

Democratization of medical knowledge and its challenges

A democratização do conhecimento médico e seus desafios

Up to the 1980's, a professional to be updated and informed about the main advances in Medicine is generally expected to travel abroad, to attend congresses or do his training in renowned hospitals. Thus, the few doctors who were available and could afford this investment, usually became notable nationwide in subspecialties when they were back and could choose between transmitting their knowledge to their colleagues or keeping it only to their practice.

What was really shown in national scientific events were complex presentations which did not meet the objective as a whole, or better, did not transmit knowledge and make other professionals capable of doing better in their career. Even in teaching hospitals, what happened was that, though teaching was predominant, not all the information and the update facts were given. Medical knowledge was restricted and, broadly, those who had it showed that they had erudition, but did not pass it on completely. One used to feel that that experience was what made the main professional difference⁽¹⁾.

The text books always were and will be important for the basic training of the doctor and the specialist. Nevertheless, progress in relation to diagnostic and therapeutic techniques causes the text books to be a limited source, because the period of time between writing and book publishing is relatively enormous, if compared to the pace at which Medicine advances. The three years of the Internship Program usually offer an adequate generalist background to the resident and a good knowledge of subspecialty to the trainees. That is to say that professionals who are not linked to teaching institutions will soon be no more updated, in case they do not search for other sources of information. We estimate that in every five years, about 50% of the medical knowledge, especially in the diagnostic and therapeutic area, makes a new beginning. This is showed by the approximately 1,000 new drugs annually launched in the medical market.

Presently, what has changed the situation above, thanks to the professional in practice, is the great amount of scientific papers in electronic data banks. Researches published in scientific journals were always the main source of medical updating. However, before the internet became popular, the principal scientific journals were only available to those who signed them or used the institutional libraries. Today, it is possible to access via internet at least the summary of any paper of the main journals in the world.

In the scientific setting, there is no information confinement. When an experiment is finished, the researchers urged in announcing their findings to the world and reinforcing their position as authority in the subject. There are many stimuli to keep this mentality, like vanity of reseaching groups, acquisition of resources in development companies for scientific papers and awards.

As follows, the Brazilian Ophthalmology Journal, founded in 1942 by Drs. Evaldo Campos, Jonas de Arruda and Oswaldo Barbosa, always contributed to the updating of the ophthalmology community, always exhibiting medical knowledge. As it was distributed at no cost to the members of the Brazilian Society of Ophthalmology, the libraries of the medical schools and, recently, to the members of the Brazilian Cataract and Refractive Surgery Societies, that Journal showed to be traditionally an important source of updated information. In 2007, thanks to the devotion of the Publisher Riutiro Yamani, the Journal was indexed on the SciELO electronic platform (Scientific Electronic Library on Line) and made its content available in complete text and at no cost also to Latin America. This Journal plays a valuable educational contribution and encourages national and foreign authors to publish papers of good quality in its editions. Knowledge spreading extended at no cost is a constant reivindication from researchers and scholars and which has been respected by the main national scientific journals. Also in 2007, the Journal had another important indexation as well, on *ISI - Thomson Reuters* database, allowing the disclosure of its content throughout the world⁽²⁻⁴⁾.

Continuing medical updating is important for the good quality and safety of the practice in Medicine. With the advent of the internet, we notice that information and updating are more easily available to the doctors and also to the patients, who could access it anytime. As a result, the doctor many times gets a patient who has already studied his diagnosis on "Dr. Google" and other sites that report information. And this patient seems to know more about the

subject than the professional who happens not to be updated. This is another stimulus for the doctor to constantly be learning more.

There is no doubt that the most practical, less expensive, most accessible and more trustful way of getting medical information is through literature review on electronic data banks. Nevertheless, to make this information popular, two pre-requisites are necessary: 1- to get into the habit of looking up into scientific journals answers for everyday practice doubts; and 2- to learn how to critically evaluate scientific papers ⁽⁵⁾.

Although journals with a high “impact factor” have their papers proofread by competent revisers (pair revision), there is no guarantee that all the papers published in them are of good quality. In addition, it is possible to find good quality published papers in journals of low “impact factor”. Accordingly, the reader is expected to have a minimum knowledge to critically evaluate a scientific article, in order not to rest his clinical practice on information that does not represent a scientific truth ^(6,7).

It is essential to be aware that publications do not always express the scientific truth. There are levels of paper values. For instance, a retrospective paper is less trustful than a random clinical trial, that has, on the one hand, a scientific value lower than a meta-analysis, which is the type of publication closer to the scientific truth of that moment.

Only on *MEDLINE* database, about 700,000 new papers are annually added. It is this profusion of information that many times encourages young doctors to not only subspecialize but also overspecialize, thus restricting their practice considerably and focusing their knowledge on specific diseases. Yet even so, this option also brings negative consequences, as the difficulty in understanding a clinic problem in relation to human being as a whole and the extreme appreciation of less significant problems. That excessive appreciation also increases the cost in medicine, besides jeopardizing the individual practice of the professional, who necessarily had to be part of a multispecialized group or depend on colleagues’ referrals. There is space for this type of professional, though it is limited and instable. For example, a superspecialist in cataract surgery by phacoemulsification was certainly better paid 15 years ago than today. And within 15 years, will there still be surgery by phacoemulsification?

We believe that the most balanced and safety professional option is to do general Ophthalmology with subspecialty in a certain area. After graduation and internship, general knowledge could be recycled in books and congresses and subspecialty could be recycled mainly by means of scientific literature. The challenge, in this case, will be how to identify among so many published papers the liable information, which could be transferred to everyday practice.

Ideally, it should start from the medical community itself the desire to participate in trainings of critical analysis of the literature. Once there is a demand, scientific events will probably incorporate those subjects in their programme. The training makes the reader able to recognise the most liable paper designs and identify methodological errors that may influence the results and conclusions of the papers (biases). One of the most crucial parts of publication is the description of the methodology used for obtaining data. At this point, we should examine these following issues: a) how the sample was set up (identify possible selection bias); b) exposure to other factors, besides interest intervention (identify possible conduction bias); c) losses or exclusions of individuals included in the study (identify possible follow-up bias) or how the result is diagnosed (identify possible detection bias). Yet, it is not trustful to appraise only the summary or the conclusion of the article, if the methodology is not seen as adequate⁽⁸⁾.

In 2003, a disengagement occurred in the history of the Brazilian Ophthalmology Journal. At that time, the Editor was Dr. Paulo Augusto de Arruda Mello, who, on his own initiative, created pair revision for the submitted papers. This measure was crucial for the good quality of the papers published in the Brazilian Ophthalmology Journal, so the readers could access a scientific knowledge previously evaluated and approved by specialists in the subject. It clearly showed a commitment of the Journal to the quality of the information intended to convey to the readers^(9,10).

Currently, the Brazilian Ophthalmology Journal is indexed on *Scopus databases*, *ISI - Web of Knowledge (Thomson Reuters(R))*, *SciELO* and *LILACS*. In 2009, the Journal received its first Impact Factor (*Impact Factor of the Journal of Citation Reports – ISI Thomson*). The indexation and the Impact Factor happened to benefit the international exposure of the Journal, attracting foreign authors and encouraging national authors to publish papers of excellent quality. It was a victory to Brazilian Ophthalmology, which has now another scientific journal of great amplitude and better quality⁽¹¹⁾.

Journals of good quality, evaluated by the international measurement patterns and available on electronic databases, are important for the national scientific sovereignty. This is the guarantee that national important studies will be published and disclosed to the scientific world, with no interference of foreign lobby interests. As a result, one

can assure the international acknowledgment of Brazilian scientific findings. The two national scientific journals, Brazilian Ophthalmology Archives and the Brazilian Ophthalmology Journal, are critical to assure disclosure not only of papers of international level but also those of regional importance, reporting, thus, to the Brazilian medical community situations that are related to our real life^(6,7,12).

Bearing in mind the diligent work of the former Editor, Dr. Arlindo Portes, we can say that the Brazilian Ophthalmology Journal improved its frequency of publication, intensified pair revisions, refined the quality of its papers, digitized the editorial flow and started having an electronic version in English, in which translation is paid by the Journal itself, so the authors are not charged⁽¹³⁾.

To carry on the valuable work of our former Editors will be a hard task. Our action plan as a Editor of the Brazilian Ophthalmology Journal will be, together with an experienced team of Co-Editors, improve increasingly more the quality of the published papers, reduce even more the interval between the receiving and the publication of the papers and announce the Journal abroad, attracting thus other renowned authors. Also, encourage and teach young authors to do researches with an adequate methodology and guide readers to critical evaluation of scientific papers.

To fulfill that objective, we will help the authors, when revising the submitted papers, improve the methodology, having the editorial team to invest in promising subjects, and we will give immersion courses in scientific research in several regions of the country. Taking this challenge into account, we will get the valuable support of the Brazilian Ophthalmology Society, the Brazilian Society of Cataract and Refractive Surgery, our Co-Editors and Revisors, the managers João and Marcelo Diniz and primarily all Brazilian ophthalmologists and researchers.

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