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Knowledge industry: a powerful mechanism

ABSTRACT

The paper deals with the pharmaceutical industry's links to the knowledge industry, through powerful marketing strategies. With the aim of scientifically legitimizing its products, the pharmaceutical industry interferes with the production of medical knowledge. In the form of a mechanism for directing economic interests, it funds drug research, biases its results and stimulates the production and publication of scientific papers. This is a mechanism that threatens important ethical issues: it transforms the process of scientific legitimization into a marketing strategy, compromises the credibility of the process of constructing medical knowledge and encourages distortions of the criteria for evaluating the quality of scientific papers.

DESCRIPTORS: Drug Industry. Biomedical Research. Drug Publicity. Marketing.

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INTRODUCTION

Taken as merchandise, knowledge has acquired the perspective of boosting investments by the pharmaceutical industry, both for funding research projects and for producing scientific-cultural assets. Through the dynamics of publication, involving publishers, journals and papers, among other strategic mechanisms for publicizing the industry's products, it gives power to economic interests within the field of biomedicine, thereby interlinking profit generation and scientific prestige.

In a study on economic policies for production and dissemination of biomedical knowledge, Camargo Junior³ (2009) coined the expression "knowledge industry" to define the current setup of processes for negotiating scientific production, involving the construction of medical knowledge and production of scientific papers. This subject has been dealt with as an integral part of the Medical-Industrial Complex,⁸ and distortions in wielding power that compromise control over research and knowledge dissemination activities have been indicated.

Although scientific production takes place at several levels and represents a multiplicity of interests, the main means of validating knowledge is through empirical research. As economic production has become dependent on the value of knowledge, legitimization of pharmaceutical products through scientific research has become a crucial issue for the industry. Knowledge dressed up in scientific legitimacy has been transformed into a strategic argument for sales marketing.

The knowledge industry's set of marketing strategies forms a powerful mechanism for directing economic interests that involves funding for drug research, biasing of its results, creation of diseases and stimulation for production and publication of scientific papers.

The aim of the present study was to discuss how the pharmaceutical industry, with its enormous economic strength, uses marketing strategies to link up with what could, metaphorically, be termed the knowledge industry. Because the set of activities relating to construction, validation and dissemination of medical knowledge is thus characterized as a production process controlled by private interests, it becomes subject to interference from the industry's economic logic.

SCIENTIFIC LEGITIMIZATION AS A MARKETING STRATEGY

Funding of programs for research and scientific knowledge production according to the pharmaceutical industry's interests has thus become a fundamental marketing strategy for the industry. In this respect, it can be said that the production of medical knowledge sustained by research, together with the dissemination

of its results, has transformed it into merchandise. In other words, scientific research on pharmaceutical products feeds the production of papers, circulation of knowledge and sale of medications. Through this notion, a significant proportion of the activities of research and the production and distribution of biomedical knowledge is under the control of private commercial interests.

Within biomedical logic, the credibility of drug research is preferentially based on combating specific diseases and is conditioned by the requirement to scientifically legitimize the use of drugs. This demand is anchored in producing research that, in a "scientifically" appropriate manner, "demonstrates" the efficacy of the new medication for the specific indication in question.

Because of "this need", and with the aim of leveraging sales, the pharmaceutical industry has developed strategies consisting of a variety of ways of creatively appropriating research results. This involves the use of techniques for biasing the results, such as expansion of the user base for new drugs, or even the creation of new diseases or exaggeration of the threat posed by diseases, which has been termed "disease mongering" in the English-language literature.¹²

In a study on the process of constructing new diseases or disorders, Payer¹⁵ (2006) identified ten tactics for manipulating research: 1 – stating that a normal function constitutes something wrong that requires treatment; 2 – attributing distress in a situation in which it does not exist; 3 – stating that a large proportion of the population might be affected by the disease; 4 – defining a condition of deficiency or imbalance; 5 – allowing communication specialists or spin doctors to have a say, thereby interpreting the results according to the interests at play; 6 – particularizing the focus on the topic; 7 – exaggerating the benefits from the treatment through selective statistical data; 8 – scoring the objective in a distorted manner; 9 – promoting technologies by regarding them as "magically" free of risks; 10 – transforming a symptom that does not have great significance into a sign of severe disease. Considering that the pairing of normal/diseased provides structuring in biomedical thinking,^{4,6} the strategy consists of seeking a deviation from normal that, when demarcated, might support a demand for drug treatment. Because of the inevitable sociocultural components, there is plasticity in defining "normality", and therefore in defining disease. This allows physiological phenomena to be transformed into "deviations", i.e. if they can be characterized as diseases, they need to be treated.

Taking the reference point of the constructivist dimension of technical-scientific production, in studies on class, gender, sex, race and ethnicity, Hess¹⁰ (1995) argued that certain cultural traits could be given new

meaning through science and be implanted socially. To designate this mechanism, this author used the metaphor of totemism (“technototemism”) and, to explain the surprising facility with which society assimilates new knowledge and new technologies, he used the expression “strategies of circumvention”.

This means that, for the pharmaceutical industry to introduce a given substance into the market, it needs to associate it with knowledge. The characterization of the product by means of scientific evidence directs sales. The mechanism is as described above: firstly, the focus of interest is on finding a consensual description of a natural state, starting from a biological concept; secondly, a deviation from this state is described, in order to characterize it as an abnormality; and thirdly, there is investment in research aimed at correcting this supposed abnormality.

One example of this process within our society was described by Lexchin¹¹ (2006), who reported on how Pfizer transformed the action of Viagra® (sildenafil), a treatment for erectile dysfunction secondary to medical causes (diabetes and spinal diseases, among others) that is considered effective and safe, into a prescription directed towards healthy men with the aim of improving erectile performance through capacitation to maintain the erection for longer periods.

If this medication were confined to treating secondary causes, its success would be very modest, given the limited market. Thus, the main motivation behind Pfizer’s sponsorship of research on Viagra® was to give scientific backing to its launch, thereby boosting its commercialization through this strategy. With the aim of transforming Viagra® into a wide-coverage product for use among the male population, the criteria for success in treating erectile dysfunction needed to be defined. Thus, a requirement to expand the perception of the prevalence of erectile dysfunction arose. The initial appeal was directed towards men aged over 40 years, based on the supposition that there would be significant preoccupation about erections. Ultimately, Viagra® started to be presented as an important treatment option for men with any degree of dysfunction, including rare or transitory failure in performance.¹¹

The reification of erection as the essence of male sexuality opened the way to constructing the concept of male sexual dysfunction. In other words, data on male sexuality were gathered and put into use to support the supposedly ideal or normal condition. In the name of healthcare, from day-to-day findings, a powerful mechanism for intervention in life created standardized behavioral patterns.

The magnitude of this process of medicalization is of such an order that drug production within the field of sexuality is not directed towards the disease but towards increasing potency. Since the launch of Viagra® in 1998,

more than 17 million prescriptions for treating erectile dysfunction have been made. In 2001, Pfizer declared earnings of 1.5 billion dollars.¹³

In an attempt to reproduce the success achieved through the launch of Viagra® in relation to female sexuality, the pharmaceutical industry is investing in a line of research that seeks a new “reality”: female sexual dysfunction. Moynihan¹³ (2003) considered that the aim was to create needs and open the market to other medications. This author¹³ criticized the sponsorship of such research and cited the example of the publication of a paper in JAMA in February 1999, in which its authors (linked to Pfizer) announced the study result that the prevalence of sexual dysfunction among women aged 18 to 59 years was 43%. After this subject had circulated in the media for six months, Pfizer announced that a new drug for treating female sexual disorders was being tested.

According to Moynihan,¹³ the analysis on the data from this study showed serious problems. Around 1,500 women were asked to answer yes or no to the question of whether they had experienced any of a list of seven problems over the last few months of the preceding year. This list included criteria for evaluating sexuality, such as lack of sexual desire, anxiety about sexual performance and difficulties with lubrication. If the woman answered yes to one of the seven questions, she was included in the group that was characterized as presenting sexual dysfunction.

As marketing strategies, these “scientific data” were widely publicized in the media, with the following affirmation: “43% of the women had dysfunction of one form or another, but not all of them had the most severe form”. This was a process that sought “to raise public awareness of the problem”, i.e. acceptance of female sexual dysfunction as a common but treatable disease.¹³

In indicating the controversies relating to standardization of female physiological sexual responses and to the process of medicalization of sexuality, Moynihan¹³ (2003) argued that it was important to follow up these research processes more rigorously. In his view, categorizing sexual difficulty as dysfunction had the aim of inducing physicians to prescribe medications that would “correct” sexual (dys)functions.

Despite the conceptual imprecision, the critical approach towards the industry’s strategic exploitation of the boundary between normal and pathological can be markedly clarified through Canguilhem’s argument⁶ (2006):

“If normality does not have the rigidity of a collective coercive event but, rather, the flexibility of a rule that is transformed through its relationships with individual conditions, it is clear that the limit between normal and pathological is imprecise. However, this does not lead

to continuity from normal to pathological with identical essence [...], or to confusion of the relativity of health-care, in such a way that the point at which health ends and disease starts would be unknown.” (p. 135)

RESEARCH AND PUBLICATION: STRATEGIES FOR DRUG PROMOTION

The close relationship between research and production of scientific evidence can be characterized as a powerful mechanism that interlinks the pharmaceutical industry to the knowledge industry. It feeds the production of papers, dissemination of knowledge and sale of medications. With interests concentrated on publication and propagation of medical knowledge, the pharmaceutical industry invests in quantity of publication without prioritizing quality. Thus, the production of medical knowledge has become a production line sustained by research.

The need to give credibility to results of economic interest has boosted the pharmaceutical industry’s investments in pseudo-research. Although this may look like true research, its aim is not to produce new knowledge. In fact, such research comprises marketing strategies with methodology that is deliberately biased towards strengthening the commercial position of a given medication, with results that “prove” what the advertising people are saying.¹

Furthermore, although a more attentive evaluation reveals that most so-called pharmacological innovations in fact derive from small modifications to existing products or simply from patent renovation, the pharmaceutical industry’s announcements of series of new medications based on scientific publications reinforces the false idea that frequent changes in medical knowledge are occurring.

At this point, it is worth citing the example of the case of gabapentin (Neurotin®). This is a medication approved by the Food and Drug Administration, in the United States in 1994, only for treating epileptic crises that were not controlled by other drugs. With the aim of expanding the market, Parke-Davis devised a plan called the “publication strategy” to cause physicians to prescribe Neurotin® with other therapeutic indications. The American government took the company to court for this violation. In 2004, Pfizer (which had taken over Parke-Davis in 2000) admitted its responsibility regarding the violation of federal regulations in its promotion of gabapentin and ended the case by means of an agreement with the government. Subsequently, on the basis of the American Freedom of Information Act, a group of researchers obtained access to the company’s documentation that had been submitted to the courts.¹

After analyzing these documents, Steinman et al¹⁶ (2006) identified the target of the pharmaceutical

company’s marketing interests as three specific groups of selected physicians, namely: 1 – physicians selected on the basis of their dollar/prescription ratio; 2 – physicians with the power of influence (program exhibitors); 3 – leaders, identified through their activities in local medical associations.

In addition, with the aim of passing on the idea of involvement with medical practice, Parke-Davis allocated a specific budget to “programs for residents”: educational methods; payments to physicians giving talks; creation of consultative councils; promotion of consultants’ meetings; and research and publication strategies. The analysis on the internal documentation showed the enormous extent of the company’s marketing activities, which went far beyond the open advertising. The researchers indicated that the latter was the tip of the iceberg. Most of the activities (and resources) were related to concealed advertising, including in this all of the strategies described above.¹⁶

Although papers and specialized publications are based on proof produced over the course of research, the reports on the research results are manipulated according to the company’s commercial interests and are presented to physicians under the aegis of scientific credibility. These are marketing strategies that are directed towards prescribing physicians who, to keep themselves up-to-date, need to follow up the publication of the latest scientific evidence. Given that medical interventions are directed through such knowledge, it is of fundamental importance that these reports should be impartial.

However, as shown by Angell¹ (2007), studies have already shown that researchers sponsored by the pharmaceutical industry tend to favor the company’s products. According to this author, the biased nature of such trials comes from simply suppressing negative results, or from praise given to a drug when the results do not justify any enthusiasm. Such bias may also be built into a research project, as is the case of placebo-controlled clinical trials. This means that the drug is being compared with nothing and that, if compared with other drugs that exist on the market, it may in fact be shown to be less effective than when compared with placebo. There are trials in which, to study drugs that are directed towards treating older individuals, tests are done on younger individuals. In other cases, the new drug is compared with an old drug administered at an excessively low dose.

It can be said that insofar as scientific ideology is projected as the producer of absolute truths, science confers on knowledge the category of myth. The reverberation from this is physicians’ susceptibility towards assimilating drugs dressed up in “scientific characteristics” (as presented by advertising people who are commercial representatives of the pharmaceutical industry), into their prescriptive practices without critical evaluation.²

Camargo Junior² (2003) argued that this context of preestablished ideas in which physicians withdraw from critical analysis of research results was the setting for the pharmaceutical industry to emerge as the funding agent for research and grasp the possibility of directing interests within the field of biomedicine. Through encouraging productivity of knowledge, the industry plays with the idea of irremediable technological progress. Thus, it justifies the enormous volume of published papers, thereby producing among physicians (whose recognition depends on keeping up to date) the unsettling sensation of being continually behind.

According to Angell¹ (2007), medical education companies are hired to draft papers and to find “authors” to undersign them. One such company, for example, received US\$ 12,000 for each of the 12 journalistic articles that it prepared, and it paid the academic “authors” US\$ 1,000 per signature. In one report sent to Parke-Davis, there was a notice in which the company showed that it was having some difficulty in outsourcing the authorship: “Author interested; still playing hide-and-seek by telephone”. Subsequently, the company wrote in capitals: “[OUR COMPANY] HAS THE TEXT READY; WE JUST NEED AN AUTHOR” (p. 174). Along the same lines, Guimarães⁹ (2007) argued that in most clinical trials sponsored by the pharmaceutical industry to test new drugs or procedures, the protocols are drawn up by the sponsor and the data gathered are sent in full, in their raw state, for analysis by the sponsor. This means that, although the physicians’ participation in the research is limited to inclusion of the patients and implementation of the procedures laid down in the standardized protocol, they are the authors of the papers published.

In dealing with the qualification of published papers, the situation becomes even more complicated. This is perhaps the point of the questioning by Novaes¹⁴ (2007), regarding the use of evaluation methods based on the number of citations of a paper, as an indicator of the impact of published research and its potential for creating new knowledge. In this argument, Novaes¹⁴ presented results from exploratory studies in the field of healthcare research and showed that in the papers analyzed, “only in a small number of papers was the study cited considered relevant”, which signified that the number of citations was not directly associated with the importance of the production of new knowledge.

In an analysis on two papers published in the *Anais da Academia Brasileira de Ciências*, on the consolidation of the Brazilian presence in the ISI Thomson-Reuters database, Guimarães⁹ (2007) also criticized the paper selection method: firstly, because the merit and/or relevance of the scientific contributions related to a category called “impact”; and secondly, because this “impact” was indicated by the number of times that the paper was cited in indexed periodicals.

Because these were quantitative data, the analysis on this “impact” may be strongly influenced by the way in which the research was organized, as is the case with multicenter studies, in which the following can be observed: 1- large networks of researchers with the potential to recruit patients to undergo standardized protocols; 2- remuneration for the researchers, per patient recruited; 3- precarious assurance of research ethics standards. Thus, it is likely that there was negligible participation by Brazilian authors in papers selected using the ISI database. However, they received the formal credit for authorship, recognized by research production assessment bodies in Brazil: *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES), *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (CNPq) and state research support foundations.⁹

In covering the topic of ethical questions in scientific research, Castiel et al⁵ (2007) agreed that “there may be several types of misconduct and fraud within scientific settings, such as in protocol, sampling and general data management”, as well as “increasing numbers of authors per paper, thus signifying more than a supposed increase in the number of members in research groups but, rather, the possible practice of exchanging authorship favors”.

Despite all this, in relation to Brazil, Guimarães⁹ (2007) argued that this should not discourage or hold back funding of clinical trials by the pharmaceutical industry or other external institutions, provided that ethical standards and “republican” remuneration practices are ensured in research processes.

FINAL CONSIDERATIONS

In considering the knowledge industry from the perspective of the powerful mechanism of marketing strategies, the aim was to contribute towards understanding the ways in which the dominant economic power represented by the pharmaceutical industry influence the process of production, publication and application of medical knowledge.

Given that the industry’s interest in funding research, interfering with its results and publishing them is related to its marketing strategies, the resources destined for research end up directed towards trials that provide satisfactory results, i.e. results that publicize the laboratory and increase profits.

Despite the efforts to keep the real interests at play concealed, the biased directing of resources reveals important contradictions. In other words, although the industry’s discourse proclaims collaboration with the production of medical knowledge, this collaboration is not committed towards public health.

This is therefore a mechanism that threatens important ethical issues: it transforms the process of scientific legitimization into a marketing strategy, compromises the credibility of the process of constructing medical knowledge and encourages distortions in the criteria for evaluating the quality of scientific papers.

There is a consensus around the notion that commercial interests should not influence medical decisions. Because of inefficiencies in the efforts to manage conflicts of interest and abuses of power, new strategies need to be implemented: there should be no neglect of rigorous regulation, strict separation between commercial and scientific activities and a profound reassessment of the interactions between medical professionals, professional organizations and the pharmaceutical industry.

In Brazil, the possibility of putting these interactions on a new basis can be seen in the mechanism for periodic reformulation of the consensus regarding antiretroviral therapy. In 1996, the Ministry of Health's

National STD/AIDS Coordination Office, advised by specialists, formulated the first antiretroviral therapy consensus. Since then, the committee has updated the recommendations in accordance with the latest scientific evidence.

This process is an example of public appropriation of scientific knowledge: closer to the population's health-care requirements and less subject to interference from commercial interests.

In conclusion, there is no denying the importance of studies that evaluate the efficacy and effectiveness of drugs. These investigations are fundamental. In clinical practice, physicians depend on information on the effect and safety of substances to guide them in their prescriptions. The challenge lies in ensuring that economic interests do not clash with the ethical and methodological features that are essential to the process of knowledge production, in order to obtain reliable results that are free from conflicts of interest.

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