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EDITORIAL

The use of drugs is not as rational as we believe… but it can't be! The emotional roots of prescribing

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The illusion of evidence-based prescription

Archie Cochrane changed the mind of prescribers, drug authorities, and later drug industries by introducing an idea that seems simple and obvious with the perspective of 40 years, but that was innovative at the time, i.e., that good scientific evidence should underlie each assertion, each medical decision, and by extension, each medical prescription [1]. Since then, evidence-based medicine has progressively become a familiar expression; at present, it is part of the objectives of many health ministries and public medical institutions [2]. No modern industry conceives of trying to apply for an authorization without the support of a well-designed clinical trial, and the requirements of most medicines agencies are clear in this regard [3].

The concept of rational medicine utilization (RMU) arose within that framework. The practice of accepting new medicines while keeping in mind the best possible therapeutic option and the public health principles was changing. RMU was defined during a frequently cited meeting held in Nairobi in 1985, where the attending experts stated that the goal of treating patients was to meet the rational use goal, defined as "the prescription of the most appropriate medicines to the patient in need of them, at an adequate dose and time duration, and giving to the patient the needed information to use them" [4]. This new concept appeared during the last quarter of the 20th century (i.e., in the midst of the pharmacological explosion) and just 8 years after the definition of another important concept, that of "essential drugs," that is, the core of the Essential Medicines List of the World Health Organization [5]. Thus, under the umbrella of international organizations such as the WHO/PAHO, the concept of RMU began to spread as a desirable benchmark to be attained in most countries, public health institutions, hospitals, or primary health centres. Additionally, the efforts were supported by many national and international projects, national and regional consultancies, and also by interesting and innovative changes to medical education and continuing postgraduate education, such as the useful Guide to Good Prescribing prepared by the team of Theo de Vries at the University of Gröninghen [6]. Public policies are continuously trying to improve the way medicines are used, despite difficulties and failures [7].

Together with diagnosis, prescription is a key step in the healing process. The basis of prescription is a decision-making process that requires not only clinical skills and knowledge, but also the ability to properly process new information on medicines in order to have more elements to make a decision. Nonetheless, present times pose a real challenge for prescribers because, in addition to the high number of new therapeutic options that are constantly increasing the need for pharmacological knowledge, the available information is growing relentlessly. In 1999, Sir Michael Rawlins, Chairman of NICE, calculated that in order to keep updated in a specialty, each physician would face the huge task of reading 19 papers per day to avoid the progressive gap between knowledge and advances [8]; this figure has recently risen to 75 trials and 11 systematic reviews a day [9]. Thus, the role of drug bulletins that regularly analyze and digest the available information on a

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given topic taking into account the evidence; the role of treatment guidelines; and the role of independent government or academic institutions such as NICE in England, the Scottish Medicines Consortium, or their equivalents in many countries seem to be clear, and their existence is justified.

Disappointing reality

Despite efforts to promote rational prescription, worldwide examples of inappropriate use of medicines have been repeatedly documented (e.g., despite knowing the risk factors that predispose to NSAIDs-induced gastric toxicity, omeprazol+NSAIDs continue to be compulsively prescribed even in young patients without risk factors [10, 11]; frequently antihypertensive drugs are the only therapeutic approach offered without any attempts to modify the patient's lifestyle [12]; or old well-known useful medicines tend to be traded for newly marketed and less evaluated medicines, even without them having shown superiority when compared with the older ones [13, 14]).

There are many therapeutic guidelines and formularies both in developed and less developed countries, but the adherence to their recommendations continues to be far from optimal [15]. There are essential lists of medicines in many countries, but petitions to include new and more expensive active ingredients are constant, and trying to argue against this with the support of evidence and methodological and clinical reasoning is often useless [16]. Of course, the influence of sophisticated and modern promotional techniques helps to impose new medicines; curiously, however, a given doctor tends to think that the representatives of the industry and their promotional inputs (leaflets, gifts, and lunches) influence how colleagues prescribe but do not influence his or her own prescription habits [17].

There is growing evidence of non-evidence-based use of medicines, and the most disconcerting point about this is that these attitudes are not the consequence of lack of information nor continuing education. It seems to be more a dissociation between theoretical knowledge and practical performance, which could be attributed to several nonpharmacological reasons. In addition to the obvious direct pecuniary interest to prescribe a specific medicine, more subtle reasons could be envisaged, such as the need of the prescriber to feel more confident. For example, a new medicine may be alleged to be more "powerful" (the basis for slogans of many marketing campaigns) or "safer" (another popular slogan), prompting its use as a replacement for a classic and well-known medicine, despite the clinical uncertainty associated with the novel drug. This is well-known and has been described, but the question is: "Is it so simple?".

Towards the emotional reasons for prescribing habits

In 1999, B.D. Jones from the Department of Political Science of the University of Washington, Seattle, wrote "From systematic observation in organizational settings, scant evidence of behaviour based on the expected-utility model emerges. Does this mean that people (and therefore their politics) are irrational? Not at all. People making choices are intendedly rational. They want to make rational decisions, but they cannot always do so" [18]. Why not?

Almost four centuries ago the famous *cogito ergo sum* ("I think, therefore I am") sentence written by the French philosopher René Descartes was the basis to highlight the central and only role of the human brain, its division from the body, and the 'Cartesian' way of thinking. Notwithstanding this, during the last decades of the 20th century, authors such as the neurologist Antonio Damasio began to emphasize the essential interplay and mutual influences between emotions and reasoning, thus breaking down the classic Cartesian ideas that depicted human decisions as following a clockwork-like functioning [19].

Since then, emotional influence on decision making has been thoroughly investigated, especially in areas in which to making the wrong decision could have deleterious consequences, such as aviation [20] or finance [21]. Regarding medicine use, the question seems to be: "Is the decision making process of prescribing safe from emotional influences?".

"The emotional influences on prescribing medicines" hypothesis

Formularies and clinical guidelines help to make therapeutic decisions; drug bulletins, medical journals, and continuing education courses keep prescribers updated. The theoretical basis for recommending or not recommending a given medicine for a given condition (e.g., survival, mortality, number needed to treat) seems clear. But real data on the consumption of medicines continues to alert health authorities because in many instances the prescription of medicines in clinical settings continues to be far from the desired or expected pattern. Could emotions explain part of the inappropriate prescription of medicines?

Positive emotions towards a given medicine could be the result of empathy with the product awakened by marketing campaigns, feelings of confidence owing to factors such as using a "new" product, or statements such as "optimal safety profile" read in promotional leaflets. On the other hand, negative emotions also could arise; for example, pejorative feelings stirred up by concepts such as "generic products prescribing," thinking of "rational prescribing" as something related to "poor countries," just "cost contain-

ment" or a misunderstood "reduction in prescribing freedom," or perhaps, simply the negative feelings stimulated by the fear of uncertainty necessarily associated with all therapeutic decisions.

Although these theoretical aspects are well-known, campaigns to improve the use of medicines and medical education programs continue to be founded only on a clinical and pharmacological basis, while systematically forgetting the emotional aspects that should complement this information and message in order to become at least as efficient as the marketing campaigns issued by the manufacturers.

To study the emotional roots of prescribing in clinical practice is complex, but maybe now is the moment to take advantage of the advances in modern neuroscience in order to try to identify which factors determine how we prescribe. This could be the basis to build strong and really effective campaigns for a better use of medicine, something that could be a giant step forward not only for low income countries, but for a global advance in the quality of public health. Well-designed quantitative and qualitative studies combining pharmacoepidemiology, psychology, and neuroscience principles could be carried out.

In fact, advertising professionals have used emotions to influence decisions for many decades now. Why shouldn't health authorities, policy makers, and continuing medical education professionals benefit from that knowledge and even improve it? It's time to begin to gather data from well-designed field studies, and perhaps this could be an opportunity to kill two birds with one stone: to improve the way that medicines are used (and thus, improve health care quality), and to ease the effects of the present deep economical crisis in health systems, which is associated with the consequences of the growth of high-priced new biological products—a heavy burden in terms of medicine expenditures in most countries.

Conflicts of interest None

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