

Medical student's perception of their academic performance in emergency remote teaching during the Covid-19 pandemic

Percepção de estudantes de medicina sobre o rendimento acadêmico no ensino remoto emergencial durante a pandemia da Covid-19

Percepción de los estudiantes de medicina sobre su desempeño académico en la enseñanza remota de emergencia durante la pandemia de Covid-19

Received: 11/06/2022 | Revised: 11/26/2022 | Accepted: 11/28/2022 | Published: 12/05/2022

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Abstract

Due to the pandemic related to the new coronavirus (SARS-CoV-2), which causes the disease entitled "Covid-19". And the effects of the quarantine and social distancing taken by the population the face-to-face classes of about 1.5 billion students in 165 countries were suspended. This study therefore is aimed to evaluate the perception of medical students about academic performance in emergency remote teaching during the Covid-19 pandemic. A descriptive quantitative cross-sectional study was carried out with 226 medical students from 4 medical institutions in Alagoas. The research uses as a data collection instrument a virtual questionnaire on Google Forms® of an anonymous and voluntary nature being disseminated through applications and social networks and intended for all medical students in Alagoas. The results obtained highlight students' interest in maintaining their studies remotely. However the lack of means to access and use such technologies as well as socio-economic situations and the lack of motivation and influence of the home environment proved to be determinant factors for the continuity and effectiveness of the studies.

Keywords: SARS-CoV-2; Learning; Epidemiology.

Resumo

Em virtude da pandemia relacionada ao novo coronavírus (SARS-CoV-2), causador da Covid-19, e as consequentes ações da quarentena e distanciamento social, as aulas presenciais de cerca de 1,5 bilhão de estudantes em 165 países foram suspensas. Este estudo, portanto, teve o objetivo de avaliar a percepção de estudantes de medicina sobre o rendimento acadêmico no ensino remoto emergencial durante a pandemia da Covid-19. Foi realizado um estudo transversal descritivo, de caráter quantitativo, com 226 estudantes de medicina das 4 instituições de ensino superior em medicina de Alagoas. A pesquisa utiliza como instrumento de coleta de dados um questionário virtual no *Google Forms*® de caráter anônimo e voluntário, sendo divulgado através de aplicativos e redes sociais e destinado a todos os alunos de medicina de Alagoas. Os resultados destacam o interesse dos estudantes em manter os estudos remotamente. Entretanto, condições de acesso e uso de tecnologias, conjunturas socioeconômicas, des(motivação) e influência do ambiente domiciliar mostraram-se determinantes para continuidade e efetividade dos estudos.

Palavras-chave: SARS-CoV-2; Aprendizagem; Epidemiologia.

Resumen

Debido a la pandemia relacionada con el nuevo coronavirus (SARS-CoV-2). que causa la enfermedad denominada "Covid-19". Y por los efectos de la cuarentena y el distanciamiento social tomado por la población se suspendieron las clases presenciales de unos 1.500 millones de estudiantes en 165 países. Por lo tanto, este estudio tiene como objetivo evaluar la percepción de los estudiantes de medicina sobre el rendimiento académico en la enseñanza remota de emergencia durante la pandemia de Covid-19. Se realizó un estudio transversal cuantitativo descriptivo con 226 estudiantes de medicina de 4 instituciones médicas de Alagoas. El estudio utiliza como instrumento de recolección de datos un cuestionario virtual en Google Forms ® de carácter anónimo y voluntario siendo difundido a través de aplicaciones y redes sociales y destinado a todos los estudiantes de medicina de Alagoas. Los resultados obtenidos destacan el interés de los estudiantes por mantener sus estudios a distancia. Sin embargo, la falta de medios para acceder y utilizar dichas tecnologías, así como las situaciones socioeconómicas y la falta de motivación e influencia del entorno familiar resultaron ser factores determinantes para la continuidad y eficacia de los estudios.

Palabras clave: SARS-CoV-2; Aprendizaje; Epidemiología.

1. Introduction

The pandemic caused by the new coronavirus (SARS-CoV-2) which devastated the world in 2020 made the population need to learn how to live with a virus that is transmitted through the air and has a high rate of infection which caused the need for society to acquire new habits of self protection (Lana et al., 2020). In addition governments had to adjust their countries to the new reality through social distancing measures such as avoiding crowded spaces and thus reducing the speed of contamination in the country so that the health system would not collapse (Moreno-Correa, 2020). Due to this situation there was a need to adapt several areas in an emergency to a new reality. Thus in the university environment things could not be different (Ferentz et al., 2020). So managers in this sector needed to create innovative ways of providing education. However they faced a huge challenge: a way that would not negatively affect the quality of learning (Bezerra, 2020).

The teacher, more than transmitting knowledge, must now guide the process of student's learning in order to develop his/her abilities, namely learning to learn, self-learning and autonomy. The teacher must follow motivate, dialogue, be a leader and mediator, fostering and mediating a positive human interaction (Goulão, 2012). It is also expected to be a moderator in interpersonal and intrapersonal relationships. and play your role of self and hetero-evaluator of contents and performances. It is also expected that serve as support and stimulus to students, regulating and guiding their emotions, affections and attitudes (Dias, 2008).

Dealing with the effects of such a situation in the educational sector more specifically in health training as in medicine not only does it require a new way of structuring the course but also needs a complete reformulation of teaching practices (Faustino & Silva, 2020). A resignification in the way of teaching. In addition it was noted the need for a new form of management in which there needed to be a way that would avoid the transmission of theoretical knowledge without the concern about how information was being assimilated by students and whether they would be able to practice it (Bezerra,

2020). Another hindering factor for learning is the student's ability with digital information and communication technologies (DICT).

Previously used to aid teaching now gained prominence at a much more intensified speed. It was notable that students were not previously prepared in a social and economic and educational way to use digital tools as a primary way of accessing education (Arruda, 2020). Among the courses in the health area the medical course is considered one of the most complex and tiring with a large workload, extensive content and pressure for learning in the professor-student relationship. In addition there is a strong association between the medical course and the development of stress since it demands too much from the students' physical and emotional and psychological aspects. Psychological characteristics such as obsessiveness and perfectionism and self-demand are common personality traits of academics. In addition psychiatric disorders such as anxiety, depression and drug use are also frequent. Consequences of the emotional and psychological exhaustion that the course provides (Pereira, 2010) .

This exhausting reality of medical students has worsened in the current situation of the world with the adaptation of teaching to online classes and interruption of practices and internships. Since the uncertainties about learning and future procedures for normalization and adequacy of teaching methods of the faculties has generated a great emotional and psychological overload of the students and generated in fact damage to the learning process (Dias et al., 2020).

In this way the study is aimed to evaluate the perception of medical students about their academic performance in emergency remote online teaching during the Covid-19 pandemic clarifying previously unknown aspects of the issue contributing to the improvement of individual and institutional measures for better students' academic performance.

It is recommended that in the virtual environment there is at least one communication space for news and notices; a space for doubts that students have; a space informal where students can interact in a more relaxed way; and different Spaces created in each topic for the activities that can be developed in each theme (Moreira et al., 2020).

2. Materials and Methods

2.1 Type of study

It is a descriptive quantitative cross-sectional study (Estrela, 2018; Pereira, 2018).

2.2 Site of research

The study was carried out with medical students from Centro Universitário Cesmac and Centro Universitário Tiradentes and Federal University of Alagoas and State University of Health Sciences of Alagoas.

2.3 Sample

The research gathered data among college and university education students of medicine in Alagoas more specifically among the population that has some digital equipment with internet access configuring a probabilistic sample with a convenience bias.

2.3.1 Size and sampling

The sampling procedure was non-probabilistic for convenience with data collection by accessibility and individually in which students from face-to-face courses were invited by social networks to answer a questionnaire online. The technique consisted of selecting a sample of the population that is accessible in this case those over 18 years old and with access to a device that accesses the internet for sampling.

2.4 Recruitment of subjects and acquisition of the free and informed consent

The distribution of the questionnaire among the population was done through the internet and the Free and Informed Consent Term (FICT) was the first part viewed when opening the link sent to access the questionnaire for reading and understanding the research objectives and the collection of consent from respondents if they click on the “Accept” option in the FICT. The participant can read the FICT and ask questions through a phone number and email available in the header that precedes the FICT. To carry out the research, a questionnaire adapted from the study by Rosário (2009) was used. The questionnaire consisted of 3 blocks: block 1 - Socio-Demographic profile. Block 2 - questions regarding the conditions of adaptation to a new teaching methodology and self-efficacy and instrumentality of self-regulation of learning. Block 3 - questions regarding access and skills and capacity technique with the TDICs. All questions were multiple choice that is with answer alternatives to mark only one option.

2.5 Inclusion criteria

The following inclusion criteria were adopted: students attending medical school and being over 18 years old and having some digital equipment with internet access.

2.6 Exclusion criteria

Students from any school other than medicine and elementary and high school students and under 18 years of age and residing outside the state of Alagoas or those who did not sign the informed consent form were excluded.

2.7 Procedures

The data collection instrument was built on the Google Forms® platform and disseminated via the internet through the applications and social networks: WhatsApp® and Instagram® and Telegram®. In which students from face-to-face courses were invited by social networks to voluntarily answer between the 1st and 31st of May 2021 to the online questionnaire.

2.7.1 Research instruments

To carry out this study the following research instruments were used:

1. *Socio-Demographic Questionnaire*: aimed at characterizing the sample. This complementary questionnaire included questions such as gender, age and academic year.
2. *Scale of Prospective Reactions to Distance Studies (SPR-DS)*: psychometric self-report test. Developed in this study based on the theoretical framework in question to measure prospective reactions of students from face-to-face courses to remote online classes during the period of social distancing in Brazil. The term “distance studies” was used operationally to represent remote online studies. Thus the test is based on a continuous 5-point Likert-type scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree) composed of 20 items. Related to the suspension of classes are the possibilities of remote studies and everyday experiences such as: “I want to take advantage of the suspension of classes to stimulate my personal projects” and “I am willing to continue my classes through distance studies”.
3. *Questionnaire of Conditions for the Use of Digital Information and Communication Technologies (QCU-DICT)*: questionnaire developed in this study to verify the effectiveness of remote studies based on expectations of using digital technologies. The questionnaire was based on a scale of 5 categorical points composed of 5 items such as: “Daily time

available to carry out distance activities (reading and doing assignments, answering forums, etc.)” and “Ability to use computational tools (text editors and spreadsheets and presentations and web browsing, etc.)”.

2.8 Data analysis

Initially descriptive statistical analysis was performed on the data (frequency tables) with 95% confidence intervals. Subsequently a contingency table was used crossing the dependent variables (answers on the self-regulation of knowledge. On aspects related to insertion in remote teaching and on the attitudes taken to adapt to the new reality) with the independent variables (age and sex and age at graduation).

Initially descriptive statistical analyzes were performed on the data (frequency tables) with 95% confidence intervals. Blocks 1 and 3 of the questionnaire corresponding to socio-demographic questions and access and technical skills with the TDICs. A contingency table was used in order to cross the dependent variables (answers on self-regulation of knowledge on aspects related to insertion in teaching remote and on the attitudes taken to adapt to the new reality) with the independent variables (age and sex and year of college).

The analysis of the 2nd block of questions which included 20 multiple-choice items referring to the conditions for adapting to a new teaching methodology. The five answer options were aggregated for better inspection of the sample so that the options “strongly disagree” and “partially disagree” were grouped into “no” as the responses of “totally agree” and “partially agree” were aggregated into “yes”. Neutral results that are undecided were considered “maybe”. The answers marked with the option “I prefer not to answer” had no statistical value for the present study.

3. Results

According to the data obtained on table 1 the majority of those who answered were female 72.7% (164). Most of them attending the 5th year of the medical course 40.9% (92) against 6.1% (14) 6th grade students. Only 10.6% (24) were aged between 26 and 30 years and 33.3% (76) were between 22 and 25 years old.

Table 1 - Socio-Demographic profile of medical students in Alagoas.

Gender	Male 27.3%	Female 72.7%				
Year of medical school	1st year 10.6%	2nd year 16.7%	3rd year 16.7%	4th year 9.1%	5th year 40.9%	6th year 6.1%
Age	18-22 years old 31.8%	22-25 years old 36.3%	26-30 years old 10.6%	>30 years old 21.2%		

Source: Authors (2022).

It is highlighted through the results obtained on table 2 related to the students' expectations about studies in the period of social distancing that students would like to have easy and quick access to ask questions to the teachers 92.4% (209). This information corroborates the study by Moura et al. (2020) where they point out that the graduation in medicine follows the National Curriculum Guidelines (NCG) of 2014. Describes that the medical professional needs training based on respect in a general way in the commitment and citizenship in the integrality and dignity of the human being. Furthermore in its daily practice it will have as its transversal axis the social determinants of health-disease development. However "homeschooling"

ends up being unsatisfactory to interactional demands related to the medical graduation process linked to the current NCG and the principles of the National Humanization Policy.

From this perspective student-teacher interaction is extremely relevant for the elevation of knowledge regarding the medical student because the role of the teacher as a facilitator ends up generating a bond more effectively in a student-teacher connection. However “bedside” teaching and learning which is extremely fundamental to medical graduation ended during the Covid-19 pandemic. Thus it is necessary to follow up on the construction of modern methodologies aimed at guaranteeing quality training for medical students in light of the new legislation and the Covid-19 pandemic (Gomes, 2020).

Another valuable piece of data was that 86.4% (195) of the interviewees feel uncomfortable with the suspension of face-to-face classes while 4.5% (10) responded that they did not feel uncomfortable with the interruption of classes. However these data are in line with what is stated by Arruda (2020) in which it is said that higher education academics have better responses to the implementation of distance learning. Due to the fact that individuals at this academic level are adults. However the research shows that 56.1% (127) of the students had difficulties in reading books (e-books or PDFs) on the computer screen. Making the teaching and learning process even more difficult.

It was also possible to notice that although 86.4% (195) of the participants claimed to feel uncomfortable with the suspension of face-to-face classes 89.4% (202) responded that they would like the educational institution where they study to offer online studies during social distancing. This fact can be explained with 81.8% (184) of respondents answering that they believe that the suspension of classes is not a good thing for their career and professional interests.

However despite the remarkable preference on the part of students for the model of remote classes to the detriment of the total suspension of classes 40.9% (92) of the participants reported not having the willingness to continue classes through distance studies. 43.9 % (99) of the students stated that the environment at home does not allow them to focus on distance studies and 54.5% (123) report having difficulty carrying out studies remotely.

Table 2 - Adaptation conditions for medical students from Alagoas on studies during the period of social distancing. From May 1st to May 31. 2021.

ITEMS	YES	NO	MAYBE	WOULD RATHER NOT ANSWER
	%			
I would like to have easy and quick access to my teachers to ask questions.	92.4	3	3	1.5
I believe that social networks could be used by teachers to share academic and study information.	75.8	9.1	13.6	1.5
I find it interesting to receive academic materials (e.g. books, articles) by email	97	1.5	1.5	-
I would like the educational institution I study at to offer remote studies during social distancing.	89.4	-	10.6	-
I believe that the suspension of classes is not a good thing for my career and my professional interests.	81.8	7.6	10.6	0
I am willing to continue my classes through online classes.	36.4	40.9	21.2	1.5

I feel uncomfortable with the suspension of face-to-face classes.	86.4	4.5	9.1	-
If I study and I feel I can take online assessments (tests/exams).	84.8	-	15.2	-
My professional demands have been less intense in this period of social distancing.	50	36.4	9.1	4.5
I want to take advantage of the suspension of classes to stimulate my personal projects.	59.1	19.7	19.7	1.5
I would like to participate in discussion forums with my colleagues on topics in my field of study.	72.7	9.1	18.2	-
I feel that I have difficulty carrying out my studies remotely.	54.5	18.2	27.6	-
Regardless of my school/college, I continue to study during this period of social distancing.	77.3	7.6	12.1	3
I have difficulty reading books (e-books or PDFs) on the computer screen.	56.1	34.8	9.1	-
I have been feeling unmotivated to read books in this period of social distance.	63.6	24.2	12.1	-
The environment at home does not allow me to focus on studying online	43.9	40.9	15.2	-
In the period when I was supposed to be in the classroom and I haven't been doing productive things.	50	24.2	22.7	3
I have experience with Virtual Learning Environments (VLE).	34.8	54.5	9.1	1.5
I believe that after the period of social distancing and I will feel unmotivated to continue my studies.	18.2	68.2	13.6	-
My household commitments prevent me from doing any other activities.	-	88	12	-

Source: Authors (2022).

In the study it was seen that 87.8% (198) stated that they have continuous access to the internet with 11.1% (25) reporting difficulties or unstable internet connection. In addition all participants answered that they have digital equipment with internet access (Table 3). Regarding the adaptation of students to remote teaching, the skills and technical capabilities with DICTs are in line with what was seen by Arruda (2020) when he stated that most students were not prepared for the speed at which it was implemented in the remote model of education. Noting that 30.3% (68.4) claimed to have limited skills and 4.5% (10.1) stated that they have little to no skills with digital platforms and computational tools.

Table 3 - Issues related to access and skills and technical capabilities with the DICTs of medical students in Alagoas.

%						
1- Study availability	No time available -	Less than one hour a day -	Between 1 and 2 hours a day 15.2	Between 2 and 4 hours a day 40.9	More than 4 hours a day 39.4	Would rather not answer 4.5
2- Internet access	Little or no access -	Access with connection difficulties 9.1	Limited access and no connection difficulties 3	Seamless access and no connection difficulties 43.9	Unlimited access with fast connection 43.9	Would rather not answer -
3- Digital platforms and computational tools 1	Not skilled -	Little skills 4.5	Limited skills 30.3	Substantial skills 51.5	Expertise or great skill 12.1	Would rather not answer 1.5
4- Digital equipment and computer equipment	None -	Has but with no internet access -	Has with internet access 42.4	Has various equipments with internet access 57.6	-	Would rather not answer -
5- Conditions for taking courses remotely	No subject 1.5	Only one subject at a time 6.1	More than one subject as long as one could choose 33.3	All subjects 56.1	-	Would rather not answer 3

Source: Authors (2022).

The Covid-19 pandemic has affected every aspect of our lives including education where governments have issued stay-at-home guidelines and as a result universities across the world have ended up being closed. Therefore the use of digital and remote technologies in teaching has become an essential part of educational continuity (Rajab et al., 2020).

It was also evidenced that there was an academic quality loss during the period of online classes due to social distancing, as respondents reported difficulties in concentration, learning and performance in studies compared to the traditional teaching model. However participants claimed to prefer the permanence of the digital model compared to the total suspension of classes during the period of social isolation caused by the Covid-19 pandemic.

Studies have suggested that the fear of being infected by a potentially fatal virus, of rapid dissemination, whose origins, nature and course are still poorly understood, ends up affecting the well-being psychological impact of many people (Asmundson & Taylor, 2020; Carvalho et al., 2020). depression symptoms, anxiety and stress in the face of the pandemic have been identified in the general population (Wang et al., 2020) and, in particular, health professionals (Zhang et al., 2020a). In addition, cases of suicide potentially linked to the psychological implications of COVID-19 have also been reported in some countries such as Korea South (Jung & Jun, 2020) and India (Goyal et al., 2020).

Lopes (2020) reveals concern about students without internet access, especially in regarding their return to face-to-face teaching. In addition, many do not have technological resources that allow for an equal monitoring of school contents. Such conditions may generate lack of motivation in relation to students with access to online classes and technological resources made available through them. The author also expresses concern about the prospects pedagogical, social and intellectual abyss that will affect students after the period of isolation as well as practical solutions to reduce its impacts.

4. Final Considerations

Physical distancing should not be an impediment to social approximation regarding the university environment. Remote teaching even being implemented in an attempt not to leave the student helpless and in an emergency way to continue their studies. Is not a form of teaching well-regarded by students nor has it brought the expected results when it is implemented.

Many students have access to the internet and a fact that facilitated the implementation of remote teaching. But many do not have it, thus needing printed materials to be able to carry out the activities not being able to watch video classes or synchronous meetings as well as listen to audios with explanations or even clear up their doubts in real time with the teacher as it happens virtually. In this way it was found that the students surveyed still consider the possibility of encouraging the use of DICTs when returning to post-pandemic face-to-face teaching as everyone involved ended up necessarily adapting to the "new normal".

Further research should be considered to encourage those responsible for teaching students in an online based education to weigh the pros and cons of this novel way of teaching. It should also be considered to compare our results against other courses; not only in the medical field. This way more data will be collected, helping the educational community to achieve a great medium regarding remote teaching.

References

- Asmundson, G. J. G., & Taylor, S. (2020). Coronaphobia: fear and the 2019-nCoV outbreak. *Journal of Anxiety Disorders*, 70, 102196. <http://dx.doi.org/10.1016/j.janxdis.2020.102196>
- Arruda, E. P. (2020). Educação Remota Emergencial: Elementos para políticas públicas na Educação Brasileira em tempos de covid-19. *EmRede - Revista De Educação a Distância*, 7(1), 257–275. <https://doi.org/10.53628/emrede.v7i1.621>
- Bezerra, I. M. (2020). State of the art of Nursing Education and the challenges to use remote technologies in the time of Corona virus pandemic. *Journal of Human Growth and Development*, 30(1), 141–147. <https://doi.org/10.7322/jhgd.v30.10087>
- Carvalho, P. M. M., Moreira, M. M., Oliveira, M. N. A., Landim, J. M. M., & Rolim Neto, M. L. (2020). The psychiatric impact of the novel coronavirus outbreak. *Psychiatry Research*, 286(112902), 1-2. <http://dx.doi.org/10.1016/j.psychres.2020.112902>
- Dias, P. (2008). Da e-moderação à mediação colaborativa nas comunidades de aprendizagem, Educação, Formação e Tecnologias, 1(1), 4-10.
- Dias, G. N., Vogado, G. E. R., Barreto, W. D. L., Silva Júnior, W. L., Barbosa, E. S., Rodrigues, A. E., Silva & Costa, C. A. C. (2020). Retorno às aulas presenciais no sistema educacional do estado do Pará, Brasil: Obstáculos e desafios durante a epidemia de Covid - 19(Sars-Cov-2). *Brazilian Journal of Development*, 6(6):37906-37924. <http://dx.doi.org/10.34117/bjdv6n6-358>.
- Estrela, C. (2018). Metodologia Científica: Ciência, Ensino, Pesquisa. Editora Artes Médicas.
- Faustino, L. S. E. S., & Silva, T. F. R. S. E. (2020). Educadores frente à pandemia: dilemas e intervenções alternativas para coordenadores e docentes. *Boletim De Conjuntura (Boca)*, Boa Vista, 3(7), 53–64, 2020. <https://doi.org/10.5281/Zenodo.3907086>.
- Ferentz, L., Fonseca, M. N., Accioly, N. S., & Garcias, C. (2020). Comportamento em tempos de Coronavírus no Brasil: utilização de hashtags no início do isolamento social. *Comunicação em Ciências da Saúde*, 31(1). <http://dx.doi.org/10.51723/CCS.V31ISUPPL>
- Gomes, V. T., Rodrigues, R. O., Gomes, R. N., Gomes, M. S., Viana, L. V., & Silva, F. S. (2020). A Pandemia da Covid-19: Repercussões do Ensino Remoto na Formação Médica. *Revista Brasileira De Educação Médica*, 44(4), e114. <https://doi.org/10.1590/1981-5271v44.4-20200258>
- Goulão, M.F. (2012). Ensinar e aprender em ambientes online: Alterações e continuidades na(s) prática(s) docente(s). In: J. A. Moreira; A. Monteiro (Orgs.) *Ensinar e aprender online com tecnologias digitais*. Porto: Porto Editora, 15-30.
- Goyal, K., Chauhan, P., Chhikara, K., Gupta, P., & Singh, M. P. (2020). Fear of COVID 2019: first suicidal case in India. *Asian Journal of Psychiatry*, 49(101989). <http://dx.doi.org/10.1016/j.ajp.2020.101989>
- Jung, S. J., & Jun, J. Y. (2020). Mental health and psychological intervention amid COVID-19 Outbreak: perspectives from South Korea. *Yonsei Medical Journal*, 61(4), 271-272. <http://dx.doi.org/10.3349/ymj.2020.61.4.271>
- Lana, R. M., Coelho, F. C., Gomes, M. F. C., Cruz, O. G., Bastos, L. S., Villela, D. A.M., & Codeço, C. T. (2020). Emergência do novo coronavírus (SARS-CoV-2) e o papel de uma vigilância nacional em saúde oportuna e efetiva. *Cadernos de Saúde Pública*, 36(3):e00019620. <http://dx.doi.org/10.1590/0102-311X00019620>
- Lopes, P. C. de A. B. (2020). A Covid-19, o retorno às aulas e o custo social do fechamento das escolas - o que pode ser feito?. *Educação Pública*, 20(29).

Moreno-Correa, S. M. (2020). La innovación educativa en los tiempos del Coronavirus. *Salutem Scientia Spiritus*, 6(1), 14-26.

Moura, A. C., Mariano, L. de, Gottens, L. B., Bolognani, C. V., Fernandes, S. E., & Bittencourt, R. J. (2020). Estratégias de Ensino-Aprendizagem Para Formação Humanista, Crítica, reflexiva e ética na graduação médica: Revisão Sistemática. *Revista Brasileira De Educação Médica*, 44(3). <https://doi.org/10.1590/1981-5271v44.3-20190189>

Moreira, J. A. M., Henriques, S. & Barros, D. Transitando de um ensino remoto emergencial para uma educação digital em rede, em tempos de pandemia. *Dialogia*, São Paulo, 34: 351-364, jan./abr. 2020. <https://doi.org/10.5585/dialogia.n34.17123>

Pereira A. S. et al. (2018). Metodologia da pesquisa científica. [e-book gratuito]. Santa Maria/RS. Ed. UAB/NTE/UFSM.

Rajab, M. H., Gazal, A. M., & Alkattan, K. (2020). Challenges to online medical education during the COVID-19 pandemic. *Cureus*, 12(7): e8966. <https://doi.org/10.7759/cureus.8966>

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in china. *International Journal of Environmental Research and Public Health*, 17(5), 1729. <http://dx.doi.org/10.3390/ijerph17051729>

Zhang, J., Wu, W., Zhao, X., & Zhang, W. (2020b). Recommended psychological crisis intervention response to the 2019 novel coronavirus pneumonia outbreak in China: a model of West China Hospital. *Precision Clinical Medicine*, 3(1), 3-8. <http://dx.doi.org/10.1093/pcmedi/pbaa006>