

QUALITATIVE STUDY

Distance Education in Medical Ultrasound in Brazil

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ABSTRACT

Objective: This study aimed to assess whether Brazilian doctors demonstrate an interest in participating in ultrasound (US) distance courses.

Materials and methods: Focused directly on the theoretical part of the course, and estimating that the doctor already has prior knowledge of operating the machine, a closed questionnaire of 22 multiple choice questions was sent to Brazilian physicians by Internet.

Results: It was found that, among doctors who perform ultrasonography, 98.5% would like to do a training course, either in person or remotely, with 15.1% preferring distance courses. When the question was solely on performing ultrasound distance courses, 79.5% of respondents would like to complete a course administered in this manner.

Conclusion: This research demonstrated that there is great interest in medical ultrasonographic courses conducted remotely. This method could allow a more appropriate distribution of the schools in this area across the country, facilitating access to knowledge and professional development of physicians residing in remote areas.

Keywords: Distance education, Physician, Ultrasonography, Ultrasound education.

Abbreviations: AMB: Brazilian medical association, CFM: Federal council of medicine, DE: Distance education, CME: Continuing medical education, US: Ultrasound.

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INTRODUCTION

There are two principal motives that motivate physicians to participate in a course of continuous education in ultrasound (US): on one hand is the current and fast development of technology, and on the other hand is the inherent desire of physicians to continually self-improve.^{1,2} This imaging method shows a constant evolution, and its fundamental that doctors understand and know how to use this technology, especially when it has to do with the health of the population.

Due to its high mobility, low exam cost, accessibility, and the low space requirement for its execution, US is the imaging method most widely used in Brazil. However, it is not enough to have this technology if the physician who performs the examination is not properly trained. Ultrasound apparatus, in the hands of inexperienced or untrained doctors, can be very dangerous, resulting in misdiagnosis or even the growth of a significant disease. Therefore, there is a demand for continuing medical education (CME), where ultrasonography courses are offered to professionals.

Despite US being a predominantly practical examination, for which one must learn to handle the device, there is an extensive amount of theoretical content that the physician must learn, related to the organ diseases that are being evaluated.

It is understood that physicians are willing to enhance their knowledge with more training.³ Refresher courses are capable of transforming professional practices in all medical areas.^{1,4} In order to achieve this, educational intervention strategies should be firmly directed toward the daily work of these professionals.⁵⁻⁷

Through a systematic review of the topic, Cantillon and Jones⁵ reported a significant number of educational methods that improved not only the performance of physicians but also clinical outcomes. There are multiple factors that may influence the effectiveness of learning, such as prior experience and motivation^{2,8} as well as the reliability of the content.^{9,10}

Historically, in Brazil, the south and southeast are the central regions responsible for continuing education of physicians. However, as our country has large physical dimensions, most doctors are unable to follow the studies.¹¹

Distance education (DE) could help to solve this problem. Distance education is as old as the postal service, but it was with internet that it became more appealing as a means to promote continuing professional education, a necessity that emerged in the 90s.^{10,12} After the appearance of quality and accreditation programs, distance medical education has continued to gain more ground.^{1,2,4,10,13-22}

Distance learning has the potential to train a large number of people in a short space of time, without diminishing the quality of medical education.^{1,2,4,18-23} It encourages physicians to perform their professional development in an accessible and modern way.¹⁶

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Directing the focus on only the theoretical part of the course, assuming that the physician already has a prior knowledge in operating the device, this study aimed to assess whether Brazilian doctors demonstrate an interest in participating in ultrasound distance courses, an unusual training method.

MATERIALS AND METHODS

The population involved in this study was composed of doctors who perform diagnostic ultrasonographic examinations in Brazil. It is estimated that there are approximately 30,000 medical sonographers in the country.²⁴

A closed questionnaire, with 22 multiple-choice questions, was sent by email to approximately 5,000 physicians. The physician address database was based upon the members of the Brazilian Society of Ultrasonography (SBUS).

We received responses from 205 physicians who responded to the questionnaire in its entirety. The explanation for this small number of responses may have two causes: physicians do not like to 'waste time' answering questions, or they may have been afraid to open the email because they thought it was a spam or virus.

The research was performed in the period from August 1, 2013 to September 15, 2013. Institutional Review Boards (IRB) of the Brazilian Medical Association approved this study.

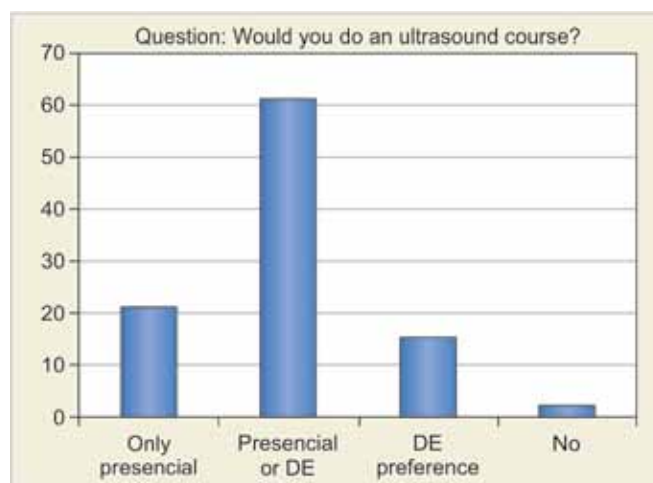
RESULTS

Over 98% of respondents would like to participate in an ultrasound course, mainly if it is practical and fast for them, either in person or remotely, demonstrating that physicians have a great interest in specialization courses. Seventy-six percent of physicians would not mind if the course were at a distance, showing DE has potential. Also, 15.1% of physicians would prefer remote classes (Graph 1).

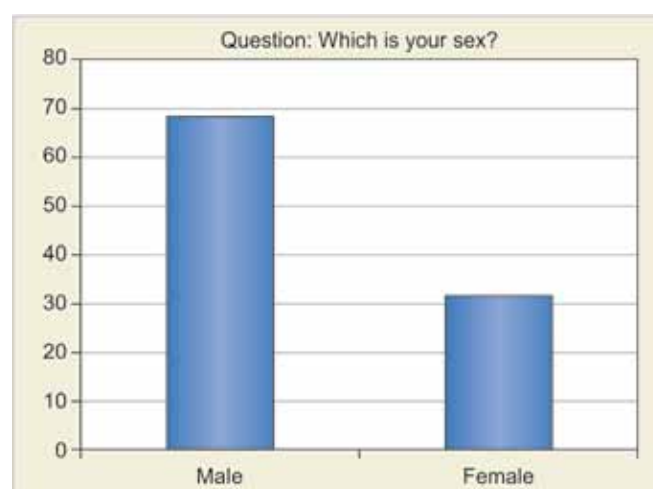
Regarding the profile of the respondents, the majority were men (68.2%) (Graph 2) between the ages of 30 and 40 (31%) (Graph 3).

The physicians surveyed try to update themselves in some way. Eighty-nine percent of them have taken refresher courses in the last 2 years (Graph 4). Most Brazilian ultrasonographers are learning through books (83.9%), classroom courses (78%), or congresses in this area (77%). Less common forms of continuing education include Internet sites (59.5%), specialized journals (54.6%), and home video like DVDs or CD-ROMs (51.7%) (Graph 5).

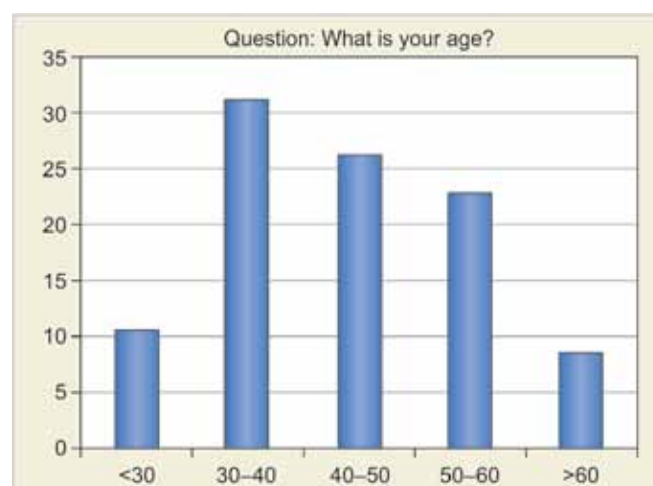
Physicians who do not usually participate in US courses say they do not do so because of the lack of schools close to them (47.8%) or due to a lack of time (63.9%). These reasons would be incentives for undertaking a



Graph 1: Interest in participating in an ultrasound course (DE: Distance education)

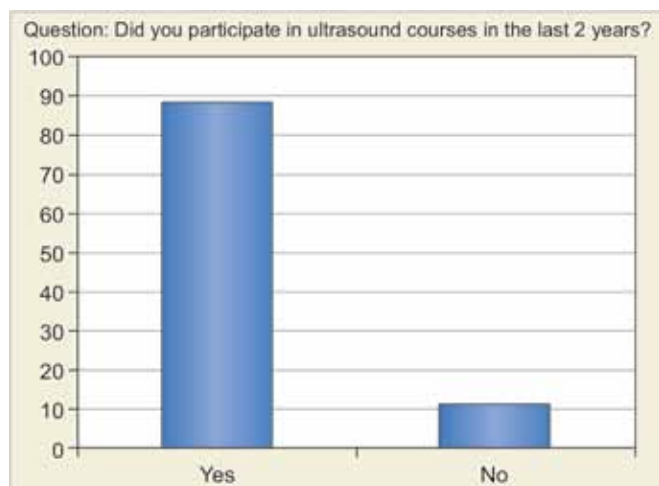


Graph 2: Distribution of gender

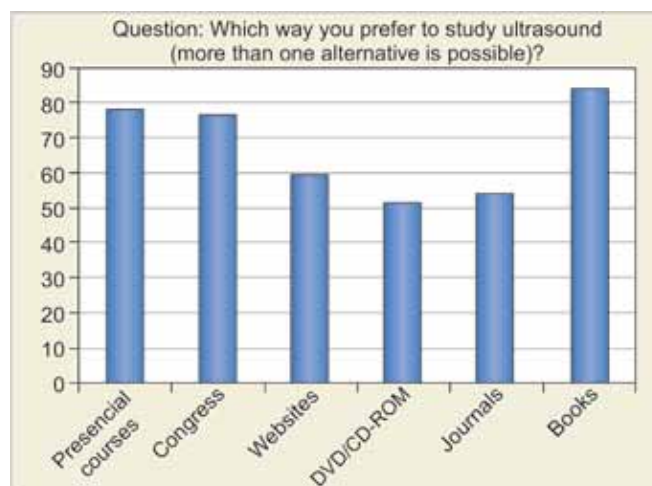


Graph 3: Age of the respondents

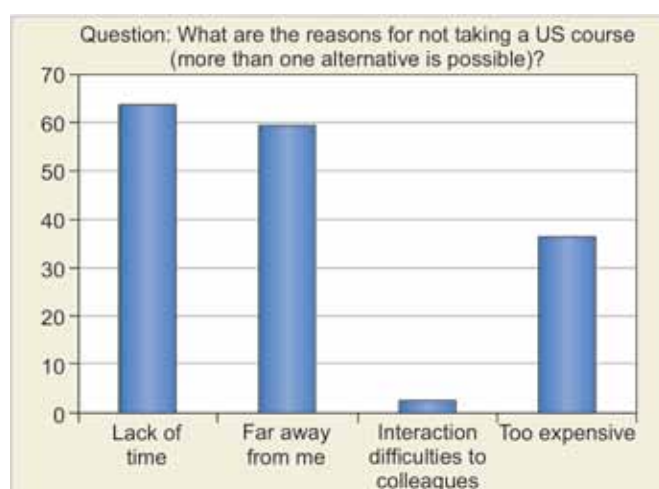
distance course (Graph 6). The responses obtained in the survey indicated that 46.3% have advanced computer knowledge and 51.2% have good knowledge, totaling 97.5% of those who can use a computer without needing help from others. This is essential for DE (Graph 7). It was



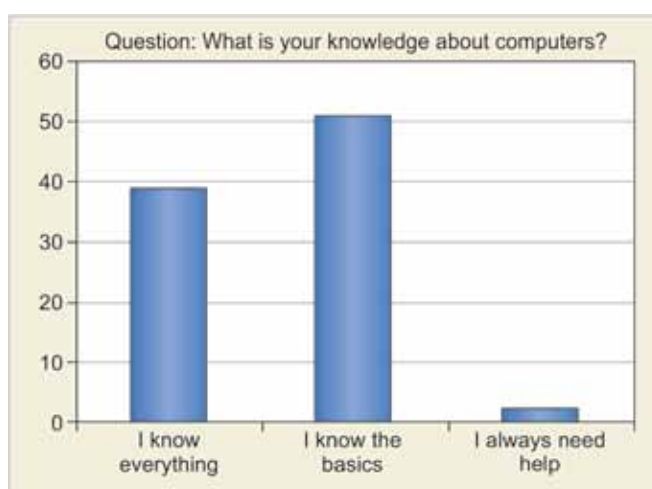
Graph 4: Participation in ultrasound courses in the last 2 years



Graph 5: Physicians' preferred ways of studying



Graph 6: Reasons for doctors not taking an ultrasound course (US: Ultrasound)



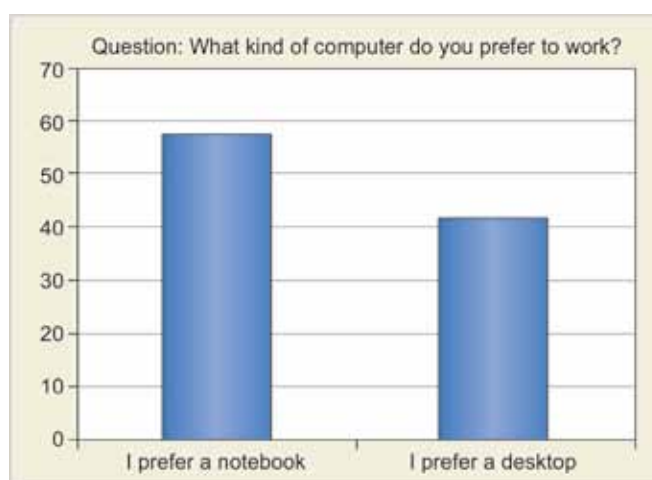
Graph 7: Acknowledgment about computers

also observed that 100% of physicians use computers, and most of them (58%) prefer a laptop computer. This facilitates the realization of DE, as they could study anywhere (Graph 8).

One of the most important reasons why students choose a distance learning course is the flexibility to study where they want, only requiring an Internet connection, which nowadays is easily achieved with wireless (WI-FI) systems or a telephone network operator plan.

When asked what would encourage them to take a distance US course, 75.6% said the greatest benefit was being able to study at any time, and 71.7% said the best thing is that they do not need leave their homes. The option to review the material at any time (63.9%), having a course more focused on their area of interest (61.9%), lower costs (57.5%), and the ability to study alone were other incentives that would lead the physicians to undertake a US distance course (Graph 9).

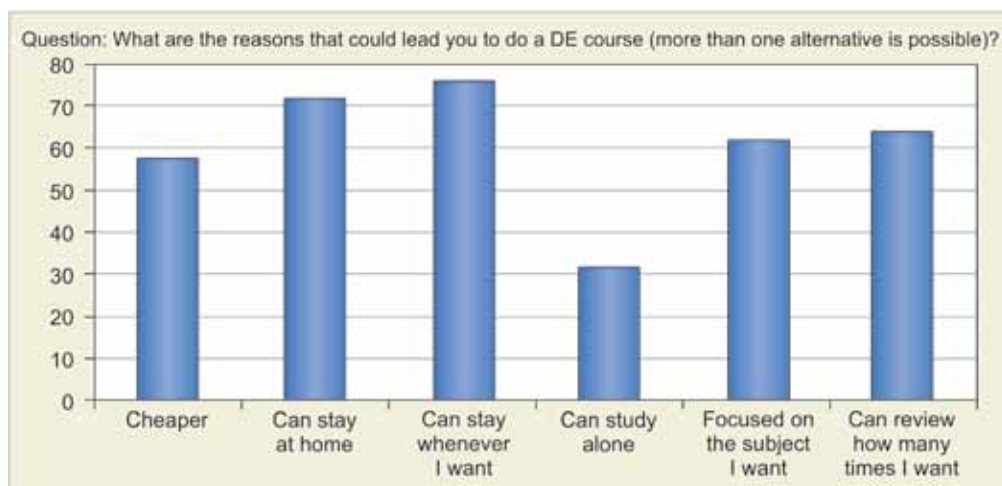
Almost 50% of the doctors said they had done a DE course before, and 84% liked it. The 39.5% had never done



Graph 8: Kinds of computers they prefer to work with

a DE course before but intend to. Only 12.6% do not have an interest in it (Graph 10).

In the remote learning platforms, 82.9% of the respondents answered that the most important are video classes, followed by the availability of study material



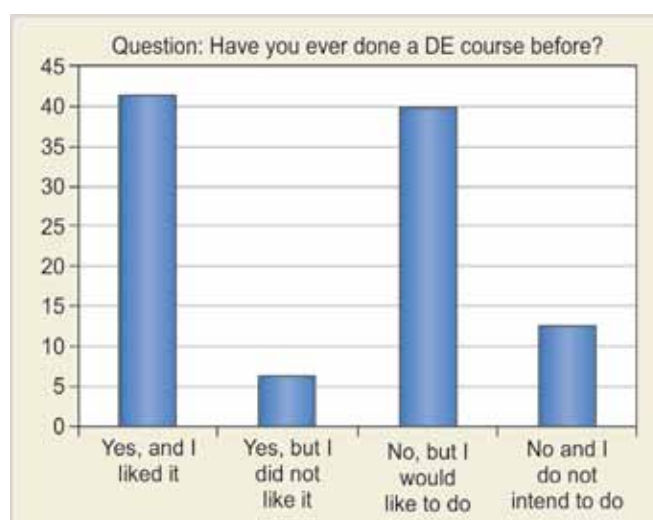
Graph 9: Reasons that would lead physicians to do a distance education course (DE: Distance education)

wherever they want (80%). The respondents gave little importance to whether the program was innovative in appearance (31.2%) or the availability of virtual people (avatars) to guide the study (21.4%), demonstrating that aspects of course presentation are not so important for students (Graph 11).

The physicians who had previous specialization in other areas besides ultrasound would seek more for gynecology/obstetrics courses (63.4%) if they should perform US distance learning, followed by internal medicine (58.5%) (Graph 12). There is a reason for this: seventy-five percent of the researched have a specialization, with G/O being most common (38%) (Graph 13). When only doctors without previous specialization were asked, internal medicine (16.9%), gynecology (16.0%), and small parts (15.2%) were taken as preferred (Graph 14).

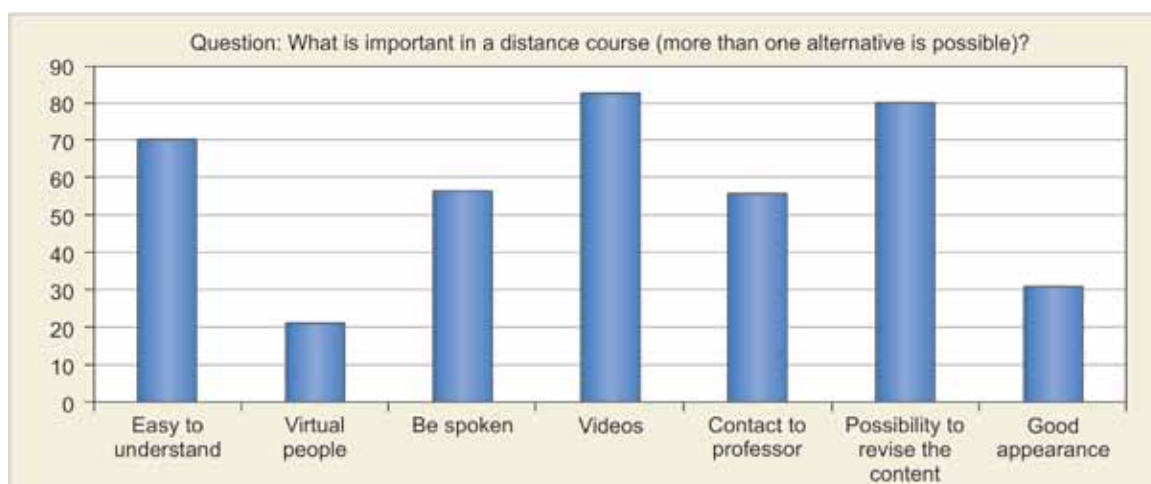
DISCUSSION

Ultrasound has become a major diagnostic tool in many parts of the world, with broad clinical applications. Today,

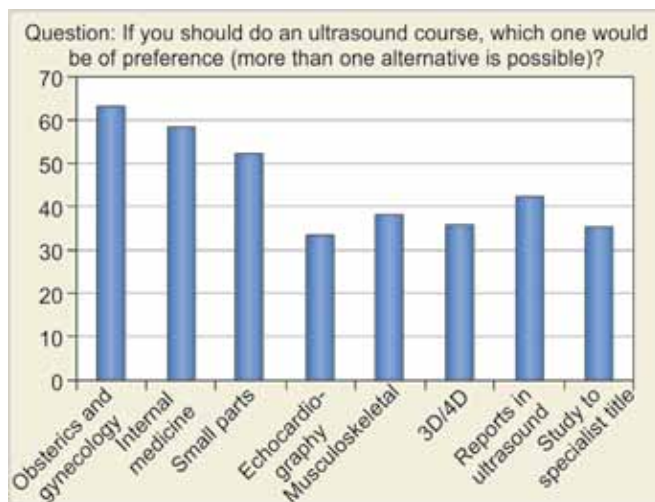


Graph 10: Previous experience in a distance education course (DE: Distance education)

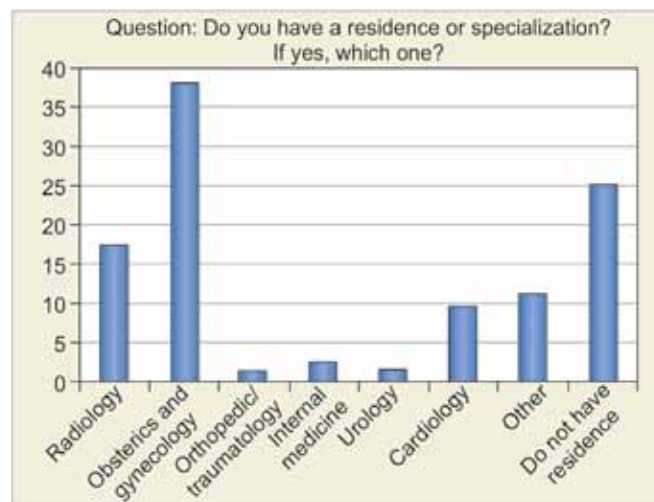
it constitutes the second most requested examination in Brazil, according to statistics from the Brazilian Institute of Geography and Statistics (IBGE),²⁵ below only regular blood tests.



Graph 11: The importance of a distance course for physicians



Graph 12: Question about the preference of ultrasound courses, including only doctors with previous specialization or residence



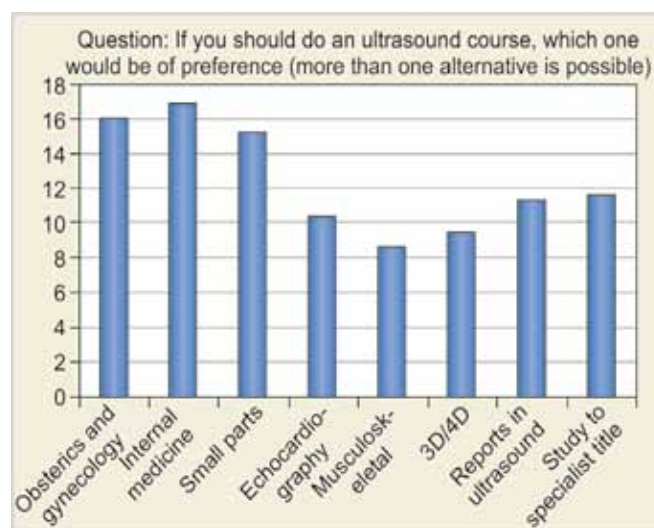
Graph 13: Percentage of doctors who have a specialization or residence and what residence they did

Ultrasonography is a specialty area in radiology. However, it is not purely an imaging method, as it requires the correlation of clinical data for the interpretation of images, as well as an interaction between physician and patient. It also implies knowledge of anatomy, physiology and pathology. In Brazil, only doctors can perform it and give technical advice. For its execution, it is necessary to prepare professionals in specific techniques and procedures. Therefore, the importance of the right training in this area and the existence of proper quality US schools are of concern.

To ensure that the population is attended in a competent manner, suitably qualified professionals, good ultrasonographic schools, and educational techniques should exist. Ultrasonography is undoubtedly one of the best results of scientific and technological development over the past three decades, but in order to take full advantage of this technology, we must have prepared physicians.

Distance education has been proposed as a learning alternative.²⁶ Ultrasonographers are highly receptive to this instructional system, as they insist (on interest and necessity) on continuing to refine or develop new skills. Distance learning is new to many of them, and they would not mind learning through this technique.^{18,21}

Many physicians have US schools close to their homes, but they are not always of quality. Lack of time is also a major inconvenience for them.^{21,27} As we saw in this research, the study preference of physicians is through books, with classroom courses and conferences in second place. Many classroom courses can be delivered at a distance if focused on the theoretical part. Thus, distance education emerges as an excellent educational opportunity for physicians who perform ultrasonography in Brazil,²⁸ increasing their knowledge and ability to perform a method that benefits thousands of people.



Graph 14: Question about preference of ultrasound courses, including only doctors without previous specialization or residence

However, for the distance learning method to be successful, it is necessary that ultrasound schools become specialized in it, as do the must-have qualified teachers and tutors and technological resources.¹³⁻¹⁵ To achieve this, schools need to know how to manage the courses that use this methodology, watching the policies and legislation regarding this type of education, as well the forms of student evaluation.¹⁷

It is known that this small sample does not represent all Brazilian physicians who perform ultrasonography, which can compromise the accuracy of the results. However, this research demonstrated the great interest in medical ultrasonographic courses administered remotely. This method could permit a more appropriate distribution of the schools across the country, facilitating access to knowledge and the professional development of physicians residing in remote areas.^{22,27,29}

In the future, a new complementary study could be performed, when ultrasonographic distance education will have become routine, and thus, we could verify the impact that this may have caused on the learning of these physicians.

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