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Editorial

After some decades using a standard design, the Revista Facultad de Ingeniería Journal's appearance has been improved, for both printed and digital versions. A new modernized logo is being released in the current issue, simplifying the name of the journal to a single term easily to pronounce: REDIN. The new layout includes a color triad in the front cover, an image on the book cover which, in some cases, may correspond to an image of one of the papers published in the issue (with the permission of the authors), and in some other cases may be an image designed only for the purpose of the cover. Moreover, on the front cover, the seal of the University of Antioquia is included and two prominent papers in the issue recommended by the editors are highlighted. The back cover preserves the content: the issue, the indexed bibliographic databases, and the bar code used in electronic publishing. After this issue, at the bottom of the first page of each article the Creative Commons Attribution copyright license icon  is embraced, in order to inform users and, at the same time, to protect the journal from legal implications in case of misuse by a user of the material published in the journal. As our readers can verify, the paper presentation style has a modernized format allowing readers to easily access the information using the numbering in all sections of the paper.

After this issue, the journal accepts again state-of-the-art papers; accordingly, instructions to authors interested in this text typology are available at the journal website. Regarding state-of-the-art publications, some aspects about the importance of literature review in research will be addressed.

Unquestionably, it is difficult to suggest a tentative date for the origin of research synthesis; perhaps, in the early history of mankind there was no need to synthesize what had previously occurred, in order to build up a knowledge base. Undoubtedly, the most cited in this area is "A Brief History of Research Synthesis" developed by three of the main proponents of research synthesis: Chalmers from clinical medicine, Hedges and Cooper from psychology and social politics, respectively. At the very beginning, the synthesis of research was developed in an exclusive number of disciplines, but it has been disseminated in almost every area of academic activity [1]. In 1753, James Lind, a Scottish naval surgeon who played a central role in the first randomized controlled trial, also fostered the importance of systematic methods for identifying, extracting and evaluating information from individual studies as a protection against biased interpretation of research; nonetheless, considering that period, it was a complete challenge to categorize and compile published and unpublished materials; after this first step, some developments in information retrieval and documentation contributed to the research synthesis.

On May 20th, 1747, Lind developed a procedure studying 12 patients with scurvy, dividing them into six pairs and implementing different treatments for each pair. Six days later, Lind said: "The result of all my experiments was that oranges and lemons were the most effective remedies for this distemper at the sea". Six years later, Lind, reporting a research on the nature, causes, and treatment of the disease, proposed the need to review the literature systematically and abandon "weaker evidence". Considering this standpoint, and as it was not easy to eradicate prejudices, it was mandatory to present a complete and impartial view of what had been published about scurvy following a literature review, which may provide clues about possible mistakes.

Similarly, Seventeenth-century astronomers are also important contributors of modern research synthesis; they found that the combination of data from similar studies introduces greater precision to their individual observations [2]. Correspondingly, the work by the statistician Karl Pearson, in a specific observation about the limitations of the evidence on inoculations against fever, identified the importance of relating multiple small studies in order to reach a conclusive view [3]. Collecting research evidence, discarding non-relevant information, synthesizing systematically significant findings is essentially the science of research synthesis.

The review papers have been frequently seen as a relatively poor contribution to original research articles; however, a good review can propose new ideas based on the analysis and synthesis of previous work, it can help build new theories from discussed evidence and propose new directions for future research. The literature review is essential to identify a research question, to write a proposal for a project to provide a context, to interpret and compare results, to assess the methods that are or not appropriate for a research and to prepare a publication [4]. A good literature review avoids the danger of reinventing the wheel, and even more critical, the risk of reinventing the flat tire!

In most situations, the best instrument for some decisions emerges from a systematic review of all the evidence reported. It is argued that reviewing following this strategy is a search for the whole truth, and not just a part of it; consequently, it is "a fundamentally scientific activity" [5]. A good literature review can provide an estimation of the need for intervention in a specific topic of study; it gives an idea of the available evidence and the quality of the studies. Finally, another good reason for the literature review is to determine whether the findings are consistent with multiple studies and to identify the strengths and weaknesses based on evidence.

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