

Drug promotion and advertising in teaching environments: elements for debate

Promoção e propaganda de medicamentos em ambientes de ensino: elementos para o debate

Promoción y propaganda de medicamentos en ambientes de enseñanza: elementos para el debate

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ABSTRACT

The pharmaceutical industry uses advertising to promote its products. Controlled drugs can only be advertised to professionals who are licensed to prescribe or dispense them. This paper makes an extensive review of scientific articles that discuss the ethical and legal implications of drug promotion and advertising in medical teaching environments. It concludes that self-regulation of drug advertising is not justified and that there is sufficient evidence showing how the power of the pharmaceutical industry is capable of influencing decisions made within the physician-patient

relationship, in which promotion and advertising are among the tools used. This paper advocates complete prohibition of drug promotion and advertising in teaching environments, and the incorporation of this issue in students' education. Given that the current legislation permits advertising of prescription drugs only to physicians and pharmacists, it is emphasized that such advertising is illegal when it reaches medical and pharmacy students.

Key words: Ethics. Advertising. Marketing. Conflict of interests. Medical students. Medical education.

RESUMO

A indústria farmacêutica utiliza a propaganda para a promoção de seus produtos. Os de uso controlado só podem ter a propaganda dirigida a profissionais habilitados a prescrevê-los ou dispensá-los. Este artigo faz uma ampla revisão de artigos científicos que discutem questões éticas e legais acerca da promoção e propaganda de medicamentos em ambientes de ensino médico. Conclui-se que não se justifica a auto-regulamentação da propaganda de medicamentos e que existem evidências suficientes de como o poder da indústria farmacêutica é capaz de influenciar as decisões no âmbito da relação médico-paciente, sendo a promoção e a propaganda um de seus instrumentos. Defende-se sua total proibição em ambientes de ensino, bem como a incorporação da temática na formação dos estudantes. Como a legislação vigente permite a propaganda de medicamentos vendidos sob prescrição apenas a médicos e farmacêuticos, destaca-se que tal propaganda é ilegal quando atinge estudantes de medicina e de farmácia.

Palavras-chave: Ética. Propaganda. Marketing. Conflito de interesses. Estudantes de medicina. Educação médica.

RESUMEN

La industria farmacêutica utilizada la propaganda para la promoción de sus productos. Los de uso controlado sólo pueden tener la propaganda dirigida a profesionales habilitados a prescribirlos o despacharlos. Este artículo hace una amplia revisión de artículos científicos que discuten cuestiones éticas y legales acerca de la promoción y propaganda de medicamentos en ambientes de enseñanza médica. Se concluyó que no se justifica la auto-reglamentación de la propaganda de medicamentos y que existen evidencias suficientes de como el poder de la industria farmacêutica es capaz de influir en las decisiones en el ámbito de la relación médico-paciente, siendo la promoción y la propaganda uno de sus instrumentos. Se defiende su total prohibición en ambientes de enseñanza, así como la incorporación de la temática en la formación de los estudiantes. Como la legislación vigente

permite la propaganda de medicamentos vendidos bajo prescripción solamente a médicos y a farmacéuticos, se resalta que tal propaganda es ilegal cuando alcanza a los estudiantes de medicina y farmacia.

Palabras clave: Ética. Propaganda. Mercadeo. Conflicto de intereses. Estudiantes de Medicina. Educación médica.

INTRODUCTION

This paper identifies and discusses some ethical and legal questions relating to promotion and advertising of medications within environments where medicine is taught. The arguments are based on the international academic debate on the regulating of commercial advertising of medications and on the risks in the relationships between companies and physicians and medical students, within teaching environments for professional, technical and ethical training. Evidence presented in various studies conducted in Brazil and abroad provide the empirical basis for the arguments developed here. In the present study, we have used the following definitions from Collegiate Board Resolution (RDC) 102, of November 30, 2000, from Anvisa (*Agência Nacional de Vigilância Sanitária*), the national regulatory agency for health-related matters:

PROMOTION – A set of informative or persuasive activities from companies responsible for production and/or processing, distribution and commercialization of medications, or from communication bodies or advertising agencies, with the objective of inducing prescription, dispensing, acquisition and use of medications.

ADVERTISING/PUBLICITY – A set of techniques used with the objective of disseminating knowledge and/or promoting adherence to principles, ideas or theories, with the aim of influencing the public through actions that have the objective of promoting a given medication, with commercial purposes (Brazil, 2000).

At the end of this paper, consequent to the arguments presented and in consonance with the various calls to defend ethics in education and medicine that have been made, and in strict compliance with the regulatory provisions that govern this activity, it is proposed that promotion and advertising of medications within environments where medical students circulate or that is directed towards medical students should be prohibited, and that these practices should consequently be prohibited from medical congresses.

Although this will be the focus, it will not be difficult for readers to make the desired extrapolations to the relationships between companies, especially in the pharmaceutical industry, and teaching for other professions. We would like to point out that, in principle, we are not questioning the legitimacy of advertising in relation to medications. Our focus is primarily on examining the reasons for the actions and situations relating to the advertising of medications within teaching environments and the possible consequences for the process of training healthcare personnel. The quality (content and purpose) of advertising for medications and abuses

of companies' economic power in order to convince professionals to prescribe their products are therefore relevant questions in this study. Thus, we will start by considering the question of advertising.

Promotion and advertising of medications and self-regulation

Although advertising of medications and other health-related products has specific features, in a general manner it has the same objective as any other advertising: to make a given product known through the favorable characteristics attributed to it by its manufacturers, which are strongly associated with meeting some need.

As stated by Olivetto (2003), one of the most prominent advertising professionals active in Brazil, "it's not by chance that the majority of the best remembered brands (highlighted through the *top of mind* award) are also the ones that advertise best". Advertising and marketing techniques influence individuals' choices, and the use of these techniques, together with economic power, may give rise to abuses and distortions in commercial practices. For this reason, through the intermediary of actions by governments and by advertisers themselves, society has established limits on advertising.

In Brazil, in addition to government bodies for supervising and controlling health-related actions, services and products, there is also the National Council for Self-Regulation of Advertising (Conar), which is a corporative non-governmental body that seeks social legitimacy (through intense advertising campaigns) as the most trustworthy and effective social player for implementing control over advertising. Its mission (Conar, 2004) is "to prevent deceitful or abusive advertising from causing embarrassment to consumers or companies". In other words, "to stop advertising professionals' actions from affecting the basis for professionals and the competition to coexist, as well as ensuring a degree of protection to society" (Rego, 2004, p.3). Thus, Conar seeks assurances of social legitimacy in order to ensure that advertising activities are self-regulated.

Differing from the model of professional self-regulation, which is delegated by the State, Conar achieved its authority through competent advertising work, backed by wide-ranging support from the social communication media. This was achieved competently, although perhaps impertinently. This achievement related to Conar's position within the capitalist process, given that it is a strategic component of commercial relationships. On the other hand, the traditional problems relating to self-regulation are also not unfamiliar to the professional field of advertising and marketing. Thus, although desirable, it is unreasonable to expect that corporations will position themselves above their corporate interests.

In considering advertising practices within the sphere of the market for healthcare and medical-pharmaceutical care, the problems resulting from self-regulation take on even more significant dimensions. Lives may be at

stake, through choices that often pass by physicians unperceived because of sophisticated advertising and marketing techniques and the relationships established between these professionals and pharmaceutical company representatives. In this sense, the consequences from advertising may translate into harm to those who ought to be the beneficiaries.

Regulation of advertising relating to medications

Self-regulation of the advertising market relating to medications and other health-related products is a distortion with predictable consequences. In Canada, all advertising or promotional messages carried by audio, video, audiovisual, electronic and computational media is subject to prior assessment by the Pharmaceutical Advertising Advisory Board (PAAB), before release. This body is independent of the industry and is coordinated by a board composed by representatives of the Pharmaceutical Manufacturers' Association of Canada (PMAC), generic medication producers, the Medical Council, the Canadian Pharmacists' Association, consumer associations and advertising associations. In addition, PMAC has a self-regulation code for its representatives' activities, sample distribution and event support, among other activities relating to promotion of new medications (PMAC Code of Marketing Practices).

As described by Lexchin (1997), methods like these are insufficient and ineffective for controlling advertising. According to this author, the conflicts between the commercial objectives and the ethical and scientific goals of the promotion lead to weakened compliance. This author defined five critical points relating to the application of codes that need to be publicly released: mechanisms for identifying violations of the codes; composition of the monitoring committees; sanctions for violations of the codes; quantity and quality of the information in reports issued regarding complaints and violations of the codes; and the circulation that these reports achieve.

In 2003, in New Zealand (which, like the United States, does not have any restrictions on direct advertising of medications to consumers), the medical schools released a report that advocated ending advertising within their environments and warned about the need to stand up to the power of the pharmaceutical industry, in order to defend the public interest, which is an intrinsic characteristic of State action (Toop et al., 2003).

In Brazil, advertising of medications is governed by a vast range of legislation, which includes: Law no. 6360/76 (Brazil, 1976), which makes provisions regarding the sanitary surveillance to which medications, drugs, pharmaceutical supplies and correlates, cosmetics, hygiene products and other products are subject, and determines other measures; Decree no. 79094, of January 5, 1977, which regulates Law no. 6360/76 (Brazil, 1977); Law no. 6437/77, which defines infractions of the federal sanitary legislation and establishes the respective sanctions (Brazil, 1977); Law no. 9294/96, which makes provisions regarding restrictions on the use of advertising in relation to medications (Brazil, 1996); Decree no. 2018/96 (Brazil, 1996), which regulates Law no. 9294/96; and Collegiate Board

Resolution (RDC) 102, of November 30, 2000, from Anvisa (Brazil, 2000), which regulates advertising and promotional and publicity messages relating to medications, on the basis of the pertinent laws and decrees.

RDC 102 also establishes a distinction: for medications sold directly to consumers, without the need for a medical prescription, the advertising can be directed towards consumers; however, if a prescription is required for the medication (with or without retention of the prescription form), the advertising can only be directed towards professionals who are qualified to prescribe it, carried in media that are restricted to such professionals (Brazil, 2000, 1976). This RDC also dedicated attention specifically to the actions of advertising agents, through determining that laboratory representatives "must limit themselves to the scientific information and characteristics of the medication that have been registered with Anvisa". The scientific studies that we will present below show that the scientific references presented in publicity material are not always trustworthy.

Thus, for example, television or radio advertising for analgesics and antipyretics such as acetylsalicylic acid and acetaminophen is allowed, but not advertising for antibiotics or beta-blockers. However, the restrictive measures do not stop alternative actions by advertising agents – thus testing the limits of the governmental or corporative regulations – in advertisements directed towards the general public on internet websites or those that induce consumers to ask for information, of the type “ask your doctor”. However, such stratagems or artifices, which possibly are recognized as advertising techniques, do not comply with the sanitary legislation in its most important aspect: protection of the population’s wellbeing.

Even though it is relevant and necessary to discuss the ethical and legal limits of advertising relating to medications that is directed towards consumers, the present paper is not focused on this aspect of advertising. Rather, the focus here is on advertising that ought to be directed exclusively towards physicians but improperly reaches medical students.

Barros and Joany (2002) evaluated advertisements for medications in three large-circulation Brazilian medical journals and noted that there was a great shortage of information. It suffices to cite the fact that they found information on adverse effects in only 20% of the advertisements.

According to a study conducted by Nascimento (2005), which analyzed 100 advertisements for medications, there was a lack of compliance with the Brazilian legislation, given that in 100% of the samples, at least one article of RDC 102 had not been complied with.

Pharmaceutical industry and physicians: dangerous liaisons

"The relationships between pharmaceutical companies and physicians are potentially dangerous and harmful both to professional practice and to consumers of healthcare services" (Rego, 2004, p.3). Thinking about this relationship, professional and healthcare regulatory organizations have increasingly sought to set limits on this coexistence, as done recently by the World Medical Association (Abbasi, Smith, 2003). The World Health

Organization (WHO, 1988) has approved a resolution to discipline the promotion of medications.

In Brazil, in recognition of the potential risks involved in sponsorship and advertising, the Federal Medical Council (*Conselho Federal de Medicina*, CFM) has issued resolutions prohibiting linkage between medical prescriptions and receipt of material advantages offered by economic agents with interests in the production or commercialization of pharmaceutical products or equipment for medical use. These resolutions determine that when physicians give talks or write articles that publicize or promote pharmaceutical products or equipment for medical use, they should declare who the sponsoring financial agents are, along with the methodology used in the studies (when this is the case) or the bibliography that served as the basis for the presentation, when this transmits knowledge coming from outside sources (CFM, 2000). The "insertion of publicity material connected with the fields of medicine and hospitals, and the like, in newspapers and journals edited by the CFM and Regional Medical Councils (CRMs), and on internet websites" was also prohibited (CFM, 2002).

What was the CFM seeking through these prohibitions? We take the view that, in addition to regulating the professional practices of physicians in relation to the advertising of medications, within its sphere of activity, the CFM also sought to establish a dividing line for its independence in relation to the powerful pharmaceutical industry, which seems to be omnipresent in the professional world of physicians. The CFM also ensured that any possible advertisements would not be interpreted as endorsements for any product advertised, and highlighted its concern regarding the potential conflicts of interest associated with clinical practice and research.

The importance that the pharmaceutical industry bestows on advertising its products is expressed in the distribution of its expenditure. In this regard, we present two pieces of convergent information, albeit from different sources. In an analysis on the expenditure of the companies that produced the fifty medications most consumed by elderly people in the United States, the national consumer organization Families USA Foundation (Lemmon, 2001) concluded that the expenditure of these companies relating to administration and advertising reached two and a half times the amount invested in research and development. Their profits exceeded the amount invested in research and development by 60%. Likewise, Barros (2004) found that in 2000, 30% of the expenditure among these companies was destined for advertising and administration, while 12% went to research and development. Even if these figures also include advertising aimed at the general public, it is certain that a proportion was aimed at specialists.

However, it seems that most physicians believe that their professional integrity is immune to advertising actions and that the actions of pharmaceutical company representatives and the gifts, sponsorship or funding from the industry do not influence their practice, or at least the quality of their practice. In this respect, Barros and Joany (2002, p.894) stated that "such significant expenditure (of the order of 20-25% of overall earnings) on advertising can only be explained if this leads to the expected return in terms of sales and profits". On the other hand, Jesus (2000)

presented some declarations by Brazilian professionals on this topic and showed that some of them recognized that contacts with pharmaceutical industry representatives were inappropriate and did not maintain such contacts. Fagundes et al. (2007) presented data from a survey among 50 physicians (25 clinicians and 25 surgeons), among whom 98% said that marketing agents from the pharmaceutical industry visited them. Twelve percent of the interviewees received daily visits and 86% received small gifts during the visits. Among other important data from their study, 14% of the interviewees said that they prescribed medications because of the awards; 68% said that they believed that the advertising had a direct influence on prescriptions; and 68% believed that there were errors or incorrect information on the advertising material. Bermudez (2000) advocated the ending of abusive harassment of medical professionals by pharmaceutical representatives.

Could there in fact be a reason for advocating prohibition of contacts between marketing agents and physicians? This would thus limit the advertising to printed material or static display material such as banners, posters and leaflets. Would this resolve the problem, or at least part of it? In the following, a little of what has been published on this topic around the world will be examined.

Wazana (2000) indicated that the current level of relationships between physicians and the pharmaceutical industry affected physicians' behavior and needed to be the subject of educational and policy actions. From analysis on 16 studies that described and discussed the relationships between the pharmaceutical industry and physicians, this author observed that the relationship started at university and continued after graduation, with a mean of four meetings a month with pharmaceutical representatives. Depending on professional status, physicians are accustomed to taking part in lunches funded by the industry; they receive presents and small gifts; their traveling costs to congresses are covered; and they are sponsored on refresher courses.

The current and erroneous opinion among physicians is that pharmaceutical representatives provide accurate information about their drugs and are capable of providing accurate information on the existing or alternative drugs. Most physicians deny that presents and small gifts might influence their behavior, although doubts are expressed with regard to whether such practices are ethical. They admit that they would have fewer contacts with pharmaceutical representatives in the absence of these benefits. However, Howard (2000) firmly contested Wazana's conclusion (2000) that physicians could be bought with small gifts and cheap presents and that they would not have the intelligence to distinguish between facts and propaganda.

Steinman (2000) and Pinto, Pinto and Barber (1998) indicated that most physicians considered that the advertising of medications directly to the population was also capable of negatively influencing the act of writing medical prescriptions. However, they did not have this feeling in relation to advertising directed towards physicians and the receipt of presents and gifts from the industry. They indicated that most physicians believed that

presents did not affect their prescriptions, but believed that the presents influenced their colleagues' prescriptions.

Westfall, McCabe and Nicholas (1997) analyzed the question of the distribution and use of free samples by physicians and concluded that there was only one reason why the industry would distribute free samples: to change physicians' behavior at the time of prescribing medications. In their opinion, the fundamental question was not whether physicians could or could not have relationships with the industry but, rather, whether physicians' relationships with their patients should always have precedence. They took the view that prescribing a medication because of the convenience of having a sample was not the best way to practice medicine from the patient's point of view. The pertinence of these conclusions for our context is reinforced through considering that the sample available might not be sufficient for the whole treatment and, almost as a rule of thumb, would be more expensive than the medication already available.

According to Molinari, Moreira and Conterno (2005), some members of the medical profession recognized that they felt under pressure to prescribe medications from pharmaceutical laboratories when they received small gifts and free samples, and that they were fearful of not prescribing them when they received greater benefits. On the other hand, these authors stated that many physicians believed that they were immune from commercial influence. However, other studies have revealed that accepting presents and hospitality from the pharmaceutical industry may compromise physicians' judgement regarding medical information and subsequent decisions about patient care. Because of this, these authors emphasized that it is important for physicians (qualified professionals) to explain the potential conflicts of interest in developing and publishing their clinical studies. They pointed out that the World Medical Association discourages close relationships between physicians and the pharmaceutical industry, and they attempted to establish clearer rules for such relationships.

Here, a special reference should be made regarding this form of advertising: free samples. There is no doubt that this is a very effective form of marketing. After all, what other reason could the industry have for distributing samples of medications? There will doubtlessly be those who seek social justification for their receipt of samples, alleging that these medications will be passed on to poor people who have difficulty in acquiring them. In fact, treatments for poor people need to be taken more seriously. However, this alternative does not appear to bring benefits for patients, given that the treatment on offer is not necessarily better than others for which no free samples are available. Moreover, even if sufficient volume of medication for the patient's complete treatment were provided (which is not usually the case), the physician would be publicizing this medication among the population as an adequate medication only because a free sample was available. In any event, it is hard to believe that something free could exist in a commercial relationship.

However, it could be argued that accepting free samples (or not) has no effective significance with regard to changing prescriptions; or that distribution of gifts is irrelevant; or that the harassment by marketing agents

has the single purpose of publicizing studies that have been conducted and updating physicians regarding innovations, given that it is the industry that invests in technology; or that what is more relevant is the quantity of systematized evidence that the advertising provides, thereby supplying a scientific basis for changing prescriptions. Nevertheless, the quality of information present in pharmaceutical advertising has also been greatly criticized, as the studies presented below show.

The quality of advertising information

For example, Villanueva et al. (2003) investigated the advertisements for anti-hypertensive agents and cholesterol reducers that were published in six Spanish medical journals in 1997, looking for those that showed at least one bibliographic reference. They identified 264 advertisements for antihypertensives and 23 for lipid-lowering agents, of which only 125 displayed any references. They were unable to check 18% of them because they were unpublished monograph studies. Out of the studies mentioned, 63% had been published in periodicals with a high impact factor, and 84 references were randomized clinical trials. In 45 advertisements, the promotional claim was not backed by any reference. These authors concluded that physicians needed to be cautious in accepting the information provided by the advertisements, even if they did display bibliographic references (Rego, 2004, p.4).

It was seen, with lamentable frequency, that the advertising of medications was not governed by ethical and scientific rigor.

Also in relation to the information available in advertisements for medications, Cooper et al. (2003) studied the quality and quantity of diagrams present in advertisements published in ten American medical periodicals in 1999. They observed that a certain quantity of information that was unqualified to appear in advertising for medications (including types of data aggregation formally prohibited by the FDA) was present in more than 50% of the advertisements.

Tanne (2004) released the results from a study conducted by Kaiser et al. (2004), of the Institute for Evidence-Based Medicine, a private research institute located in Cologne, in Germany. This study evaluated 175 journals containing information on 520 drugs that were sent through the post or delivered directly to 43 generalist physicians in that city. They concluded that only 6% of the advertising material for the medications analyzed was backed by evidence.

Researchers funded by the pharmaceutical industry may introduce interpretation bias into their analyses that possibly will not be noticed by specialist reviewers, and evidence of this is already available. Kjaergard and Als-Nielsen (2002) sought to identify whether there was any type of association between declared conflicts of interest and the results from clinical trials. Thus, they reviewed the results from randomized clinical trials published in the British Medical Journal (BMJ) between January 1997 and June 2001. They concluded that the randomized clinical trials analyzed significantly favored the experimental interventions when there was a

declared conflict of interest regarding funding. Other types of conflict of interest were not significantly associated with the authors' conclusions.

In a study published in the Journal of the American Medical Association (JAMA), Als-Nielsen et al. (2003) analyzed clinical trials that had been included in Cochrane meta-analyses and observed that the conclusions from studies funded by for-profit organizations could be more positive because of biased interpretation of the results from the trial. According to their investigations, the data contained in the tables of the published papers were consistent, but the analyses of these same tables were biased. Their conclusions led them to recommend that readers and professionals undertaking peer review tasks should remain attentive with regard to comparisons between data presented in tables and analyses on these data by authors. In other words, the peer review system for scientific papers had been inefficient in identifying papers that did not present the correct interpretation of the data obtained in the clinical trial.

In addition to advertising carried in publications destined for physicians, information on medications is carried in therapeutic guides. In Brazil, Barros (2000) compared the information contained in the therapeutic guide most used, the *Dicionário de Especialidades Farmacêuticas* (DEF) or "medications dictionary", which is sponsored by manufacturers, with another two American guides, for the 44 medications most used in Brazil. The results showed that in the DEF, information that is indispensable for prescriptions, according to WHO criteria, was absent from around 65% of these medications, whereas it was absent from 8% and 10% of the medications in the two American guides used as comparisons.

Pharmaceutical companies' race towards financial success and the contributions of healthcare professionals towards this end makes us consider the urgency of reflecting on and sharing the hopes of Thawani, expressed in an editorial of the *Indian Journal of Pharmacology*:

[...] It is hoped that in future we shall have a new generation of doctors who demand that all drug promotion be ethical. Unless this demand comes from the medical establishment who refuse to take lavish gifts, eat lunches and dinners sponsored by drug companies, and attend continuing medical education programmes paid for by the companies, we can never expect drug companies to self-regulate (Thawani, 2002, p.227-8).

Vigilance regarding advertising and a critical eye on it are still not traits of professional medical culture, whether in the United States, India or Brazil.

In a certain type of scientific journalism, we can identify a pattern that is easily recognizable simply as advertising material. These are articles that, under the pretext of presenting some new information of public use relating to the launch of a new medication on the market, uncritically put across information supplied by the pharmaceutical laboratory that produced it. One example of this type of reporting is the following headline from the healthcare section of the Brazilian magazine *Veja*: "*Sempre alerta: há uma nova versão de um remédio contra a impotência que não requer sexo com hora marcada*" ["Always alert: there's a new version of a medicine against impotence that means you don't need an appointment for sex"] (issue no. 2018, of July 25, 2007, available at

http://veja.abril.com.br/250707/p_103.shtml). It is well known that many of these reports are made at the invitation of the company that produces the medication that the report is about. The fact that on some occasions, there is a note that "the journalist traveled there at the invitation of Laboratory X" does not lessen the problem, since it is not made clear to readers what the real significance of this information is, or what the possible consequences of a situation of conflict of interest might be. As can be seen, despite the existence of specific regulations, the power of the State needs to be made felt in punishing all abuses, given that it seems obvious that an organization like Conar does not act in this type of case.

Possible consequences on the training process and the technical quality of trained professionals

Harassment of medical professionals by pharmaceutical companies may also compromise the professional training of medical students. A study by Palmisano and Edelstein (1980), cited by Wazana (2000), indicated that 85% of medical students believed that it was improper for politicians to accept presents, while only 46% considered that it was inappropriate for the students themselves to receive presents of the same value from the pharmaceutical industry. In other words, they understood that politicians could be influenced and have their integrity threatened by presents, but not themselves, the students. The medical students did not perceive that physicians, like politicians, are social players whose credibility rests in the trust that society places on them, for them to always make their decisions on the basis of the best and greatest interests of society. This might be thought only to represent student immaturity, were it not also observed among professionals, as presented below.

In a study on the results from interactions between pharmaceutical representatives and the teachers and physicians of the clinical body, Lurie et al. (1990) found evidence that such contacts correlated with changes in prescriptions. They suggested that the influence of marketing agents in medical teaching centers needed to be recognized and their activities needed to be appropriately assessed.

Vainiomäki, Helve and Vuorenkoski (2004) conducted a national survey in Finland on the effect of pharmaceutical advertising among medical students. They observed that most of the students considered that pharmaceutical advertising was an important source of information on medications. Although these authors were not in favor of any control over contacts between pharmaceutical representatives and students, they believed that such contacts would affect their actions as prescribers of medications in the future. They considered it was important for medical schools to regulate such contacts in some way.

Taking this general picture as the backdrop, we will now consider the situation faced by our undergraduate students. On the one hand, biochemistry and pharmacology classes seek to contribute towards comprehension of the mechanisms of action and interaction of chemical substances in the human organism and their possible therapeutic uses. On

the other hand, there are marketing agents equipped with summarized information that is objective (but not always reliable, as we are seeing) and correlates a product directly with a disease, with the promise of curing it or controlling it. The need to control uncertainties and insecurities that young students have, and their lack of knowledge of the strategies and practices of the pharmaceutical industry for promoting their products, leave them extremely vulnerable to such actions. This gives rise to the possibility of unacceptable potential risks to future clients of these students, thereby seriously harming their training. Moreover, currently, there are no restrictions on the actions of marketing agents within university environments in Brazil and practically all around the world, let alone in relation to contact with such students.

Zipkin and Steinman (2005) carried out a thematic review through Medline, among articles published in the English language between 1966 and 2004, regarding medical training and the pharmaceutical industry. They observed both that the pharmaceutical industry was significantly present in all of its aspects, at all times during the medical training, and that various initiatives had been taken by different medical schools in an attempt to interfere with this relationship. One model for action that attempted to influence the results from such interactions was a proposal to introduce small educative actions that would prepare students to deal with the pressure from pharmaceutical representatives. Hopper, Speece and Musial (1997) observed an improvement in the perceptions of medical residents regarding the ethical and marketing aspects of drug promotion after a single session of exposure to theory followed by debates. Wofford and Ohl (2005) reported changes in knowledge and attitudes among medical students after they participated in an obligatory workshop during the third year of the medical course, on problems relating to advertising of medications and clinical practice.

Although it would be reasonable to consider that educational interventions within this field are welcome, it seems very unlikely that separate actions will be enough to prepare students to deal critically and autonomously with modern marketing. Thus, the alternative proposed and approved by the Deliberative Council of the Brazilian Association for Medical Education (*Associação Brasileira de Educação Médica*), during the 43rd Brazilian Congress of Medical Education, held in Natal in 2005 (Abem, 2005), seems much more reasonable: "to recommend that medical schools and university hospitals prohibit the actions of marketing agents from the pharmaceutical industry in university hospitals or in any other space relating to the teaching of medicine".

Prohibition of the presence of pharmaceutical representatives inside healthcare units destined for teaching is a measure (a drastic one, without doubt) that was adopted by McMaster University in 1992. As stated by Rego (2004, p.4):

McCormick et al. (2001) studied the long-term effect of this policy, which restricted medical interns and residents' contacts with pharmaceutical representatives. They compared the attitudes and behavior of physicians who had and had not been subject to this policy during their training, seeking to determine whether the behavior of the two groups would be

similar or not. The results showed that physicians who were trained under the guidance of this policy had a lower tendency to regard information from pharmaceutical representatives as beneficial for orienting their practice than did those who had not been trained under this guidance. They concluded that restricting the access of pharmaceutical representatives to interns and residents seemed to affect the physicians' future attitudes and behavior.

It needs to be highlighted that in Brazil, pharmaceutical representatives make contact with students from the beginning of their professional training, and not just at the end.

Protection for the final consumers implies not only prohibiting direct advertising of medications to consumers, but also ensuring that physicians have access to reliable information on medications, and an end to the unconventional pressure to incorporate new medications into their list of prescriptions. The experience developed at McMaster University strongly suggests that controlling the influence of advertising and marketing resources should begin during the process of professional training. In this respect, it is essential to understand that it is imperative to prohibit marketing contact and actions among students, both in fact and in law, especially because of students' greater susceptibility that results from their low knowledge about medications and about marketing agents' actions. The deleterious effects of such actions are felt through physicians' professional lives, either through the way in which they look less critically at the advertising material that is distributed, or through conflicts of interest that might appear (Rogers, Mansfield, 2004).

Without doubt, the function of professionals and educators with the field of healthcare is to protect both their patients and their students. From this special focus presented here, this means medical students. Protecting them, in this case, means concerning ourselves with their moral and ethical training, which is strongly influenced by events during their undergraduate years, thereby contributing towards developing their capacity to think critically and make decisions autonomously.

Among many things to be done, some immediately viable and others less so, the most significant and viable of these is to work towards training physicians who are more aware of the influence of pharmaceutical corporations as they go about their lives and activities. Thus, through programs directed strongly towards developing critical awareness, we can contribute towards improving the quality of prescriptions and patient care, while also contributing towards improving the quality of life of our students and future colleagues.

For this, with the obvious understanding that medical students are not physicians yet, it is concluded that not only is advertising among students ethically unacceptable, but also it is legally prohibited. However, this necessary interdiction cannot be the only action to be taken. The topic covered here should be included in undergraduate courses and postgraduate programs, so as to reinforce the professionalism of newly qualified physicians.

Likewise, the way in which scientific events are held with support from the pharmaceutical industry should be rethought and rediscussed, because of the

enormous financial dependence that exists, which transforms the circulation areas of our congresses into pathetic gift distribution salons, with physicians performing the sad role of Indians chasing after shining mirrors. It is even worse when it is the funding company that establishes the agenda for the events, the main talks and the discussions at scientific meetings. Rigorous criteria for ethical advertising of these products also need to be established among the professionals.

Nonetheless, these are not the only desirable or necessary actions. Society in general, and healthcare professionals especially, need to be mobilized to demand transparency from their researchers and scientific writers, in their relationships with the pharmaceutical industry (and other sources of funding). In other words, they need to declare the characteristics and basis of such relationships expressly and clearly in the body of articles produced, and whenever they release studies relating to products from companies with which they maintain any type of commercial relationship.

COLLABORATORS

Marisa Palácios and Sergio Rego participated in the bibliographic review, compilation of the first draft of the paper and final revision. Maria Helena Lino participated in the bibliographic review in relation to the juridical aspects of the topic and their incorporation into the body of the paper, and participated in the revision of the first draft.

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