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# Experiences and challenges of medical training during the COVID-19 pandemic

Experiencias y retos de la formación médica durante la pandemia del COVID-19

Experiências e desafios da formação médica durante a pandemia da COVID-19

## ABSTRACT

**Objective:** to report the experience and challenges of medical students in the first semester of medical training during the COVID-19 pandemic. **Method:** Report of experience and challenges of medical graduation during the pandemic of the new coronavirus in a private higher education institution, from March to July 2020. **Results:** The University Center (UNIVAG) established measures to face COVID-19, adopting Emergency Home Education. This experience demonstrated great adaptive capacity of those involved in the learning processes of theoretical content, as well as more creative attitudes of students and the inclusion of other active methodologies in the teaching plan of the Community Interaction Program in order to bring the student closer to reality. **Conclusion:** Given this scenario, adapting to the use of available technologies was a challenge, but essential to add knowledge to medical students and continue the school year.

**DESCRIPTORS:** Coronavirus infections; Education; Medicine.

## RESUMEN

**Objetivo:** reportar la experiencia y desafíos de los estudiantes de medicina en el primer semestre de formación médica durante la pandemia de COVID-19. **Método:** Informe de experiencia y desafíos de la graduación médica durante la pandemia del nuevo coronavirus en una institución privada de educación superior, de marzo a julio de 2020. **Resultados:** El Centro Universitario (UNIVAG) estableció medidas para enfrentar el COVID-19, adoptando la educación de emergencia en el hogar. Esta experiencia demostró una gran capacidad adaptativa de los involucrados en los procesos de aprendizaje de contenidos teóricos, así como actitudes más creativas de los estudiantes y la inclusión de otras metodologías activas en el plan docente del Programa de Interacción Comunitaria con el fin de acercar al estudiante a la realidad. **Conclusión:** Ante este escenario, adaptarse al uso de las tecnologías disponibles fue un desafío, pero fundamental para sumar conocimientos a los estudiantes de medicina y continuar el curso escolar.

**DESCRIPTORES:** Infecciones por coronavirus; Educación; Medicamento.

## RESUMO

**Objetivo:** relatar a experiência e os desafios dos estudantes de medicina do primeiro semestre da formação médica durante a pandemia da COVID-19. **Método:** Relato de experiência e desafios da graduação médica durante a pandemia do novo coronavírus em uma instituição de ensino superior privada, no período de março a julho de 2020. **Resultados:** O Centro Universitário (UNIVAG) estabeleceu medidas para o enfrentamento da COVID-19, adotando a Educação Domiciliar Emergencial. Essa experiência demonstrou grande capacidade adaptativa dos envolvidos nos processos de aprendizagem dos conteúdos teóricos, bem como atitudes mais criativas dos alunos e a inclusão de outras metodologias ativas no plano de ensino do Programa de Interação Comunitária a fim de aproximar o aluno da realidade. **Conclusão:** Diante deste cenário, a adaptação para a utilização de tecnologias disponíveis foi um desafio, porém essencial para agregar conhecimento aos graduandos de medicina e continuar o ano letivo.

**DESCRIPTORIOS:** Infecções por coronavírus; Educação; Medicina.

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**INTRODUCTION**

This experience report was produced in a pandemic context of COVID-19, as at the end of December 2019, in Wuhan, China, patients with viral pneumonia of unknown cause were reported. After the first cases, the pathogen was identified as a new type of Coronavirus, later called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The 2019 coronavirus-associated pathology has been described as COVID-19, an atypical SARS-type pneumonia. <sup>1</sup> On March 11, 2020, the World Health Organization (WHO) declared the COVID-19 pandemic. To date (July 31st, 2020), 17.296.303 cases of the disease have been reported, with a record of 673.290 deaths. <sup>2</sup>

In Brazil, the first confirmed cases were related to people with a recent history of travel to epidemic areas and/or who had contact with confirmed or suspected cases. The Ministry of Health, on March 13, 2020, verified the community transmission, adopting, therefore, measures of social distancing in order to mitigate the transmission of SARS-CoV-2 in the country. To date, Brazil has 2.610.102 confirmed cases and 91.263 deaths <sup>2</sup> The reality of the state of Mato Grosso is consistent with the current scenario of the pandemic, since it has a high rate of community transmissibility of the virus,

with a record of 48.854 confirmed cases and 1.752 deaths.

Delimiting the context of interest in this report, there is the city of Várzea Grande, where UNIVAG is located. The educational institution mentioned is a private university, with a pedagogical project for the medical science area anchored in the PBL method, acronym for Problem Based Learning, with the meaning of Problem Based Learning, an active methodology that encourages group participation and pro-activity of the members.

This city is in second place in the rank of municipalities with the highest number of cases in the state of Mato Grosso, with a lethality rate of 7,36%.<sup>3</sup> This shows the importance of the social distance measures adopted by the municipal administration, which culminated in the suspension of face-to-face classes. Inserted in this scenario, teachers and students face a new reality in medical education and training. For the maintenance and progression of the course, protocols for Emergency Home Education were adopted.

The Community Interaction Program (Programa de Interação Comunitária - PIC) consists of one of the five subjects proposed for the first semester of the UNIVAG medical course. It is through the PIC that academics are inserted in the daily life of the Family and Community Health Units, putting into practice their acquired theoretical

knowledge. However, due to the pandemic situation, new strategies had to be planned in order to achieve excellence in the discipline. Therefore, the objective of this study is to report the experience and challenges of medical students in the first semester of medical training during the COVID-19 pandemic in the context of the PIC.

**METODO**

It is an experience report of five medical students from the first semester and a nurse tutor about the experience of taking the Discipline of the Community Interaction Program of the medical course at a private institution during the pandemic period of COVID-19.

The private Higher Education Institution (HEI) is located in Várzea Grande, whose medical course uses the problem-based learning method (PBL).

Considering the emergence of the new coronavirus, academic activities were developed using especially the google meet tool, whose class meetings were online in live mode, maintaining the institution's method provided for in the political pedagogical project of the course.

To collect the information, the teaching plan of the first semester and observations of the experiences lived by the academics during the pandemic period from March to July 2020 were used.

Therefore, the data were analyzed following the following path:

- Therefore, the data were analyzed following the following path:
- Analysis of the situation of the pandemic of the new coronavirus and the changes of the face-to-face model for emergency home education.
- Experiences of medical training in the pandemic period of COVID-19.

Due to the methodological nature, it does not require the approval of the Research Ethics Committee (Comitê de Ética em Pesquisa - CEP) in accordance with resolution No. 510/2016 of the National Health Council (Conselho Nacional de Saúde - CNS), which provides for studies that will not be submitted to CEP.

## RESULT

PIC has as one of its main purposes the formation of graduates aware of the importance of Family and Community Medicine and Primary Care, in addition to providing greater understanding of the functioning of these areas within the scope of Health Care Networks (Redes de Atenção à Saúde - RAS), which comprise the Unified Health System (SUS).

To this end, it has theoretical and practical components that complement each other, helping the learning process, since practice enables the application of theory, contributing to its full understanding and also for the insertion of the student in the work environment of the health professional in community, through activities in Family Health Units (Unidade de Saúde da Família - USF) and their respective areas of coverage. In this way, the organization of PIC activities takes place by dividing the class into groups of generally five students, each of whom is supervised and guided by a tutor and allocated to a USF.

In this context, with the beginning of the school year, which occurred at the end of February, the first classes of this discipline normally followed the activities according to the stipulated calendar.

However, on March 17, the university

opted to suspend face-to-face classes, aiming at the safety of everyone in the midst of the COVID-19 pandemic. With this, the faculty responsible for the PIC developed new teaching strategies in the new context, looking for ways to transmit the necessary knowledge, in addition to promoting the engagement of students at a distance, aiming to avoid the delay in the academic calendar, continuing the classes.

In this sense, on April 17th, Emergency Home Education was implemented, which gave segment to theoretical content, through the use of digital videoconference platforms and Google Meet, keeping the student in relatively direct and instantaneous contact with the teacher so that they could, especially, clarify doubts during the content delivery. In this way, the execution of practical activities was relocated to the moment of returning to face-to-face classes.

To carry out the theoretical activities, together with the videoconference platforms, the Virtual Learning Environment (VLE/ UNIVAG) platform was used, this device was already included as support material for the subjects in which the students were enrolled, where information was posted referring to the academic calendar of each semester. However, with the paralysis of the face-to-face activities, VLE became of fundamental importance for the availability of didactic resources, mainly, for the provision of study materials related to each discipline, a fact evidenced by students and teachers.

With the return of theoretical activities through the online model, each group formed was presented to its respective preceptor. Since then, the virtual meetings continued to take place every Friday (except holidays), in the morning, through the GoogleMeets platform, with each group remaining in an exclusive call with their mentor.

Five theoretical discussions were held (one per meeting), two face-to-face conferences before the pandemic on the theme Unified Health System and Health Care Network and a videoconference on health indicators, the other topics were discussed as shown in table 1:

Considering the UNIVAG teaching system, based on the PBL method, students received the materials to be studied in advance, via VLE, and, at the time of the meeting, discussed about the subjects learned. In this perspective, the active methodology was of fundamental importance for the successful development of the students, since it stimulates the constant search for new ways to assimilate the content, in addition to reading the materials provided.

However, many times, only theoretical discussions were not enough for the proper understanding of the content, because even in the face-to-face modality there could be doubts, but that the process of active participation in the USF would be an important elucidative component.

At that time, the role of the tutor was fundamental, helping to establish knowledge

Table 1 – Theoretical contents of the first semester of the medical course in the discipline of the Community Interaction Program. Várzea Grande- MT, 2020.

Tema	Sistema Único de Saúde
Rede de Atenção a Saúde	1
Política Nacional de Atenção Básica	1
Atenção Domiciliar e ferramentas utilizadas	1
Processos de educação para atuação nos serviços de saúde	1
Assistência a saúde da pessoa indígena	1
Resíduos sólidos dos serviços de saúde	1
Indicadores de saúde	1
Total	1

Source: Medical students, 2020.

through examples, clarification of possible doubts, but mainly through the preparation and discussion of clinical case studies. The latter consisted of one of the strategies adopted by the discipline to make the content less abstract and improve the understanding of the topic addressed.

Thus, at the end of each theoretical discussion, the tutor presented a clinical case according to the theme of that day, then asked pertinent questions about the conduct to be taken according to what was observed. These questions followed in different ways, both in the form of open and objective questions, which ended up simulating the evaluation process that occurred at the end of the semester.

In addition to these methods, there were also times, via VLE, lists of exercises for fixing the learned content, the contents and activities planned for the semester.

The form of assessment adopted by the university during the pandemic consisted of formative and summative notes, both with equivalent weights and which together make up the semiannual note. The first consists of the individual assessment of the student as well as his interaction with the group during the development of theoretical discussions, while the second occurs through the realization of a test, which can follow the traditional physical or oral model.

Considering the parameters prior to the pandemic, the formative evaluation remained unchanged, since the sum required changes, since it was carried out in person, to the traditional model, with objective and discursive questions. Thus, the test was conducted using the oral model, using the videoconference platform, in which each student conducted it individually with their tutor, with open camera and audio and having the questions designed by that same instrument.

The content of the assessment was related to what was discussed during the theoretical discussions and conferences, which would be subject to a previous study so that on the day of the assessment, it could answer the open and objective questions that were projected, allowing the student to reflect on the content. It should be noted that the evalua-

tion process occurred without major difficulties, since it followed the model of the simulations carried out after the discussions.

Thus, the first semester of the course was concluded, but not without obstacles, such as problems with internet connection, which sometimes hindered the flow of communication, however, with the patience and understanding of all, this issue was overcome with peace of mind, not significantly impairing the learning.

Furthermore, the absence of practice also hampered the learning process, since learning about a profession without effective contact with it becomes, in fact, a more challenging experience. In addition, the incentive to scientific production, which usually occurs since the beginning of academic training, due to the construction of reports of experiences related to the practice at the USF, was compromised, since the vast majority of initiatives occurred in person, through meetings, debates and clarifications on thematic and confection.

On the other hand, one of the strategies adopted by the group that helped the dynamics of the discussions, was the exploration of the digital resources available for the preparation and presentation on the videoconference platform of abstracts, slides using power point or prezi, mind maps and images on the proposed themes, which were projected during the theoretical discussions, serving as support for learning; these attitudes were more present during the pandemic, which demonstrated greater creativity of the students.

In these cases, the materials were prepared jointly by the students, based on previous discussions carried out by means of instant messaging applications, where they planned to follow the theoretical discussion so that all important points were given due prominence, and they also discussed among themselves their doubts, in a mutual aid process. In addition, using the same instant communication tools, a group of whatsapp was created together with the governess, which also served as a means of assistance for the communications that needed to be made (such as messages and warnings) and possible other questions that arose, the whi-

ch ended up bringing the contact between all the members closer.

Given the above, it appears that even though it is a period of great difficulty, since staying at home sometimes requires additional effort for concentration and a lot of discipline, the dedication of students in this period was crucial for the good functioning of this model of education emergency, considering the great participation of the student body in the active methodology that makes up the basis of the PBL, making the proposed academic content to be carried out and properly understood, highlighting that communication and creativity were attitudes that were highlighted in the context of a pandemic, being explored and presenting itself as a differential in student behavior.

On the other hand, the dedication of the group's tutor was essential to overcome this challenge, enabling the development and learning of her students during the follow-up of this exceptional semester, since, the teachers faced the challenge of learning a new teaching methodology, the use of platforms and, at the same time, reassure and stimulate their students constantly, worrying about emotions, learning and satisfaction with the course, teacher and institution.

## DISCUSSION

The medical training of countless individuals was affected due to the pandemic caused by SARS-CoV-2, however, the main ones involved in this problem were university students in the medical course. These academics were submitted to emergency actions from universities that implemented emergency home education.

The modality of emergency remote education (ERE) is not limited only to online classes, but, rather, in a more active methodology of the student with his own learning, through previous studies, theoretical discussions between students and greater contact with educators. In contrast, Distance Learning (Ensino a Distância - EAD) as a learning structure has a different proposal, since there is only an offer of classes in virtual environments without the active participation of stu-

dents.<sup>4</sup> Some academic centers, such as UNIVAG, presented a positive experience about this methodology applied to theoretical contents, with excellent evaluative performances and contiguity in the adherence of knowledge by the students.

Despite the benefits of ERE, according to a study developed by the Catholic University of Portugal that made a comparison between the

Depression Anxiety and Stress Scales (DASS-21) of the years 2018, 2019 and the current pandemic period, it was found there was a significant increase in psychological disturbance among academics in the pandemic period, as they faced some blows with the application of ERE, such as increased levels of depression, anxiety and stress, which can end student performance.<sup>5</sup>

Working on students' emotions and assisting in the process of emotional maturation is an extremely important measure, so that this drop in performance is not observed. According to a study, the main responsible for helping this evolution must be the educator, and for this to be possible, promoting reflections and analyzes is necessary<sup>6</sup> in conflicting scenarios, like the current one.

Under another bias, at Centro Universitário UNIVAG, the practical modalities, as opposed to the theoretical ones, were paralyzed in the basic cycle (first and second year). Despite being a responsible and necessary action for the current pandemic context, weaknesses are also observed because of this interruption, the lack of practices makes it difficult to associate the applicability of the theoretical knowledge learned, in order to minimize the damage, UNIVAG developed case studies simulating a reality, with the purpose of bringing students closer to the real context of the health service.

The literature corroborates, pointing out another disadvantage of the ERE, with emphasis on the increase in waiting for graduates to be inserted in the job market, which can cause problems, such as dropping out of the course and loss of income. Another damage is related to the replacement of these lost practical procedures, which have an indefinite implementation date, generating numerous uncer-

tainties among students as to the quality standard that these classes will have.<sup>7</sup>

In addition, it is worth mentioning that diseases with a high rate of transmissibility, such as COVID-19, require academics and health professionals to reinforce protection measures through the use of PPE, so that mass contamination is avoided. However, in countries like Turkey and Brazil, this increase in care is not fully possible, due to the reduced access to these protection tools. In the case of Turkey, a study reports that although the offer of PPE, such as masks, is a mandatory requirement of the government, civil citizens and also health professionals are having difficulties in acquiring this equipment free of charge, this is due to the fact that government actions sufficient to meet the demand of the Turkish population, which corroborates the drop in accessibility of this equipment in the country.<sup>8</sup>

In Brazil, one of the causes of this decrease in access to these PPE, is the exorbitant increase in the demand for these surgical protective equipment used by professionals and academics, such as the Type 2 Facepiece (Peça Facial Filtrante - PFF2) masks and N95 particle respirator. This problem was caused by part of civil society having stored this type of PPE in their homes, and, consequently, a numerical difference between the production and consumption of this equipment ends up being generated.<sup>9</sup>

Health professionals and academics are the most affected by this issue, since having access to these PPE is crucial for safe care and study. In addition, the underfunding of SUS in Brazil<sup>10</sup> it also accentuates this problem of reduction in the medical infrastructure, which can also generate an increase in the number of people infected by the disease.

These perspectives make it clear that the return of practical activities through the basic cycle would be more challenging at the moment of the accelerated pace of growth of cases of COVID-19, even with the availability of PPE by the institution. Thus, the institution is known to have maintained emergency home education by preparing its students through theoretical content, as well as biosafety classes to prepare students for a safe return.

In addition, another challenge, in the medical training of academics of the basic cycle of UNIVAG, was the reduction of some activities offered by the scientific community. Active participation, since the beginning of their students' careers in these modalities, has always been stimulated through essential disciplines such as the PIC.

The literature shows that one of the main activities that were compromised by this pandemic period was scientific experiments. This is due to the fact that the scientific community was forced to stop carrying out these projects and consequently there was a delay in the development of experiments and loss of schedules. Some researchers worked around this conflictual situation by continuing their projects, but at home using modern technologies. In some cases, this type of research has become a positive mechanism, not only in medical training, but also in other courses, as the second year postdoctoral fellow at the Agricultural University of Huazhong, Wuhan China, who had great experiences with the development of your projects through virtual platforms. However, this issue may also become an obstacle for some individuals, such as the case of Bai Zheng, a master student at Zhejiang University, Hangzhou China who felt a regression from his projects developed at home.<sup>11</sup>

The cancellation of scientific events, such as symposia, conferences and workshops, also aggravated the context of medical training. This is due to the fact that much of the knowledge acquired during the execution of projects and experiments is disseminated to other individuals through the realization of these events. With this cancellation, countless ideals and perspectives are no longer propagated, in addition, economic losses have also been generated, which affects the organizers and participants of these events. The realization of virtual conferences is a challenge because of the differences in time zones, in the case of international events, and also the reduction of accessibility, since access to the internet is a requirement for the individual to enjoy the knowledge. Another perspective that also affects the scientific community is the

reduction of investments and project financing due to the economic uncertainties generated by the pandemic. Consequently, there is a decrease in the development of projects that have already started and that would possibly be admitted.<sup>12</sup>

Therefore, it is understood that the experiences that are developed in primary care subsidize medical training, especially with regard to the development of skills related to health education.<sup>13</sup>

## CONCLUSION

In view of this scenario, it is clear that cooperation, adaptation and traces of new strategies on the part of students, teachers and UNIVAG were factors that allowed the favorable execution of the emergency home education plan and the incorporation of knowledge, respecting health. only

those involved in the education process, but also the entire local population, in favor of protective measures.

It is also visible that the proposed active methodology, the PBL method, was essential to strengthen the continuity of learning proposed during the pandemic. This statement corroborates the fact that the theoretical discussions of the PIC discipline were aggregating and favored the accumulation of knowledge by all students.

Some obstacles were found during the semester, such as technical difficulties with network connection, absence of practical classes and the cancellation of some scientific events that help in the context of medical training, were suspended by universities, such as UNIVAG, following the protocols of social distance Ministry of Health.

Despite the circumstances, the university

has plans to replace these practical classes as a form of practical learning, which is a challenge yet to be overcome, however students are already being prepared for a safe return through biosafety conferences. As for the events, the meetings applicable to the virtual modality are being held in order to add knowledge to the students.

Despite the prerogatives, the first semester of the medical course at UNIVAG was successfully concluded, highlighting that in the midst of the pandemic, academics demonstrated more creative attitudes compared to the previous period, adapting to the new teaching modality proposed. Finally, the importance of Emergency Home Education is highlighted for the continuation of the academic year of graduates from the private network, ensuring community health while the context of the pandemic of COVID-19 endures. ■

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