The value of the critical analysis of the literature for continuing medical updating

O valor da análise crítica da literatura para a atualização médica continuada

Continuing medical updating is crucial for the safety and good quality of medical practice. Today, the less expensive, easy and trustful way of acquiring medical knowledge is through literature review in electronic data banks, which are available on the internet. Accordingly, a minimum knowledge on behalf of the reader is necessary to critically evaluate scientific articles and not to have his clinical practice based on information which cannot stand for the truth [1,2].

Although journals with a high "impact factor" submit the studies they receive to the analysis of competent reviewers (peer reviews), there is no guarantee that all articles published in these journals are of good quality and, in the same way, it is possible to have good studies published in journals of low "impact factor" [3-5]. It is also important to know that publications do not always accuretly express the scientific truth. There are levels of study values, for instance a retrospective study is less trustful than a randomized clinical trial, that has a lower scientific value than a meta-analysis, that, in other words, is the type of publication in which the results are closer to the scientific truth of that moment, because the way the hypothesis was tested is more precise and had, in theory, less influence of other factors which could deceive the data. Thus, we have to measure the value of the published information, considering the design of each study [6].

It is important to also consider the value of the article, which is the degree of conformity with truth. The External Value refers to the possibility of applying the results in different realities (generalization). For example, an article that identifies the barriers for access to cataract surgery in a public hospital of northeast Brazil may not be totally valid to the reality of southeast or to a private clinic where the difficulties of access are possibly others. The Internal Value indicates the level in which the results of the research reflect the truth, or better, how much we can trust on the data. The Internal Value is related to the employed methodology which allow us to measure the possibility of the results being biased.

Thus, the most important part of the publication that has to be carefully analysed is the description of the employed methodology for obtaining the data. It is on this item that one has to consider the issues which could deceive the results. Methodological errors are called Biases and their identification reflect how much one can trust the results of the study. The Bias can be understood as an error that does not take us to a true and biased conclusion and can also be random or systematic. In research, statistical tests detect the casualty action (random error), but not the systematic error (systematic distortion between the measure of a variable and its real value).

Random Bias represent, in general, individual features of the population they are studying, features that are not controlled by the researcher and which could influence the results of the survey. For example, the fact that not all diabetics with similar control of glycemia, will develop retinopathy at the same time, bacause there are inherent differences that may cause diseases among the population. The impact of these individual variations on the result of the study can be minimized by the adequate size of the sample and, mostly, deceive not only control group data but also the intervention group.

Systematic Bias are risky, because they can induce considerable errors. They are methodological errors related to technical errors of research, inducing a measurable uncertainty that ruins the value of the results. The ideal would be if researchers could eliminate all the Bias; if not possible, at least it would be crucial to minimize them. Below, some types of Systematic Bias will be described.

Sample Bias: sample is a subset of elements pertaining to a population. The information provided for a sample is later generalized. Sample Bias occurs when it does not represent the population. For instance, if the objective of the survey is to evaluate the degree of visual impairment by cataract in patients who look for treatment in São Paulo, it is not enough to evaluate only the individuals who look for a renowned public hospital but it is necessary to examine not only patients of the public health system but also those of the private system [7].

Selection Bias: occurs in situations where a studied group and the control group are not comparable. For example, when studying the results of monofocal intraocular lenses (IOLs) and the multifocal ones, a methodological error would be to give preference for younger patients to be part of the group receiving the intraocular multifocal lens. The reason is that, in theory, it would be possible that these people show other variables that could influence the results, as the ability of better respond to the satisfaction questionnaire. The Selection Bias probably is the most common error, which can be neutralized by randomization of the groups with masked allocation, that is to say, when the researcher makes sure that all selected subjects to participate in the study have exactly the same chance of taking part of each group. The author has to explain how the sampling was made up as well. But, even if the author "misleads" the editor, reporting that the study was randomized, the reader could protect himself by checking the features of each group, because variables like age, sex, race and schooling have to be similar for both groups in random studies.

Conduction Bias: occurs when the examiner treats the subjects of the study in an assimetrical way, so as to be exposed to other factors besides interest intervention. For instance, when the appraiser knows that he is measuring the participant's visual acuity,who was operated with a multifocal intraocular lens, he probably tends to encourage letter reading on Snellen table, pressing the subject to read the smaller letters. This does not happen with individuals of the control group. This error should be avoided with the standardization of the procedures and measurements of the study, besides "masking" the appraiser, so he does not know to what group the patients belong.

Loss of Follow-Up: in general, one does not bear loss or exclusion of individuals over 10%, once included in the study. In the case of evaluation of the intraocular lenses, the individuals who did not show for the follow-up were probably those who got better and who think it is no more necessary to come back to the hospital. Therefore, the study would reveal incidence of unreal insatisfaction.

Detection Bias: related to the evaluation of the denouement. For example, if the appraiser, who had used the Snellen test for evaluation, say that the visual acuity of the patients who had received aspheric intraocular lenses is similar to those who had received spheric ones. It is common sense that Snellen test is not adequate for this type of measurement, being necessary to carry out the exam with the test of contrast sensibility [8]. Another situation occurs when the subject of the study knows he has received placebo. In this case, it is likely that he would search in a disguised way for alternative forms of treatment, as those who know that had received the studied drug and are influenced by suggestion to think they are better (placebo effect). This error can be eliminated when "masking" the patients.

A study is considered masked when the appraiser does not know who is in each of the study group. Double-masked, if additionally the patient does not knows to what group he belongs. Triple-masked, if the person who had carried out the subject allocation in each group does not know who are the candidates that are allocating.

Confusing Bias: is when one does not distinguish the effect between two or more variables. For instance, when one evaluates fuel consumption of two cars and tests one of them on the road and the other in the city. In this case, we will have two variables influencing the result, the cars and the route. The same way, if an experienced surgeon operates only the multifocal intraocular lens group, we would be testing the intraocular lenses and the surgeon at the same time. The ideal is that the variable to be studied remain isolated, or better, being the only one influencing the result.

Therefore, mainly for continuing uptading purposes, it is risky to consider solely the title and the summary of the articles, without checking if the methodology is adequate. And this adequate methodology is ultimately the indication that one can believe in the results exhibited. All the researchers can make mistakes which can interfere in the result of the study. If the errors are systematic, they can contaminate the right course of the survey. To give more credibility to the study, the researcher should be attentive and not let that bias occur. Editors, reviewers and, principally, readers have to be attentive to the employed methodology in getting the results.

When a clinical research is idealized, it is necessary that a doubt should be elucidated. The answer to the doubt of the researcher, in general, is also what other professionals long for, in order to add information that can improve their practice. Yet, it is expected that the results achieved better reflect the truth for the reality of the moment [9].

We emphasize that it is risky to read only the conclusion of the articles, because it represents the personal interpretation of the results on behalf of the researcher. And the personal interpretation can be biased as well [10]. For example, estimating that the medium external temperature in São Paulo next winter would be 21 degrees Celsius, someone in Recife could interpret this datum as being cold, like someone from Curitiba could interpret it as being hot. The ideal is that the reader considers the results of the studies, according to his reason and outlook, for truth can be faced to each indvidual in a different way.

Carlos Drummond de Andrade thus described "truth" in his book The Body: "the door to truth was open, but only let half person enter each time. Therefore, it was not possible to reach truth, because the half person who entered had only brought the profile of half truth. And its second half also returned with half profile. And the half profiles did not coincide ....They drop the door! They got to the bright place where truth showed its magnificent fireworks. It was divided in different halves, one different from the other. They discussed which half was more lovely. None of the halves was totally lovely. And they missed choosing... Each one chose according to his caprice, his illusion, his miopa".

Volunteer Faculty, Post-doctorate degree at Postgraduate Program of Faculdade de Medicina da Universidade de São Paulo – USP – São Paulo, SP, Brazil.

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