CHAPTER 154

The importance of digital methodology for training medicine academics

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ABSTRACT
Different from the old Flexnerian Clinic model, currently, the Expanded Clinic model is welfarism and based on the Medicine National Curriculum Guidelines, which aim at restructuring and adapting medical curriculum as a way of guaranteeing proper care according to the needs of the served population, as well as making use of methodologies that facilitate the active participation of the academic. The digital methodology is an example of an active instrument and facilitator in the dissemination of knowledge and learning. Thus, this study aimed to analyze the impact that the use of this tool can have on the academic training process, taking into account the different results found in digital searches on common medical topics, such as Systemic Arterial Hypertension, Diabetes Mellitus, and Dyslipidemia. For this, we use the online search platforms Google, Google Scholar, Scielo, and Medical Guidelines. The results found, showed that the search for academic articles was more reliable in the last two options, while in the Google and Google Scholar platforms the variety of products obtained was, for the most part, unsatisfactory for the medical-academic level.

Keywords: Methodology, Curriculum Guidelines, Medicine, Expanded Clinic.

1 INTRODUCTION

In 1910, health care began to follow the Flexnerian model, based on a care pattern and hospital-centered care. Later, in 2001, with the evolution of public health and greater accessibility to higher education, there was a reformulation of the National Curriculum Guidelines for the medical course. This change aimed to establish common skills to all health courses, especially in the medical field. With this, new guidelines were published in 2014, emphasizing an improvement in the training of generalist

physicians, in addition to enhancing general, critical-reflexive, and ethical skills, as a way to ensure means for promotion, prevention, and rehabilitation in health, always respecting the patient's right to citizenship and dignity (MEIRELES; FERNANDES; SILVA, 2019).

Besides the change in the theoretical model, the technological advances started in the 20th century provided structural changes in teaching institutions and in the medical faculty, through the association between the Ministries of Education and Health of Brazil, which resulted in the creation of the Incentive Program for Curricular Changes in Medicine and the National Program for the Reorientation of Professional Training in Health, such changes reflected directly on the teaching and learning process (JUNIOR; COSTA; ARRUDA, 2021; MACHADO; OLIVEIRA; MALVEZZZI, 2021).

The new methodologies in medicine seek the development of autonomy in education, having as a pillar the strategy of action-reflection-action, which in turn encourages the student to have an active posture and critical analysis of reality during their academic training (CHIARELLA *et al.,* 2015). In parallel to these changes occurring in the educational model, university institutions tend to insert the digital medium as a way to facilitate teaching. Thus, with the curricular bases that propose a teaching environment based on active methodologies are effectively consolidated in academia, by encouraging digital research focused on the search for learning and problem solving (JUNIOR *et al.*, 2020).

On the other hand, there are still obstacles in relation to the incentive and active search for knowledge and improvement of skills by health area students. Thus, it is necessary that there is a faculty able to encourage and properly guide students about the importance of scientific basis, in addition to the correct way to access it (PORTELA, 2014; ARAGÃO; ROSSI; CASIRAGHI, 2018). It is necessary that future health professionals leave college understanding and experiencing the practice of medical science, so that they can apply assertive protocols that ensure satisfactory results with the patient (FARIA; LIMA; FILHO, 2021). For, according to the Code of Medical Ethics (2018, p. 179), it is the physician's role to strive to improve the standard of medical service and to assume their responsibilities in relation to public health.

Thus, this study aims to analyze the forms of research available in the digital environment, and to promote an analysis of the impact that such a method has on the medical education process.

2 MATERIAL AND METHODS

This is a study with the objective of establishing the understanding and development of reflexive and critical reasoning of medical students in relation to research results related to medical science and national education guidelines, as well as obtaining knowledge in the proper use of search engines.

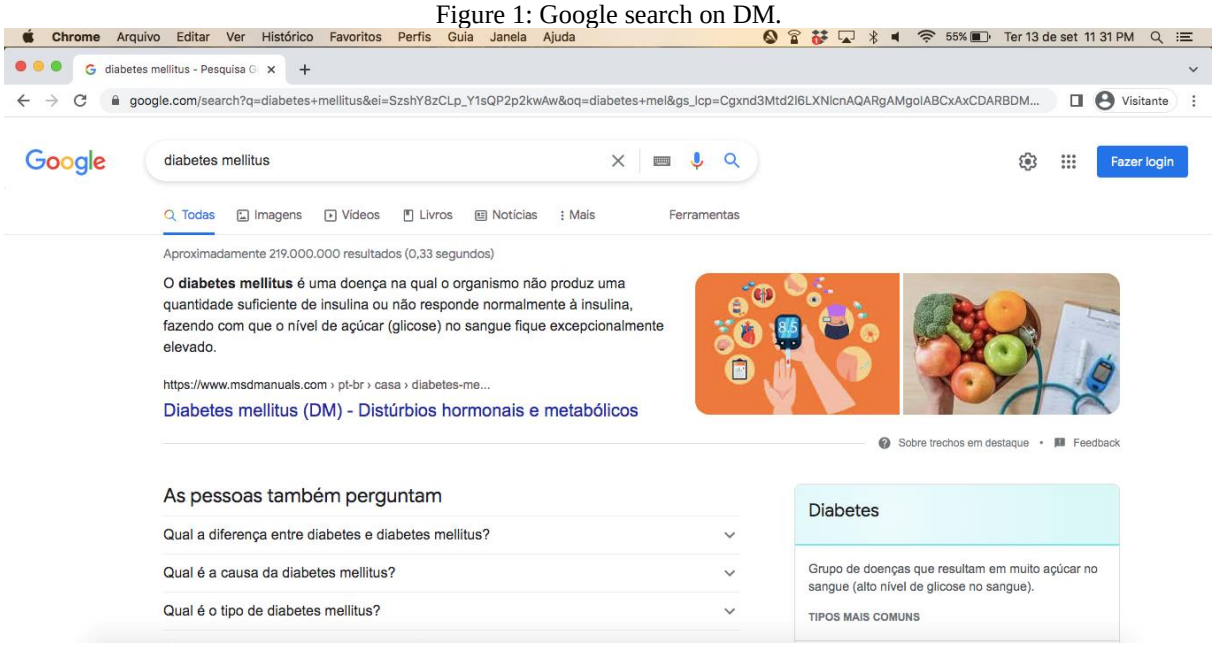
The searches were conducted through a computer with broadband internet access, using Chrome as web browser and the tool for reading digital documents in PDF (*portable document format*). The information was collected through a browser search using three themes of medical relevance in Primary Health Care, namely: Diabetes Mellitus (DM); Systemic Arterial Hypertension (SAH) and Dyslipidemia.

In addition, screenshots (images/print) of the different search methods were taken of the subjects searched in September 2022, with the objective of describing how the means of search can directly interfere in the education of medical students. Since it is public domain data with unrestricted access, no analysis by an ethics committee was requested.

3 RESULTS AND DISCUSSION

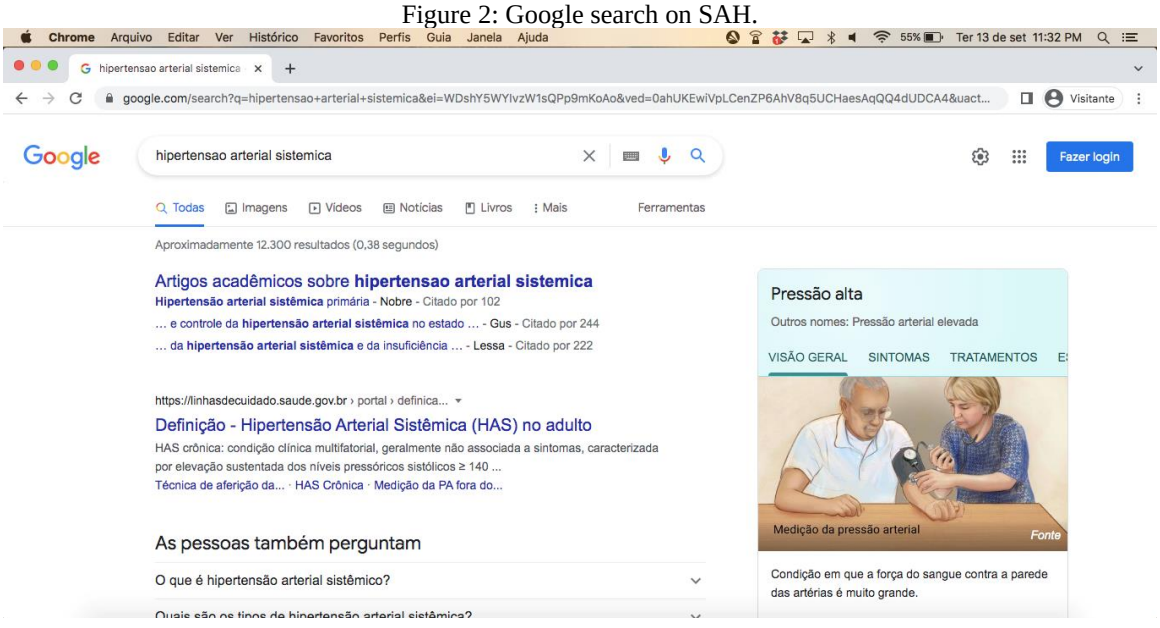
To obtain the results, the first step was to simulate a search on Google about the diseases: DM, SAH, and dyslipidemia, which are the most recurrent subjects in a Primary Care office routine and that are probably the most accessed by medical students (Figure 1, 2, and 3, respectively).

Figure 1: Google search on DM.



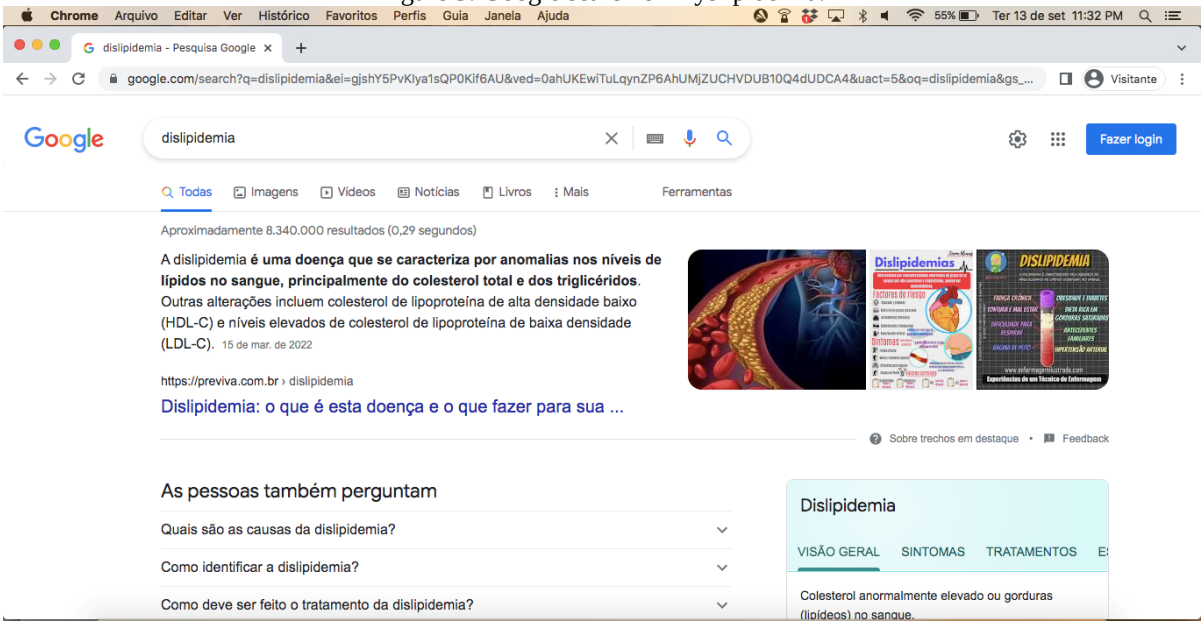
Source: Page print (author's collection).

Figure 2: Google search on SAH.



Source: Page print (author's collection).

Figure 3: Google search on Dyslipidemia.



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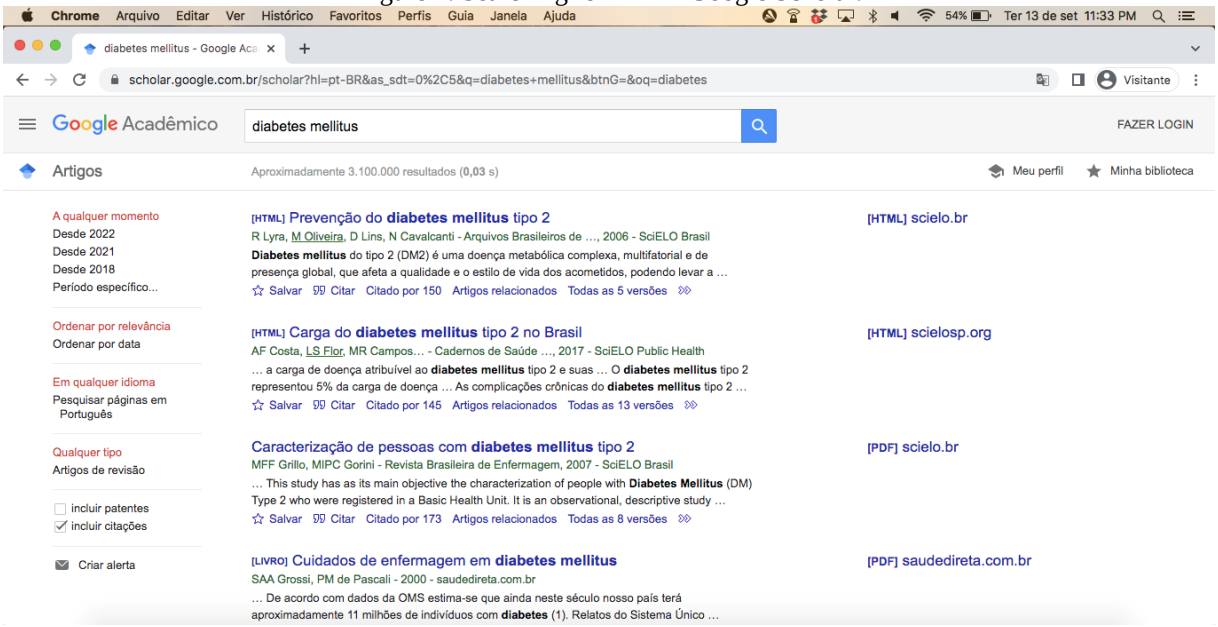
Strategies such as Google *AdSense*, *an* advertising service offered by Google and used by digital content producers, make it possible to individualize advertisements from the user's consumer profile which, in turn, is identified through statistical data analysis such as BigData (FAGUNDES *et al.*, 2018). It is known that the search for a content in databases is complex, and therefore, knowledge on the part of the faculty member is necessary for the proper use of search algorithms, classification of hypertexts and other documents accessible and available on the *Web*. Thus, it is of extreme importance that medical students have safe, evidence-based content, and for this, it is necessary that their research be based on qualitative content through the use of appropriate filters in their searches.

Quick access, through keywords on Google, can bring inappropriate and influential content to the student in academic training. It is remarkable the variety and difference of information available on the same subjects DM, SAH, and Dyslipidemia. Such a situation can compromise the construction of technical and scientific knowledge of a medical student who needs valid information based on national guidelines.

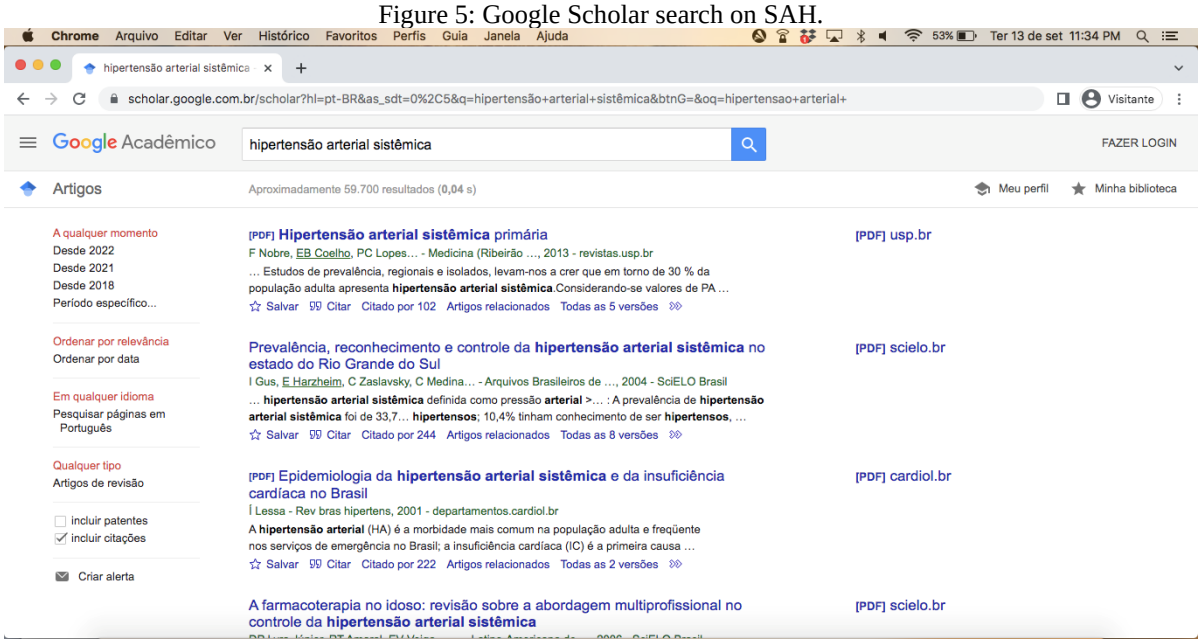
Google Scholar, on the other hand, can lead the learner to have a misconception that they will be able to filter more reliable results, as illustrated in Figures 4, 5 and 6.

Figure 4: Searching for DM in Google Scholar.



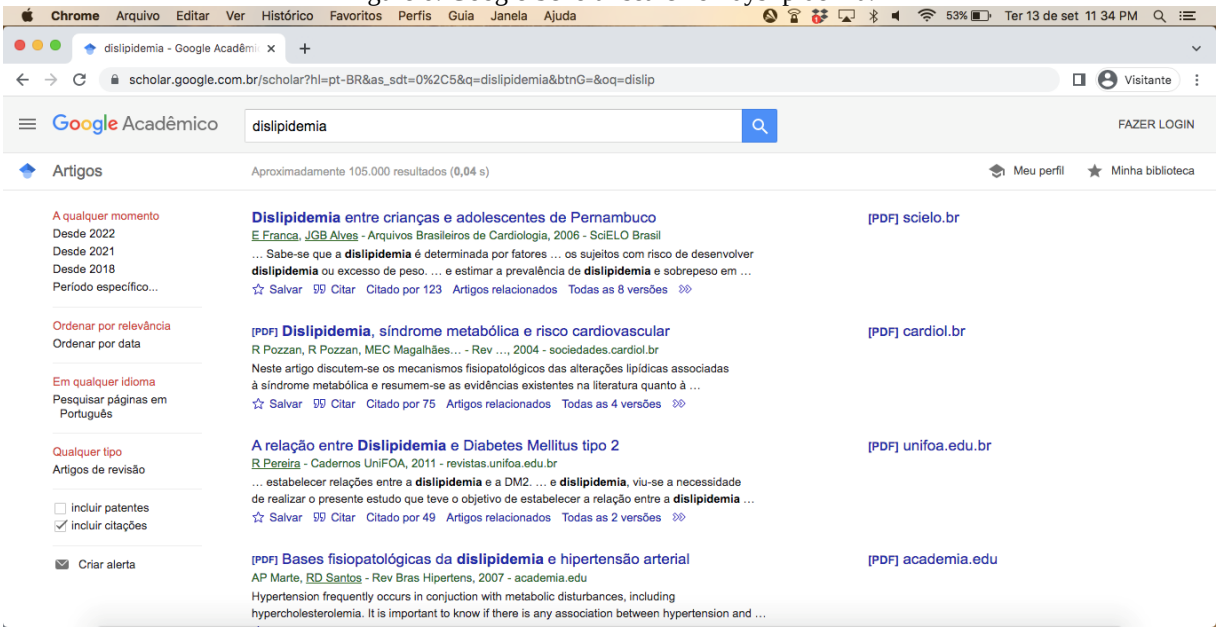
Source: Page print (author's collection).

Figure 5: Google Scholar search on SAH.



Source: Page print (author's collection).

Figure 6: Google Scholar search on dyslipidemia.

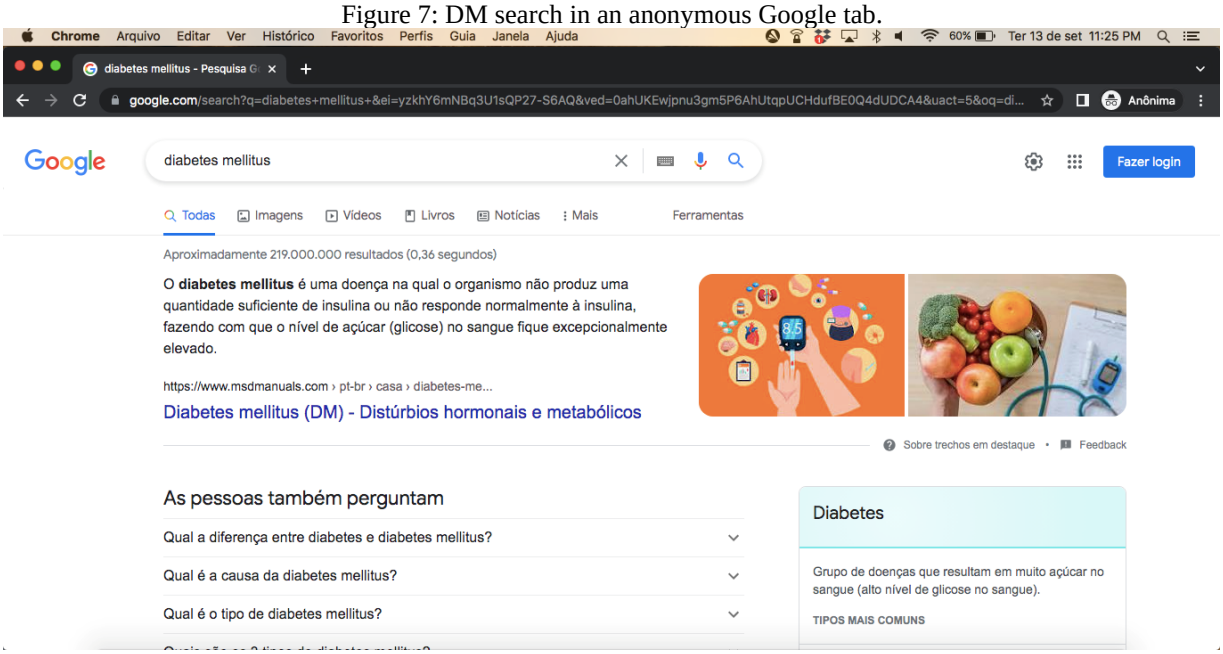


Source: Page print (author's collection).

Regarding the search for information through the Google Scholar platform, it is possible to find relevant content, however, questionable for the medical field, such as the association of outdated and inconsistent public literature with current guidelines.

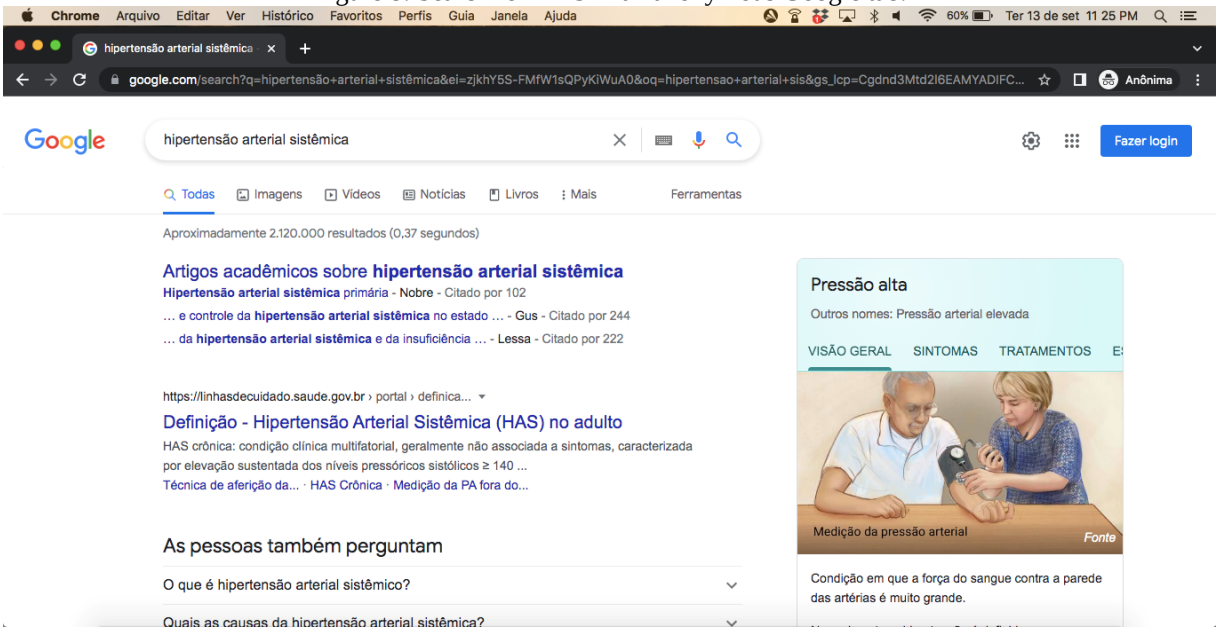
The search for content through the anonymous guide by Google, Figures 7, 8 and 9, may help to reduce the vitiation of the results presented, which occurs through the *Internet Protocol* (IP) of the computer. However, even with the use of the anonymous guide, the results obtained are still suspect for use at the medical-academic level, because there is insufficient technical information from specific areas of health, such as: pathophysiology of the disease and management options based on medical evidence.

Figure 7: DM search in an anonymous Google tab.



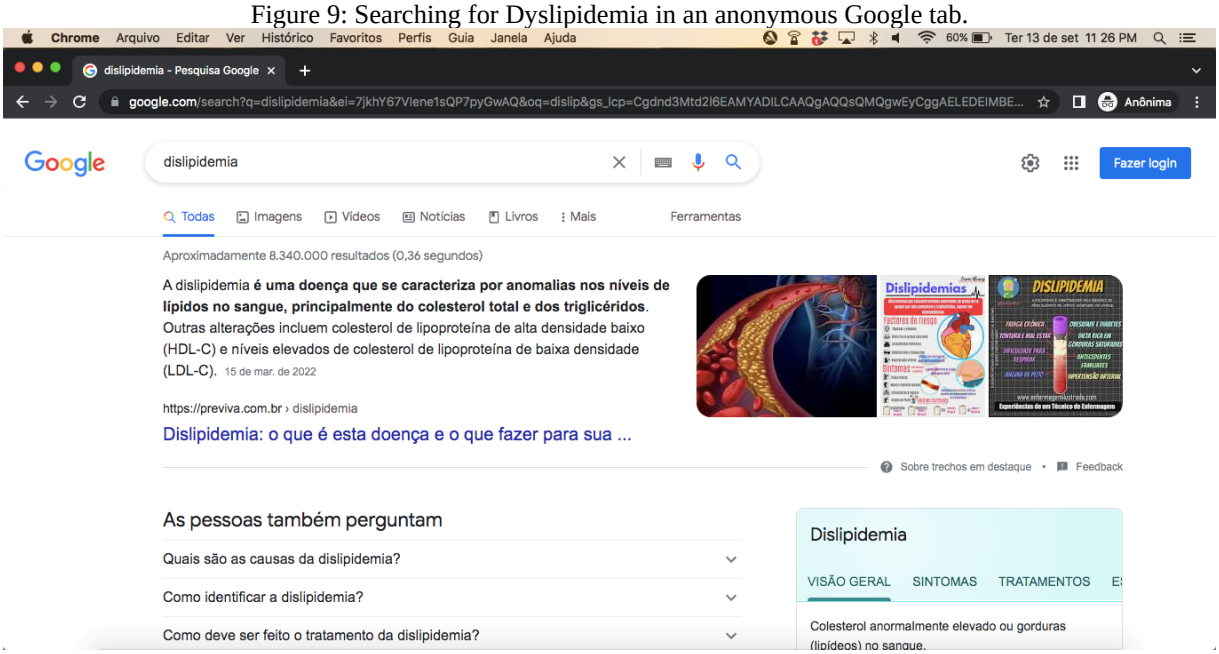
Source: Page print (author's collection).

Figure 8: Search for HAS in an anonymous Google tab.



Source: Page print (author's collection)

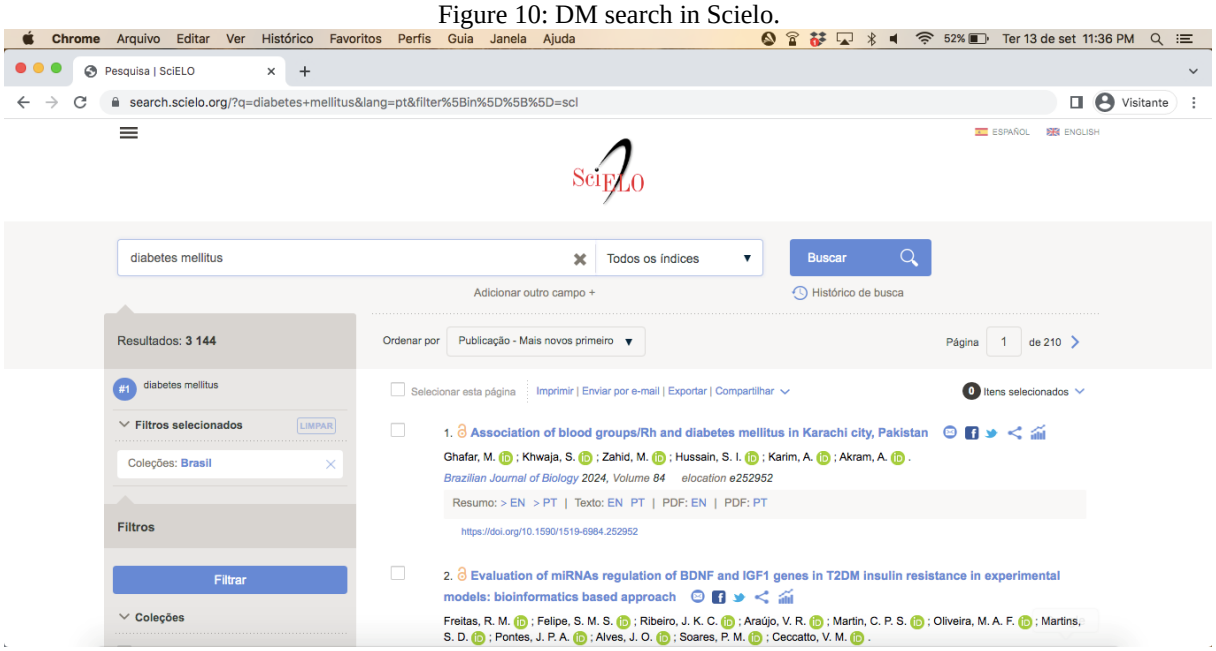
Figure 9: Searching for Dyslipidemia in an anonymous Google tab.



Source: Page print (author's collection).

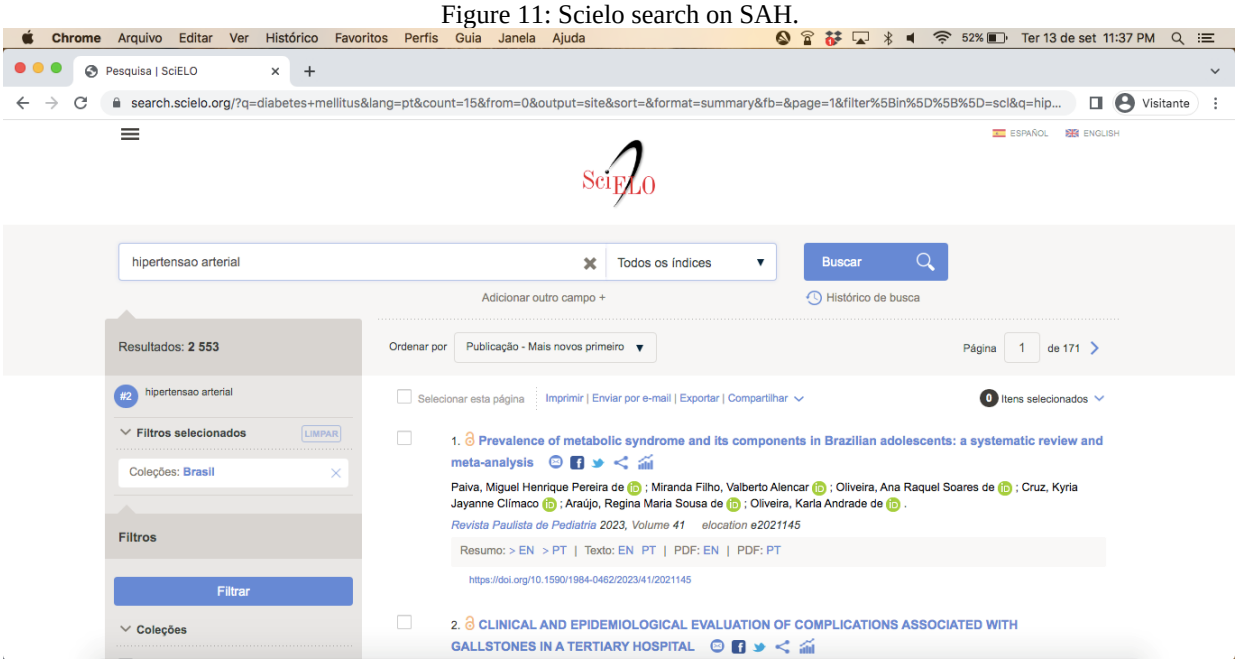
On the other hand, the search for content on scientific platforms such as Portal de Periódicos da Capes (CAPES), *Scientific Eletronic Library Online (*Scielo), *Medical Literature Analysis and Retrieval System Online* (MedLine), among others, gives the academic a higher level of confidence and safety of the information obtained regarding the health area. In this study, Figures 10, 11 and 12 show a simulation of searches on the Scielo platform.

Figure 10: DM search in Scielo.



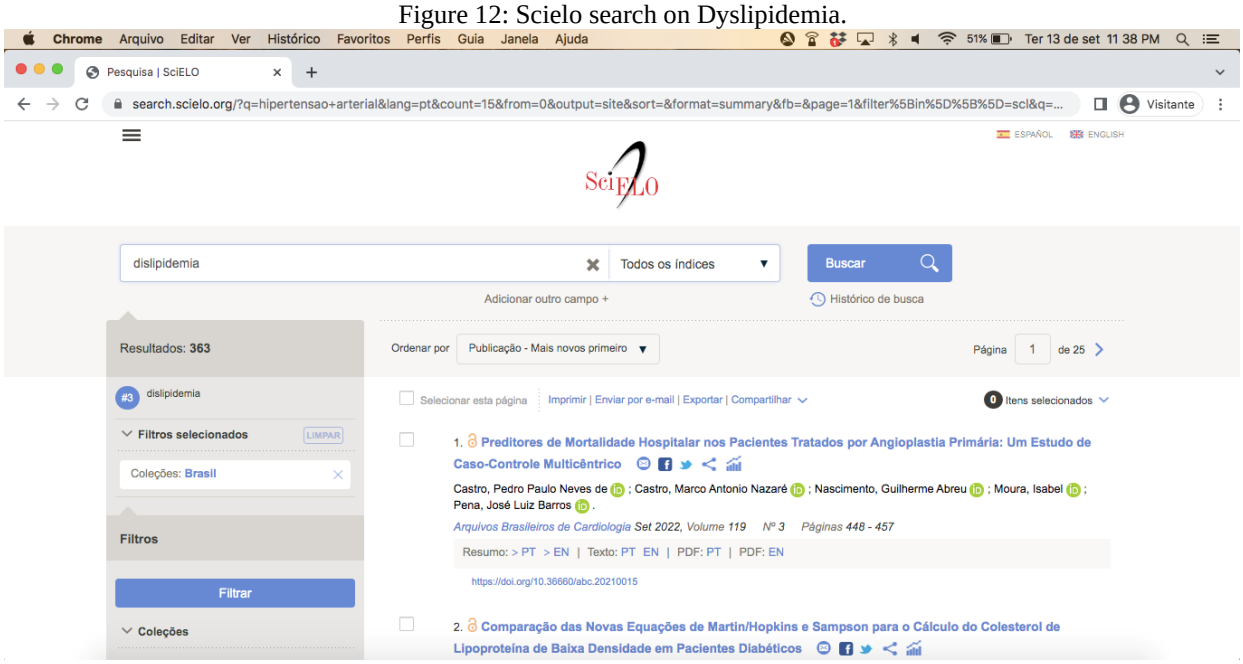
Source: Page print (author's collection).

Figure 11: Scielo search on SAH.



Source: Page print (author's collection).

Figure 12: Scielo search on Dyslipidemia.



Source: Page print (author's collection).

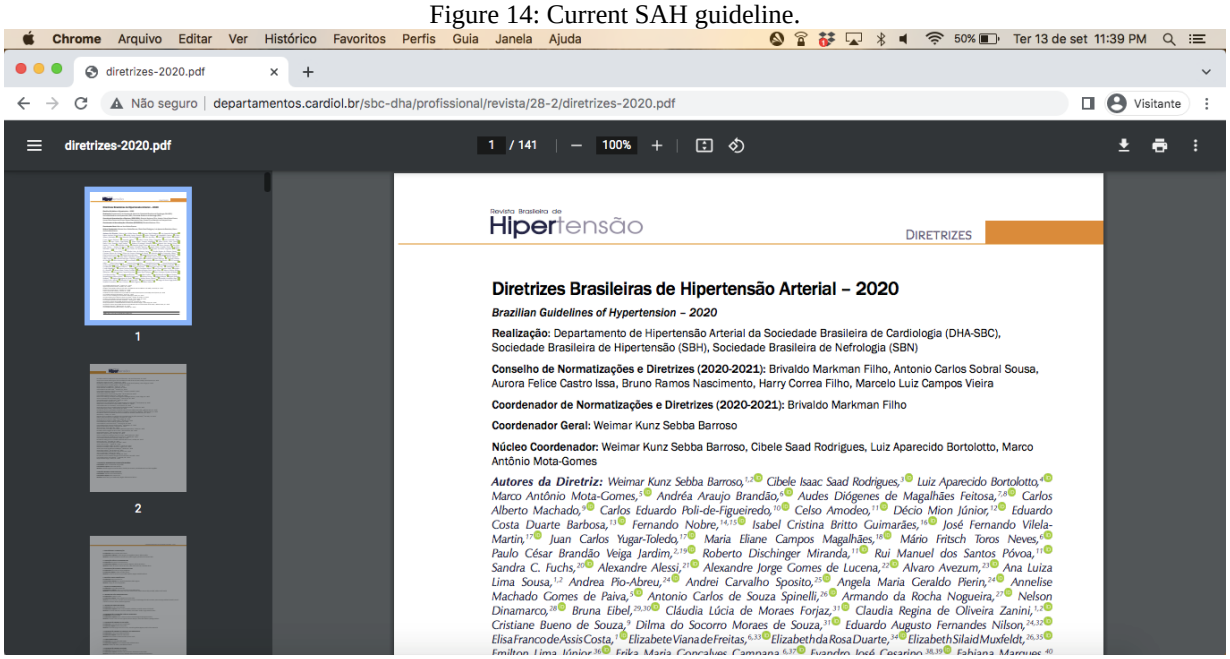
According to the results obtained, we can state that the Scielo platform enabled the medical student to perform a broad search with more reliable content, since he had access to recent evidence-based scientific articles.

In addition, a search for the updated guidelines on the topics DM, SAH and Dyslipidemia, raised in this study, Figures 13, 14 and 15, was also conducted.

Figure 13: Current DM guideline.

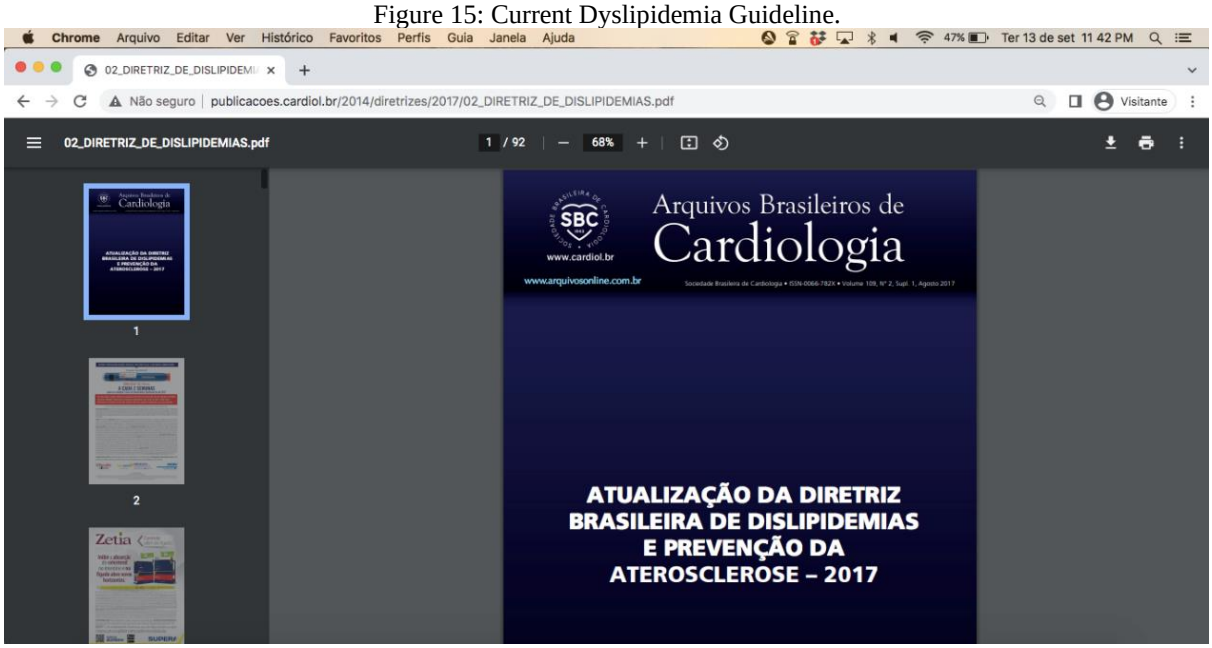
Source: Page print (author's collection).

Figure 14: Current SAH guideline.



Source: Page print (author's collection).

Figure 15: Current Dyslipidemia Guideline.



Source: Page print (author's collection).

To ensure greater reliability in clinical protocols, our country has specific national guidelines for various diseases, including guidelines for DM, SAH, and Dyslipidemia, which are used by health professionals and should also be used by students in order to obtain an updated and reliable theoretical and practical foundation. Such practice helps in the standardization of diagnoses, management, and treatment of diseases, besides minimizing possible medical errors.

Digital education is defined as the insertion and use of technology in teaching methods in addition to obtaining learning strategies within an extensive teaching method. However, the training process may be impaired in cases of an inapplicable and inadequate methodology by the teaching professional (GOMES *et*

al., 2021). The grid of a medical course, according to the curriculum guidelines, should contain methodologies that encompass the active participation of the student, consolidating the construction of knowledge in the three spheres that sustain a university: teaching, research and extension (BRASIL, 2014).

It is noted that the academics have fears and insecurities regarding their training and unpreparedness to deal with the access to search for information (GOMES *et al.*, 2021). In this sense, universities have a crucial role, intervening through the provision of continuous training programs, technical-pedagogical team, guidelines on management activities in addition to an effective training to teachers, in order to contribute to the learning of the search for information in databases with reliable content, providing the consolidation of knowledge (MORAN, 2014).

Thorough investigation of Clinical Practice Guidelines is an indispensable practice for the application of evidence-based medicine in the care of the life-threatening or victimized patient (CARAPEBA *et al.*, 2019).

According to what was exposed above and taking into account the medical reality and its various areas, it is essential that medical students should be stimulated on how they should act and think in this context in which they are inserted, aiming to contribute and acquire new skills and develop professional practices, as well as combat discordant news of official information and misinformation. Moreover, health education requires means that defend the democratization of information and reliable and safe content (GOMES *et al.*, 2021).

4 CONCLUSION

From the above we can conclude that the digital methodology is essential for the development and training of physicians. However, this requires a correct understanding of how to conduct a search, so that the desired objectives are achieved in the final result, providing relevant, updated content, with credibility and consistent with the National Guidelines of Medicine.

Moreover, this form of active learning allows a transformative education in higher education institutions, since this model requires a faculty prepared to help students. This relationship promotes not only the transmission of technical content, but also the integration between teaching and practical health services, because in the future this quality training will be put into practice in the student's performance as a professional.

Thus, in this study, it was possible to conclude that the learning process based on digital methodology has different search mechanisms, and if the student does not have the proper guidance, it may end up harming the theoretical-practical process, leading to a deficit in academic training. Therefore, we reinforce the importance of updating concepts related to search methods among medical students, always prioritizing content based on evidence and that understands the National Curriculum Guidelines for Medicine.

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