.1%)	806 (58.6%) (57.5% to 59.6%)	618 (42.1%) (41.2% to 43.1%)	
6 to 10 times	675 (12.4%) (12.1% to 12.8%)	168 (4.9%) (4.5% to 5.2%)	205 (16.1%) (15.4% to 17.0%)	302 (19.9%) (19.1% to 20.7%)	
More than 10 times	513 (12.4%) (12.0% to 12.7%)	52 (2.0%) (1.7% to 2.2%)	111 (9.6%) (8.9% to 10.2%)	350 (29.0%) (28.1% to 29.8%)	
Meal offered by drug company (<u>within the last six months</u>)					*< .001*
Never	3924 (56.6%) (56.1% to 57.1%)	2673 (74.1% (73.4% to 74.8%)	779 (55.2%) (54.2% to 56.3%)	472 (33.6%) (32.7% to 34.5%)	
Once to 5 times	2162 (38.8%) (38.3% to 39.3%)	850 (24.9%) (24.2% to 25.7%)	521 (41.4%) (40.3% to 42.4%)	791 (55.9%) (54.9% to 56.8%)	
6 to 10 times	139 (3.1%) (3.0% to 3.3%)	22 (0.9%) (0.7% to 1.0%])	26 (2.6%) (2.3% to 3.0%)	91 (6.6%) (6.2% to 7.1%)	
More than 10 times	55 (1.5%) (1.3% to 1.6%)	4 (0.1%) (0.1% to 0.2%)	9 (0.8%) (0.6% to 1.0%)	42 (3.9%) (3.6% to 4.3%)	
Grand rounds sponsored by drug company (<u>since beginning of studies</u>)					*< .001*
Never	4033 (56.8%) (56.2% to 57.3%)	3254 (92.1%) (91.7% to 92.6%)	540 (44.0%) (43.0% to 45.1%)	239 (17.9%) (17.2% to 18.6%)	
Once to 5 times	1764 (32.7%) (32.2% to 33.2%)	284 (7.6%) (7.1% to 8.0%)	720 (51.4%) (50.3% to 52.4%)	760 (52.7%) (51.7% to 53.7%)	
6 to 10 times	292 (5.7%) (5.4% to 5.9%)	8 (0.2%) (0.1% to 0.3%)	59 (3.5%) (3.1% to 3.9%)	225 (14.9%) (14.2% to 15.6%)	
More than 10 times	191 (4.9%) (4.7% to 5.1%)	3 (0.1%) (0.0% to 0.2%)	16 (1.1%) (0.9% to 1.3%)	172 (14.5%) (13.8% to 15.2%)	

Situations (n, % post-stratification, 99% CI)	All n = 6280	Clinical students n = 3549	Primary care residents n = 1335	Other residents n = 1396	P value
Grand rounds sponsored by drug company (within the last six months)					< .001
Never	4969 (73.3%) (72.9% to 73.8%)	3447 (96.8%) (96.5% to 97.1%)	958 (72.5%) (71.5% to 73.5%)	564 (41.6%) (40.6% to 42.5%)	
Once to 5 times	1267 (25.7%) (25.3% to 26.2%)	100 (3.1%) (2.8% to 3.4%)	370 (26.9%) (25.9% to 27.9%)	797 (56.1%) (55.1% to 57.0%)	
6 to 10 times	32 (0.6%) (0.6% to 0.7%)	1 (0.0%) (0.0% to 0.1%)	5 (0.4%) (0.3% to 0.6%)	26 (1.7%) (1.4% to 1.9%)	
More than 10 times	12 (0.3%) (0.2% to 0.3%]	1 (0.0%) (0.0% to 0.1%)	2 (0.2%) (0.1% to 0.3%)	9 (0.7%) (0.5% to 0.9%)	
Reception of advertising gift with high value (since beginning of studies)					< .001
Never	4210 (66.0%) (65.5% to 66.5%)	2542 (72.7%) (71.9% to 73.4%)	700 (52.7%) (51.6% to 53.8%)	968 (67.2%) (66.3% to 68.1%)	
Once to 5 times	1931 (31.5%) (31.0% to 32.0%)	963 (26.1%) (25.4% to 26.9%)	578 (42.8%) (41.7% to 43.9%)	390 (30.0%) (29.1% to 30.8%)	
6 to 10 times	101 (1.8%) (1.7% to 2.0%)	38 (1.0%) (0.8% to 1.2%)	42 (3.5%) (3.1% to 3.9%)	21 (1.6%) (1.4% to 1.9%)	
More than 10 times	38 (0.7%) (0.6% to 0.8%)	6 (0.2%) (0.2% to 0.3%)	15 (1.0%) (0.8% to 1.3%)	17 (1.2%) (1.0% to 1.4%)	
Reception of advertising gift with high value (within the last six months)					< .001
Never	5549 (87.9%) (87.5% to 88.2%)	3194 (89.9%) (89.4% to 90.3%)	1106 (82.6%) (81.7% to 83.4%)	1249 (89.3%) (88.7% to 89.9%)	
Once to 5 times	705 (11.6%) (11.3% to 12.0%)	346 (9.9%) (9.4% to 10.4%)	218 (16.6%) (15.8% to 17.4%)	141 (10.1%) (9.6% to 10.7%)	
6 to 10 times	18 (0.3%) (0.3% to 0.4%)	5 (0.1%) (0.1% to 0.2%)	8 (0.6%) (0.5% to 0.8%)	5 (0.5%) (0.4% to 0.6%)	
More than 10 times	8 (0.1%) (0.1% to 0.2%)	4 (0.2%) (0.1% to 0.2%)	3 (0.2%) (0.1% to 0.3%)	1 (0.0%) (0.0% to 0.1%)	
Free medical demonstration device (since beginning of studies)					< 0.001
Never	4631 (70.9%) (70.4% to 71.4%)	3019 (85.4%) (84.9% to 86.0%)	696 (52.6%) (51.5% to 53.7%)	916 (65.2%) (64.3% to 66.1%)	
Once to 5 times	1526 (26.6%) (26.1% to 27.1%)	519 (14.4%) (13.8% to 15.0%)	594 (43.8%) (42.7% to 44.9%)	413 (30.0%) (29.2% to 30.9%)	
6 to 10 times	86 (1.6%) (1.4% to 1.7%)	9 (0.1%) (0.1% to 0.2%)	37 (2.9%) (2.5% to 3.3%)	40 (2.6%) (2.3% to 2.9%)	
More than 10 times	37 (0.9%) (0.8% to 1.0%)	2 (0.0%) (0.0% to 0.1%)	8 (0.7%) (0.5% to 0.9%)	27 (2.2%) (1.9% to 2.5%)	

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Situations (n, % post-stratification, 99% CI)	All n = 6280	Clinical students n = 3549	Primary care residents n = 1335	Other residents n = 1396	*P value*
Free medical demonstration device (<u>within the last six months</u>)					*< .001*
Never	5457 (84.7%) (84.3% to 85.1%)	3333 (94.0%) (93.6% to 94.4%)	985 (72.7%) (71.7% to 73.7%)	1139 (81.3%) (80.6% to 82.1%)	
Once to 5 times	791 (14.5%) (14.1% to 14.9%)	212 (5.9%) (5.5% to 6.3%)	343 (26.7%) (25.7% to 27.7%)	236 (16.9%) (16.2% to 17.7%)	
6 to 10 times	17 (0.5%) (0.4% to 0.5%)	2 (0.0%) (0.0% to 0.1%)	5 (0.5%) (0.3% to 0.6%)	10 (1.1%) (0.9% to 1.3%)	
More than 10 times	15 (0.3%) (0.2% to 0.3%)	2 (0.1%) (0.0% to 0.1%)	2 (0.1%) (0.1% to 0.2%)	11 (0.7%) (0.5% to 0.9%)	
Free drug sample (<u>since beginning of studies</u>)					*< .001*
Never	4930 (76.8%) (76.3% to 77.3%)	3052 (86.4%) (85.9% to 87.0%)	800 (61.1%) (60.1% to 62.2%)	1078 (75.7%) (74.9% to 76.6%)	
Once to 5 times	1142 (18.8%) (18.4% to 19.2%)	473 (12.9%) (12.4% to 13.5%)	451 (31.9%) (30.9% to 32.9%)	218 (16.6%) (15.9% to 17.3%)	
6 to 10 times	121 (2.5%) (2.3% to 2.6%)	20 (0.5%) (0.4% to 0.6%)	65 (5.6%) (5.1% to 6.1%)	36 (2.7%) (2.4% to 3.0%)	
More than 10 times	87 (2.0%) (1.8% to 2.1%)	4 (0.1%) (0.1% to 0.2%)	19 (1.4%) (1.1% to 1.6%)	64 (5.0%) (4.6% to 5.4%)	
Free drug sample (<u>within the last six months</u>)					*< .001*
Never	5566 (87.0%) (86.6% to 87.4%)	3327 (94.0%) (93.6% to 94.4%)	1032 (76.4%) (75.4% to 77.3%)	1207 (85.6%) (84.9% to 86.3%)	
Once to 5 times	641 (11.5%) (11.1% to 11.8%)	213 (5.8%) (5.4% to 6.1%)	281 (21.7%) (20.8% to 22.6%)	147 (11.4%) (10.8% to 12.1%)	
6 to 10 times	46 (0.9%) (0.8% to 1.0%)	6 (0.2%) (0.1% to 0.3%)	18 (1.6%) (1.4% to 1.9%)	22 (1.3%) (1.1% to 1.6%)	
More than 10 times	27 (0.6%) (0.5% to 0.7%)	3 (0.1%) (0.0% to 0.1%)	4 (0.3%) (0.2% to 0.5%)	20 (1.6%) (1.4% to 1.9%)	
Funding to attend conferences or grand rounds (<u>since beginning of studies</u>)					*< .001*
Never	5541 (84.4%) (84.0% to 84.7%)	3473 (97.9%) (97.6% to 98.1%)	1228 (91.8%) (91.2% to 92.3%)	840 (60.0%) (59.0% to 60.9%)	
Once to 5 times	661 (13.9%) (13.6% to 14.3%)	68 (2.0%) (1.8% to 2.2%)	101 (7.8%) (7.2% to 8.4%)	492 (35.2%) (34.2% to 36.1%)	
6 to 10 times	60 (1.4%) (1.3% to 1.5%)	5 (0.1%) (0.0% to 0.1%)	5 (0.4%) (0.3% to 0.5%)	50 (4.0%) (3.6% to 4.4%)	
More than 10 times	18 (0.3%) (0.3% to 0.4%)	3 (0.1%) (0.1% to 0.2%)	1 (0.1%) (0.0% to 0.2%)	14 (0.9%) (0.7% to 1.1%)	
Funding to attend conferences or grand rounds (<u>within the last six months</u>)					*< .001*
Never	5817 (90.2%) (89.9% to 90.6%)	3524 (99.3%) (99.2% to 99.5%)	1275 (95.4%) (94.9% to 95.8%)	1018 (73.7%) (72.8% to 74.5%)	
Once to 5 times	451 (9.5%) (9.2% to 9.8%)	23 (0.6%) (0.5% to 0.7%)	56 (4.3%) (3.9% to 4.7%)	372 (25.9%) (25.1% to 26.7%)	
6 to 10 times	8 (0.2%) (0.2% to 0.2%)	0	3 (0.3%) (0.2% to 0.4%)	5 (0.4%) (0.3% to 0.6%)	
More than 10 times	4 (0.1%) (0.0% to 0.1%)	2 (0.1%) (0.0% to 0.1%)	1 (0.1%) (0.0% to 0.2%)	1 (0.0%) (0.0% to 0.1%)	

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Situations (n, % post-stratification, 99% CI)	All n = 6280	Clinical students n = 3549	Primary care residents n = 1335	Other residents n = 1396	*P value*
Medical journal subscription offered by drug company (<u>since beginning of studies</u>)					*< .001*
Never	6089 (96.6%) (96.4% to 96.8%)	3467 (97.5%) (97.3% to 97.8%)	1271 (95.2%) (94.7% to 95.7%)	1351 (96.4%) (96.1% to 96.8%)	
Once to 5 times	181 (3.2%) (3.0% to 3.4%)	76 (2.3%) (2.0% to 2.5%)	62 (4.6%) (4.1% to 5.0%)	43 (3.3%) (3.0% to 3.7%)	
6 to 10 times	5 (0.1%) (0.1% to 0.2%)	2 (0.1%) (0.0% to 0.1%)	1 (0.0%) (0.0% to 0.1%)	2 (0.2%) (0.2% to 0.4%)	
More than 10 times	5 (0.1%) (0.1% to 0.1%)	4 (0.1%) (0.1% to 0.2%)	1 (0.2%) (0.1% to 0.3%)	0	
Medical journal subscription offered by drug company (<u>within the last six months</u>)					*< .001*
Never	6168 (98.2%) (98.0% to 98.3%)	3503 (98.6%) (98.4% to 98.8%)	1292 (96.6%) (96.2% to 97.0%)	1373 (98.8%) (98.6% to 99.0%)	
Once to 5 times	104 (1.7%) (1.6% to 1.9%)	41 (1.3%) (1.1% to 1.5%)	40 (3.2%) (2.9% to 3.6%)	23 (1.2%) (1.0% to 1.4%)	
6 to 10 times	6 (0.1%) (0.0% to 0.1%)	3 (0.1%) (0.0% to 0.1%)	3 (0.2%) (0.1% to 0.3%)	0	
More than 10 times	2 (0.0%) (0.0% to 0.1%)	2 (0.1%) (0.0% to 0.1%)	0	0	

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Table 4: Appropriateness of gifts and promotional funding from the pharmaceutical industry according to students. Each student was asked to assess whether they found it acceptable to receive each proposal.

Proposals (n, % post-stratification, 99% CI)	All n = 5992	Clinical students n = 3333	Primary care residents n = 1306	Other residents n = 1353	P value
Gift with lower value than €50					< .001
Strongly disagree	2256 (36.9%) (36.4 to 37.5%)	1223 (36.3%) (35.5 to 37.1%)	590 (42.4%) (41.3% to 43.4%)	443 (33.5%) (32.6% to 34.4%)	
Disagree	1747 (29%) (28.5% to 29.5%)	956 (28.3%) (27.6% to 29.1%)	379 (29.9%) (28.9% to 30.9%)	412 (29.1%) (28.2% to 30.0%)	
Agree	1550 (26.6%) (26.1% to 27.1%)	907 (27.8%) (27.0% to 28.5%)	281 (22.8%) (21.9% to 23.8%)	362 (28%) (27.2% to 28.9%)	
Strongly agree	439 (7.5%) (7.2% to 7.8%)	247 (7.6%) (7.2% to 8.1%)	56 (4.9%) (4.4% to 5.4%)	136 (9.3%) (8.8% to 9.9%)	
Gift with higher value than €50					< .001
Strongly disagree	3484 (57.8%) (57.3% to 58.4%)	1903 (57.2%) (56.4% to 58.0%)	887 (65.1%) (64.0% to 66.1%)	694 (52.9%) (51.9% to 53.9%)	
Disagree	1630 (27.7%) (27.3% to 28.2%)	926 (27.6%) (26.9% to 28.4%)	301 (25.3%) (24.4% to 26.3%)	403 (29.8%) (28.9% to 30.7%)	
Agree	574 (9.2%) (8.9% to 9.5%)	342 (10.1%) (9.6% to 10.6%)	77 (5.9%) (5.4% to 6.4%)	155 (10.6%) (10.0% to 11.2%)	
Strongly agree	304 (5.2%) (5.0% to 5.5%)	162 (5.1%) (4.7% to 5.5%)	41 (3.7%) (3.3% to 4.1%)	101 (6.7%) (6.2% to 7.2%)	
Free meal					< .001
Strongly disagree	1332 (21.1%) (20.6% to 21.5%)	743 (21.1%) (20.4% to 21.8%)	402 (29.7%) (28.7% to 30.7%)	187 (14.2%) (13.5% to 14.9%)	
Disagree	1283 (20.9%) (20.5% to 21.4%)	711 (21.4%) (20.7% to 22.1%)	317 (24.2%) (23.3% - 25.2%)	255 (17.7%) (17.0% to 18.4%)	
Agree	2392 (40.6%) (40.0% to 41.1%)	1349 (41.7%) (40.9% to 42.6%)	462 (36.1%) (35.0% to 37.1%)	581 (42.6%) (41.6% to 43.5%)	
Strongly agree	985 (17.5%) (17.0% to 17.9%)	530 (15.8%) (15.2% to 16.4%)	125 (10.1%) (9.4% to 10.7%)	330 (25.5%) (24.7% to 26.4%)	
Funding to attend conferences or grand rounds					< .001
Strongly disagree	1213 (20%) (19.6% to 20.5%)	629 (18.6%) (18.0% to 19.3%)	418 (30.9%) (29.9% to 31.9%)	166 (13.3%) (12.6% to 14.0%)	
Disagree	969 (16.6%) (16.2% to 17.1%)	517 (16.9%) (16.3% to 17.5%)	287 (22.6%) (21.7% to 23.5%)	165 (11.6%) (11.0% to 12.3%)	
Agree	2348 (38.2%) (37.6% to 38.7%)	1369 (40%) (39.2% to 40.9%)	429 (32.4%) (31.4% to 33.5%)	550 (40.2%) (39.3% to 41.2%)	
Strongly agree	1462 (25.1%) (24.7% to 25.6%)	818 (24.4%) (23.7% to 25.1%)	172 (14.1%) (13.3% to 14.9%)	472 (34.9%) (33.9% to 35.8%)	

Proposals (n, % post-stratification, 99% CI)	All n = 5992	Clinical students n = 3333	Primary care residents n = 1306	Other residents n = 1353	*P value*
Free medical device					*< .001*
Strongly disagree	1463 (23.9%) (23.4% to 24.3%)	761 (22.6%) (21.9% to 23.3%)	437 (31.9%) (30.9% to 32.9%)	265 (19.3%) (18.5% to 20.0%)	
Disagree	1298 (22.1%) (21.6% to 22.5%)	703 (21.3%) (20.6% to 22.0%)	320 (25.0%) (24.0% to 25.9%)	275 (20.8%) (20.0% to 21.6%)	
Agree	2305 (38.5%) (37.9% to 39.0%)	1351 (41%) (40.2% to 41.9%)	421 (32.4%) (31.4% to 33.4%)	533 (39.9%) (38.9% to 40.8%)	
Strongly agree	926 (15.6%) (15.2% to 16.0%)	518 (15%) (14.4% to 15.7%)	128 (10.8%) (10.1% to 11.4%)	280 (20.1%) (19.3% to 20.9%)	

Table 5: Students' scepticism about the influence of pharmaceutical product promotion and incentives. Students were asked whether they agreed or disagreed with the proposals.

Proposals (n, % post-stratification, 99% CI)	Total n = 5980	Clinical students n = 3324	Primary care residents n = 1304	Other residents n = 1352	*P value*
Information provided by pharmaceutical representative is often interesting and educative.					*< .001*
Strongly disagree	461 (7.8%) (7.5% to 8.1%)	251 (7.6%) (7.2% to 8.1%)	134 (10.7%) (10.0% to 11.3%)	76 (5.7%) (5.3% to 6.2%)	
Disagree	2067 (34.2%) (33.7% to 34.7%)	1143 (34.4%) (33.6% to 35.2%)	505 (36.3%) (35.2% to 37.3%)	419 (32.3%) (31.4% to 33.2%)	
Agree	3298 (54.7%) (54.2% to 55.3%)	1868 (55.9%) (55.0% to 56.7%)	645 (50.8%) (49.7% to 51.9%)	785 (56.4%) (55.4% to 57.3%)	
Strongly agree	160 (3.3%) (3.1% to 3.5%)	67 (2.1%) (1.8% to 2.3%)	21 (2.3%) (2.0% to 2.6%)	72 (5.7%) (5.2% to 6.1%)	
Information provided by pharmaceutical representative is useful to learn about new drugs.					*< .001*
Strongly disagree	633 (10.4%) (10.1% to 10.8%)	339 (9.7%) (9.2% to 10.2%)	183 (14.1%) (13.4% to 14.9%)	111 (8.4%) (7.8% to 8.9%)	
Disagree	1678 (28%) (27.5% to 28.5%)	916 (27.5%) (26.8% to 28.3%)	396 (29.0%) (28.0% to 30.0%)	366 (27.8%) (26.9% to 28.6%)	
Agree	3404 (56.9%) (56.4% to 57.5%)	1924 (58.2%) (57.4% to 59.1%)	697 (54.6%) (53.5% to 55.7%)	783 (57%) (56.0% to 57.9%)	
Strongly agree	271 (4.7%) (4.5% to 4.9%)	150 (4.5%) (4.1% to 4.8%)	29 (2.3%) (2.0% to 2.7%)	92 (6.9%) (6.4% to 7.4%)	
Receiving gifts or free meals makes me more likely to prescribe the company's drugs.					*< .001*
Strongly disagree	1821 (30.3%) (29.8% to 30.8%)	1015 (30.1%) (29.3% to 30.9%)	338 (26%) (25.0% to 26.9%)	468 (34.1%) (33.2% to 35.1%)	
Disagree	1966 (32.8%) (32.3% to 33.4%)	1067 (32.1%) (31.3% to 32.8%)	410 (30.9%) (29.9% to 32.0%)	489 (35.4%) (34.5% to 36.3%)	
Agree	1542 (26.3%) (25.8% to 26.8%)	873 (26.9%) (26.2% to 27.7%)	365 (28%) (27.1% to 29.0%)	304 (24.1%) (23.2% to 24.9%)	
Strongly agree	653 (10.5%) (10.2% to 10.9%)	371 (11%) (10.4% to 11.5%)	191 (15.1%) (14.3% to 15.9%)	91 (6.4%) (6.0% to 6.9%)	
Contacts between medical students and drug companies should be banned.					*< .001*
Strongly disagree	1147 (19.5%) (19.1% to 20.0%)	562 (16.4%) (15.8% to 17.0%)	213 (15.5%) (14.7% to 16.3%)	372 (26.9%) (26.1% to 27.8%)	
Disagree	2058 (35.2%) (34.7% to 35.7%)	1129 (33.9%) (33.1% to 34.7%)	389 (31.7%) (30.7% to 32.7%)	540 (39.8%) (38.8% to 40.7%)	
Agree	1582 (26.1%) (25.6% to 26.6%)	924 (28.6%) (27.9% to 29.4%)	383 (29%) (28.1% to 30.0%)	275 (20.3%) (19.5% to 21.1%)	
Strongly agree	1194 (19.2%) (18.7% to 19.6%)	710 (21.1%) (20.4% to 21.8%)	319 (23.7%) (22.8% to 24.7%)	165 (13%) (12.4% to 13.7%)	

Proposals (n, % post-stratification, 99% CI)	Total n = 5980	Clinical students n = 3324	Primary care residents n = 1304	Other residents n = 1352	*P value*
Information provided by drug companies is often biased.					*< .001*
Strongly disagree	50 (0.7%) (0.6% to 0.8%)	34 (0.9%) (0.8% to 1.1%)	6 (0.2%) (0.1% to 0.3%)	10 (0.8%) (0.6% to 1.0%)	
Disagree	473 (8.6%) (8.3% to 8.9%)	228 (6.9%) (6.5% to 7.3%)	93 (8.2%) (7.6% to 8.8%)	152 (11.1%) (10.5% to 11.8%)	
Agree	2777 (45.8%) (45.2% to 46.3%)	1570 (45.9%) (45.1% to 46.7%)	528 (39.2%) (38.2% to 40.3%)	679 (50.7%) (49.8% to 51.7%)	
Strongly agree	2681 (44.9%) (44.4% to 45.5%)	1493 (46.3%) (45.4% to 47.1%)	677 (52.3%) (51.2% to 53.4%)	511 (37.4%) (36.4% to 38.3%)	
If other residents or physicians receive gifts or free meals, it makes them more likely to prescribe the company's drugs.					*< .001*
Strongly disagree	568 (10.1%) (9.8% to 10.5%)	291 (9.0%) (8.6% to 9.5%)	88 (7.3%) (6.7% to 7.9%)	189 (13.8%) (13.2% to 14.5%)	
Disagree	2160 (36.2%) (35.7% to 36.7%)	1149 (33.8%) (33.0% to 34.6%)	416 (31.7%) (30.7% to 32.8%)	595 (42.9%) (42.0% to 43.9%)	
Agree	2344 (38.8%) (38.3% to 39.4%)	1365 (41.2%) (40.3% to 42.0%)	538 (41.1%) (40.0% to 42.1%)	441 (34.0%) (33.0% to 34.9%)	
Strongly agree	908 (14.8%) (14.4% to 15.2%)	519 (16.0%) (15.4% to 16.6%)	262 (19.9%) (19.1% to 20.8%)	127 (9.3%) (8.7% to 9.9%)	
Anyone giving a lecture to medical students should expose their conflict of interests with the pharmaceutical industry beforehand.					*< .001*
Strongly disagree	144 (2.3%) (2.2% to 2.5%)	90 (2.6%) (2.4% to 2.9%)	18 (1.6%) (1.3% to 1.9%)	36 (2.5%) (2.2% to 2.8%)	
Disagree	397 (7.0%) (6.7% to 7.3%)	222 (7.1%) (6.6% to 7.5%)	73 (5.5%) (5.0% to 6.0%)	102 (8.2%) (7.7% to 8.7%)	
Agree	1778 (29.5%) (29.0% to 30.0%)	970 (28.9%) (28.1% to 29.7%)	360 (28.0%) (27.0% to 29.0%)	448 (31.4%) (30.5% to 32.3%)	
Strongly agree	3663 (61.2%) (60.7% to 61.7%)	2043 (61.4%) (60.6% to 62.2%)	854 (64.9%) (63.9% to 66.0%)	766 (57.9%) (57.0% to 58.9%)	

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Table 6: multivariate linear model of the cumulative exposure score. The names of the regions were recoded with letters to avoid inappropriate comparison between them (see discussion in the main text).

Effect	Estimation	Standard error	P value
Intercept	1.6932	0.2025	< .001
Region			< .001
A	-0.5864	0.2209	
B	-0.7410	0.3961	
C	-1.2861	0.2323	
D	-1.1962	0.2137	
E	-1.2482	0.2640	
F	-2.3819	0.2581	
G	-1.1362	0.3112	
H	-1.3756	0.1971	
I	-0.9721	0.2343	
J	-0.1837	0.2229	
K	-1.6248	0.2510	
L	-1.3765	0.5224	
M	-2.3017	0.2536	
N	reference		
Year of study	1.4793	0.02115	< .001
Appropriateness score	0.3058	0.02592	< .001

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Table 7: Comparison between 2012 (data source: Etain et al.[1]) and 2019 (current study) of students' exposure and opinions.

Situation or assertion	Clinical students	Residents
Meeting with a pharmaceutical representative (n, %)		
2012 Yes (raw, n = 1 405)	778 (79.4%)	627 (96.6%)
2019 Yes (post-stratification, n = 6 280)	3 549 (71.0%)	2 731 (96.9%)
Receiving of promotional gift (n, %)		
2012 Yes (raw, n = 1 405)	778 (71.8%)	627 (89.9%)
2019 Yes (post-stratification, n = 6 280)	3 549 (69.4%)	2 731 (74.9%)
Receiving gifts or free meals could influence student' prescriptions (n, %)		
2012 Yes (raw, n = 1 405)	778 (2.0%)	627 (3.7%)
2019 Yes (post-stratification, n = 5 980)	3 324 (37.4%)	2 656 (35.8%)

[1.] Etain B, Guittet L, Weiss N, Gajdos V, Katsahian S. Attitudes of Medical Students towards Conflict of Interest: A National Survey in France. PLOS ONE. 26 march 2014;9(3):e92858.

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Supplemental material

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Document 1: Questionnaire in French

Caractéristiques socio-démographiques

Vous êtes : *

Veuillez sélectionner une seule des propositions suivantes : Une femme / Un homme

Année de naissance : *

Votre réponse doit être comprise entre 1960 et 2000

Année ou semestre en cours (veuillez indiquer votre année ou semestre actuel, si vous êtes en disponibilité ou en césure, veuillez indiquer la dernière année ou le dernier semestre validé) : *****

Veuillez sélectionner une seule des propositions suivantes : DFASM 1/2/3 ou Interne semestre 1/2/3/4/5/6/7/8/9/10/11/12

Quelle est votre faculté actuelle ? * (Seulement proposée aux externes)

Veuillez sélectionner une seule des propositions suivantes : Aix-Marseille / Amiens / Angers / Antilles-Guyane / Besançon / Bordeaux / Brest / Caen / Clermont-Ferrand / Dijon / Grenoble / La Réunion / Lille 2 / Lille (Université Catholique) / Limoges / Lyon Sud / Lyon Est / Montpellier / Nancy / Nantes / Nice / Paris V Descartes / Paris VI UPMC / Paris VII Diderot / Paris XI KB / Paris XII Créteil / Paris XIII Bobigny / Paris Ouest / Poitiers / Reims / Rennes / Rouen / Saint-Etienne / Strasbourg / Toulouse Purpan / Toulouse Rangueil / Tours

Quelle est votre faculté d'origine ? * (si interne)

Veuillez sélectionner une seule des propositions suivantes : Aix-Marseille / Amiens / Angers / Antilles-Guyane / Besançon / Bordeaux / Brest / Caen / Clermont-Ferrand / Dijon / Grenoble / La Réunion / Lille 2 / Lille (Université Catholique) / Limoges / Lyon Sud / Lyon Est / Montpellier / Nancy / Nantes / Nice / Paris V Descartes / Paris VI UPMC / Paris VII Diderot / Paris XI KB / Paris XII Créteil / Paris XIII Bobigny / Paris Ouest / Poitiers / Reims / Rennes / Rouen / Saint-Etienne / Strasbourg / Toulouse Purpan / Toulouse Rangueil / Tours / Autre

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Quelle est votre ville d'internat ? * (si interne)

Veuillez sélectionner une seule des propositions suivantes : Aix-Marseille / Amiens / Angers / Antilles-Guyane / Besançon / Bordeaux / Brest / Caen / Clermont-Ferrand / Dijon / Grenoble / La Réunion – Océan Indien / Lille / Limoges / Lyon / Montpellier / Nancy / Nantes / Nice / Paris / Poitiers / Reims / Rennes / Rouen / Saint-Etienne / Strasbourg / Toulouse / Tours

Quelle est votre spécialité : * (proposé si interne)

Veuillez sélectionner une seule des propositions suivantes : DES Allergologie / DES Anatomie et cytologie pathologiques / DES Anesthésie et réanimation / DES Biologie médicale / DES Dermatologie et vénéréologie / DES Endocrinologie, diabète, maladies métaboliques / DES Génétique médicale / DES Gériatrie DES Gynécologie médicale / DES Hématologie / DES Hépato-gastro-entérologie / DES Maladies infectieuses et tropicales / DES Médecine cardiovasculaire / DES Médecine d'urgence / DES Médecine et Santé au travail / DES Médecine générale / DES Médecine intensive-réanimation / DES Médecine interne et immunologie clinique / DES Médecine légale et expertises médicales DES Médecine nucléaire / DES Médecine physique et de réadaptation / DES Médecine vasculaire / DES Néphrologie / DES Neurologie DES Oncologie / DES Pédiatrie / DES Pneumologie / DES Psychiatrie / DES Radiologie et imagerie médicale / DES Rhumatologie / DES Santé publique et médecine sociale / DES Chirurgie générale / DES Chirurgie maxillo faciale / DES Chirurgie orale / DES Chirurgie orthopédique et traumatologique / DES Chirurgie pédiatrique / DES Chirurgie plastique, reconstructrice et esthétique / DES Chirurgie thoracique et cardiovasculaire / DES Chirurgie vasculaire / DES Chirurgie viscérale et digestive / DES Gynécologie obstétrique / DES Neurochirurgie / DES Ophtalmologie / DES Oto-rhino-laryngologie et chirurgie cervico-faciale / DES Stomatologie / DES Urologie / DESC Gériatrie / DESC Médecine d'urgence / DESC Nutrition / DESC Maladies infectieuses

Concernant vos relations avec l'industrie pharmaceutique :

Depuis le début de votre cursus, avez-vous déjà reçu ou participé à : *

Choisissez la réponse appropriée pour chaque élément :

	Jamais	Entre 1 et 5 fois	Entre 6 et 10 fois	Plus de 10 fois
Discussion avec un visiteur médical :				
Et dans les 6 derniers mois ?				
Cadeau publicitaire "non médical" de faible valeur : stylo, matériel de bureau, carnet de note, gadget publicitaire, autre...				
Et dans les 6 derniers mois ?				
Matériel médical (réglette ECG, marteau réflexe, stéthoscope, ...) offert par un laboratoire pharmaceutique :				
Et dans les 6 derniers mois ?				
Remise d'une fiche de présentation d'un médicament par un visiteur médical :				
Et dans les 6 derniers mois ?				
Repas offert par un laboratoire pharmaceutique :				
Et dans les 6 derniers mois ?				
Soirée ou séminaire de formation sponsorisé par un laboratoire pharmaceutique :				
Et dans les 6 derniers mois ?				
Remboursement de frais de congrès par un laboratoire pharmaceutique (inscription, voyage, hôtel) :				
Et dans les 6 derniers mois ?				
Abonnement à une revue médicale offert par un laboratoire pharmaceutique :				
Et dans les 6 derniers mois ?				
Remise d'un échantillon gratuit de médicament par un laboratoire pharmaceutique :				
Et dans les 6 derniers mois ?				

Selon vous...

Trouvez-vous approprié qu'un médecin reçoive de la part de l'industrie pharmaceutique : *

Choisissez la réponse appropriée pour chaque élément :

	Complètement d'accord	Plutôt d'accord	Plutôt pas d'accord	Pas du tout d'accord
Un cadeau de faible valeur (moins de 50 euros) ?				
Un cadeau d'une valeur de plus de 50 euros ?				
Un repas gratuit ?				
Un remboursement de frais de congrès/séminaire ?				
Du matériel médical ?				

Que pensez-vous des propositions suivantes : *

Choisissez la réponse appropriée pour chaque élément :

	Complètement d'accord	Plutôt d'accord	Plutôt pas d'accord	Pas du tout d'accord
La plupart des informations fournies par les représentants de l'industrie sont intéressantes et formatrices.				
Les informations des visiteurs médicaux sont utiles pour se former sur les nouvelles thérapeutiques.				
Recevoir des cadeaux ou participer à un repas offert par un laboratoire augmente les chances que je prescrive le médicament de ce laboratoire.				
Les contacts entre l'industrie pharmaceutique et les étudiants en médecine devraient être interdits.				
Les informations fournies par l'industrie pharmaceutique sont souvent biaisées en faveur du médicament ou du produit du laboratoire en question.				
Recevoir des cadeaux ou participer à un repas offert par un laboratoire augmente les chances que d'autres collègues prescrivent le médicament de ce laboratoire.				
Toute personne effectuant une présentation devant des étudiants de médecine à la faculté devrait énoncer ses liens d'intérêt avec l'industrie avant son cours.				

Concernant la formation à la critique de la promotion pharmaceutique :

Avez-vous déjà bénéficié lors de votre formation initiale (avant l'internat) d'une formation sur les relations médecins-industrie pharmaceutique et/ou sur la promotion pharmaceutique? * (proposé si interne)

Veuillez sélectionner une seule des propositions suivantes : oui / non

Avez-vous déjà bénéficié à la faculté d'une formation sur les relations médecins-industrie pharmaceutique et/ou sur la promotion pharmaceutique? *
Veuillez sélectionner une seule des propositions suivantes : oui/non

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Cette formation était-elle obligatoire dans votre cursus ? *

Veuillez sélectionner une seule des propositions suivantes : oui/non

Vous estimez-vous suffisamment formé(e) pour gérer vos relations avec l'industrie pharmaceutique? *

Veuillez sélectionner une seule des propositions suivantes : Oui, tout à fait / Oui, plutôt / Non, pas vraiment / Non, pas du tout

Souhaiteriez-vous plus de cours à la faculté sur la notion de conflit d'intérêt, et sur la critique de la promotion pharmaceutique ? *

Veuillez sélectionner une seule des propositions suivantes : Oui, tout à fait / Oui, plutôt / Non, pas vraiment / Non, pas du tout

Pensez-vous avoir le droit de recevoir seul un représentant de l'industrie pharmaceutique ? *

Veuillez sélectionner une seule des propositions suivantes : oui / non / ne sait pas

Dernière étape : sur le plan institutionnel

La fréquence de vos contacts avec les délégués médicaux dépend le plus souvent de (plusieurs réponses possibles) : *
Veuillez choisir toutes les réponses qui conviennent :

- Votre volonté ou non de discuter avec eux
- Des habitudes ou de l'organisation du service ou de votre maitre de stage
- Du risque d'être jugé par vos maitres de stage ou vos collègues
- De votre emploi du temps
- De la gentillesse et la générosité des délégué(e)s médica(-les)ux
- De la qualité de leurs prestations passées
- Autre

Précisez : * (si autre)

Durant votre cursus, vos formateurs, vos médecins séniors ou vos maitres de stages reçoivent-ils des visiteurs médicaux en votre présence : *

Veuillez sélectionner une seule des propositions suivantes : Jamais / Une fois par mois / Une fois par semaine / Plusieurs fois par semaine

Durant votre cursus, vos formateurs, vos médecins séniors ou vos maitres de stages vous ont-ils encouragé à participer à des rencontres (rendez-vous, staffs, repas...) avec des représentants de laboratoires pharmaceutiques ? *

Veuillez sélectionner une seule des propositions suivantes : Jamais /Rarement/Assez souvent/Souvent

En dehors de vos cours (faculté ou DES), vos médecins séniors, ou vos maitres de stage, vous ont-ils procuré des conseils pour vous former à la critique de la promotion pharmaceutique ? *

Veuillez sélectionner une seule des propositions suivantes : Jamais / Rarement / Assez souvent / Souvent

Existe-t-il, à votre connaissance, une politique stricte qui encadre les interactions entre étudiants en médecine et industrie pharmaceutique dans votre faculté et/ou de votre CHU ? *

Veuillez sélectionner une seule des propositions suivantes : oui/non

Avez-vous connaissance de la Charte éthique et déontologique rédigée en 2017 par la Conférence des doyens de médecine et d'odontologie? *

Veuillez sélectionner une seule des propositions suivantes : oui/non