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# Problematicization about the COVID-19 pandemic as aid in the formation of nurses

**ABSTRACT** | Introduction: With Pandemic COVID-19, we have experienced speculation in various fields, with deterioration in the health of individuals and economic conditions in the countries, especially those vulnerable and marginalized in contemporary neoliberal societies. Faced with the situation, strategies were developed to insert the COVID-19 content in the disciplines that make up the matrix of the Nursing Course at Centro Universitário São Camilo. Method: The discipline of Health Surveillance used the problem approach. Result: In conducting research, group discussions and finalizing the proposed activities, diversified subjects of interest in the training of students were hijacked to prepare them for the inherent activities of Health Surveillance, as well as to integrate other themes. Conclusion: The choice of the educational approach and strategies chosen in Health Surveillance are important so that our future nurses can deal more accurately with the emerging and reemerging situations that are and will be hovering between all places of human experience.

**Keywords:** Applications of Epidemiology; Public Health Surveillance; Nursing Education.

**RESUMEN** | Introducción: Con la pandemia COVID-19, estamos experimentando especulaciones en varios campos, con el empeoramiento de la salud de las personas y las condiciones económicas en los países, especialmente aquellos vulnerables y marginados en las sociedades neoliberales contemporáneas. En vista de la situación, se desarrollaron estrategias para insertar el contenido de COVID-19 en las disciplinas que conforman la matriz del Curso de Enfermería en el Centro Universitario São Camilo. Método: La disciplina de vigilancia de la salud utilizó el enfoque del problema. Resultado: al realizar investigaciones, discusiones grupales y finalizar las actividades propuestas, se diversificaron temas diversificados de interés en la capacitación de los estudiantes para prepararlos para las actividades inherentes de la Vigilancia de la Salud, así como para integrar otros temas. Conclusión: La elección del enfoque educativo y las estrategias elegidas en la Vigilancia de la salud son importantes para que nuestras futuras enfermeras puedan lidiar con mayor precisión con las situaciones emergentes y reemergentes que se ciernen y se ciernen entre todos los lugares de la experiencia humana.

**Palabras claves:** Aplicaciones de Epidemiología; Vigilancia de Salud Pública; Educación em Enfermería.

**RESUMO** | Introdução: Vivenciamos, com a Pandemia COVID-19, especulações em vários campos, com agravamentos na saúde dos indivíduos e condições econômicas dos países, principalmente daqueles vulneráveis e marginalizados nas sociedades neoliberais contemporâneas. Frente a situação, estratégias foram desenvolvidas para inserir o conteúdo COVID-19 nas disciplinas que compõe a matriz do Curso de Enfermagem do Centro Universitário São Camilo. Método: A disciplina de Vigilância em Saúde utilizou-se da abordagem por problemas. Resultado: Na realização de pesquisas, discussões em grupos e finalização das atividades propostas foram versados assuntos diversificados de interesse na formação dos estudantes para prepará-los para as atividades inerentes da Vigilância em Saúde, bem como, integrar outros temas. Conclusão: A escolha da abordagem educacional e estratégias escolhidas na Vigilância em Saúde são importantes para que nossos futuros enfermeiros possam lidar com mais precisão com as situações emergentes e reemergentes que estão e estarão pairando entre todos os locais de vivência humana.

**Palavras-chaves:** Aplicações da Epidemiologia; Vigilância em Saúde Pública; Educação em Enfermagem.

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## INTRODUCTION

The historical situation we are living through, with Pandemic named by COVID-19, has been generating diverse speculations and scientific analysis, economical and social, in view of the speed that has been reaching the world population, with severe individual health effects and in world's and people's economic conditions, mainly of those who are vulnerable and marginalized in contemporary neoliberal societies.

The lack of scientific knowledge about treatments and specific immunobiological has led to the occurrence of significant numbers of infected people,

people who need hospitalization and intensive treatment, as well as deaths.

First reported in December 2019 in China, the new virus known as SARS-CoV-2 is responsible for the outbreak of the corona virus named Covid-19 that has been causing alarm among health authorities from around the world and has been declared an Emergency of Public Health of International Importance by the World Health Organization (WHO) on January 30, 2020<sup>1</sup>.

Public Health Emergency of International Concern (PHEIC) is considered under the terms of the International Health Regulations (IHR)<sup>2</sup>

“an extraordinary event that may cause a public health risk to other

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countries due to international disease spreading; and potentially requires a coordinate and quick international answer.

It's the sixth time in history which was declared Public Health Emergency of International Concern. The other ones were:

- April 25th 2009 – H1N1 Pandemic
- May 5th 2014 – international polio virus spreading
- August 8th 2014 – Ebola outbreak in West Africa
- February 1st 2016 – Zika virus and increase of microcephaly and other congenital malformations
- May 18th 2018 – Ebola outbreak in Democratic Republic of Congo

The responsibility for determining whether an event is determined a Public Health Emergency of International Concern belongs to the director-general of WHO and requires the summoning of a specialists committee – called by IHR Emergency Committee<sup>20</sup>.

On March 11th 2020, COVID-19 was characterized by WHO as a pandemic. The term "pandemic" refers to the geographical distribution of a disease, not its severity. The designation recognizes that there are currently outbreaks of COVID-19 in several countries and regions of the world<sup>21</sup>.

Until May 15th 2020, there were around 4.088.848 confirmed cases in the world; 283.153 deaths and the numbers keep increasing.

In Brazil, by the same date, there were 177.589 confirmed cases and 12.400 deaths. In comparison to other countries, Brazil occupies, at this moment, the 6th position in the higher amount of cases and also the 6th position at the number of deaths rate, even although the transmission had started around three months after several of these countries<sup>3</sup>.

The first record from the confirmation of COVID-19 in Brazil has happened on February 26th 2020, a Sixty-one year old man from São Paulo has contracted the corona virus in a trip to Italy, which had high rates of the disease cases. Today there's an hypothesis that the COVID-19 were already in Brazil before this date.

The first death was confirmed twenty days later, on March 17th. The patient was a sixty-two year old man who had diabetes and hypertension. He was admitted to Sancta Maggiore hospital, in the Paraíso neighborhood, since March 14th and passed away on 16th. He had not being travelling abroad.

The occurrence of the pandemic called COVID-19 brought with it several questions about its causality that go beyond the SARS-CoV-2 virus, such as:

1. Would it originate from the excess of technological development concomitant to social underdevelopment, considering that populations without access to computerization are marginalized from access to everything, including the capability of critical analysis?
2. Would it be due to the lack of harmony with the nature and human deepening in wild areas and unusual coexistence/consumption of animals?
3. Or would it be based on neoliberalism and globalization and its cruel doctrine that proclaims a drastic reduction of public expenses and dismantling of State intervention on social programs, which have been adopted by different world governments<sup>42</sup>?

All of these are plausible causes and must have had an influence for such a pandemic to occur, but certainly the social determination of the health-disease process is the main cause of the occurrence and fast spreading of the disease.

According to Cueto (2020, sp) the neoliberalism/globalization "has created a culture where the gain was above

everything and everyone; where was valid the cut of human resources from health systems, national and international, and where a rosary of health disasters like AIDS, Dengue, SARS, H1N1, Ebola, Zika and now the epidemic, that oppresses us, has become commonplace", thus creating a favorable scenario for the humanitarian disaster now experienced in most countries<sup>5</sup>.

## METHOD

In the face of the pandemic situation, strategies were developed to insert the content relevant to COVID-19 in the curricular units that make up the matrix of the Nursing course at Centro Universitário São Camilo. In this case, the use of active methodologies was chosen as a differential for the formation of the nurse.

The course offers a differentiated formation, supported by a matrix permeated by innovation and permanently revised and reconstructed with a focus on competencies.

In this pedagogical conception the maker space, an innovative realistic methodology, metodologia realística inovadora, set in Basic Health Unities (BHU) it is applied in the 3rd semester. The proposal involves the joint performance of students with the Family Health Strategy teams (FHS) in Primary Health Care actions. Accompanied by a teacher and the Community Health Agent (CHA), students conduct interviews with the population in a real environment -the territory- and compare the results with official data from the Ministry of Health. The developed activities include: situational diagnosis, research, nursing care, health education and proposed actions to solve problems.

This methodology and others serve as a basis for the Health Surveillance curricular unit in which the undergraduates have theoretical-practical contact with the national system of diseases and conditions of compulsory notification are able to integrate the knowledge realized in other

curricular units, with the use of descriptive and analytical epidemiology to support the understanding of the stages of investigation and intervention in an outbreak, for the understanding that Health Surveillance is one of the basic instruments of Collective Health Management as the collective diagnosis in health and the action planning through epidemiological data.

To be effective in achieving this learning, several strategies based on active methodologies are used whose methodological axis is the self-construction of knowledge and where students will develop activities in groups, to be known:

- Case studies of compulsory notification diseases that are currently Public Health problems and exposure to care and behaviors in relation to them (Dengue, Measles, Meningococcal Meningitis, Yellow Fever, Tuberculosis);
- Proposal for the implantation of a Family Health Strategy (FHS) health unit in a territory in the city of São Paulo, after searching and analyzing the epidemiological data of Primary Care in the city of São Paulo (CEInfo bulletin);
- Selection and/or discussion of written and electronic media material to assist in understanding the outbreak investigation<sup>6</sup> (COVID-19 case);
- Bibliographic search Health Surveillance Guide: single volume<sup>7</sup> from the Ministry of Health, research on official information systems and secondary data (SIM; SINASC, IBGE, SIH, SINAN) using the TABNET tool<sup>8</sup>.

## RESULTS

With the problem-based learning used in the Health Surveillance curricular unit, we seek to provide reflection on a problem situation, still current and ongoing, and in all its contours, which has been the educational approach used to seek for reaching the preparation of these

futures nurses with attributes that include systemic vision, communication and negotiation skills, skills to manage services, self-learning habit and a better prepared look to deal with complexity and uncertainty, in addition to real and lasting learning about the concepts that surround Surveillance in Health<sup>9</sup>.

In the current epidemiological situation, the main problems were chosen: the COVID-19 pandemic, the measles and dengue epidemic, the control of leprosy, meningococcal meningitis and yellow fever.

The problems to be debated and solved in groups are the starting point of the learning process for several reasons: it proposes to be an activator of the previous knowledge of the group participants on the theme; it constitutes the focus for integrating knowledge acquired in other disciplines, playing an important role in the construction of cognitive structures, which facilitates the recovery and later use of knowledge; it assists in the reframing of information, an essential fact for learning; it allows contextualized learning, in the sense that it approaches the problems of practical life, stimulating the students' intrinsic motivation.

In this case, the teacher should assume the role as a facilitator, encouraging critical thinking and self-learning among students. For this, the facilitator has the function of:

- maintain discussions' flow;
- search the student's knowledge deeply, through questions and inquiries during the analysis and resolution of problems, encouraging the group to think deeply and critically about the topic;
- ask questions that help students discover and resolve for themselves any possible conception errors;
- provide the group with information, practical examples, or illustrate with similar situations to encourage further discussion;

- detect the positive and negative points of the group's functioning, with the objective of giving feedback on the participation and cooperation of each student in the group and on the quality of the content of the discussions.

Finally, it is up to the teacher: to help the group to deal with the problems of personal relationships, to ensure that all students are effectively involved in the group discussion process and to favor individual and group development<sup>8</sup>.

The evaluation in problem-based learning must incorporate several strategies, such as: concept map, oral presentations, case studies, among others.

## DISCUSSION

The learning process of the Health Surveillance Course in Nursing Graduation at Centro Universitário São Camilo in 2020 started from dividing students into groups and dividing school days into activities, to be known:

- Reading, in groups, the 2019-nCoV Respiratory Disease Epidemiological Bulletin, identification of its main concepts and discussion in the classroom (conceptualization of a suspected case, epidemiological emergency, International Health Regulations, compulsory notification, interventions - epidemiological, health and environmental surveillance, epidemiological chain, etc.)<sup>6</sup>.
- Watch the movie "London's Historical Rescue: outbreak of illnesses and deaths from respiratory illnesses", carry out a critical reflection and analysis on the whole context of the problem: historical moment, change in fuel use, environmental factors, overlapping of illnesses from influenza to cardiac and respiratory problems connected to air pollution, uses of epidemiology

to organize and analyze data. Correlate with COVID-19.

- Carry out the design or written assembly of the epidemiological chain of some of the most important diseases in the city of São Paulo and identify some interventions that could interrupt the epidemiological chain of diseases.
- Watch the film on outbreak investigation steps, analyze and correlate what has been said with the current COVID-19 Pandemic situation.
- Carry out previously established case studies in predetermined groups of: meningitis, leprosy, measles, dengue and yellow fever; other diseases of importance in Public Health in the current epidemiological situation in the country.
- Laboratory Support in Health Surveillance Communicable diseases and their epidemiological relevance: the case of COVID-19.
- Presentation of the work: justification for the indication Primary Health Care Unit based on the analysis of health indicators in the different regions of the city of São Paulo, with the proposed health planning according to the main problems identified.

Through research, group discussions / students in the classroom and completion of the proposed activities, it was possible to deal with various subjects of interest in the training of students to prepare them for carrying out the activities of collection, organization, analysis and health intervention inherent to Health Surveillance, as well as to integrate other themes, namely:

- Understanding about the theory of Social Determination of Health-disease Process- analyzing the progress of the pandemic and the generation of deaths among the social classes with lower consumption power and residents in the

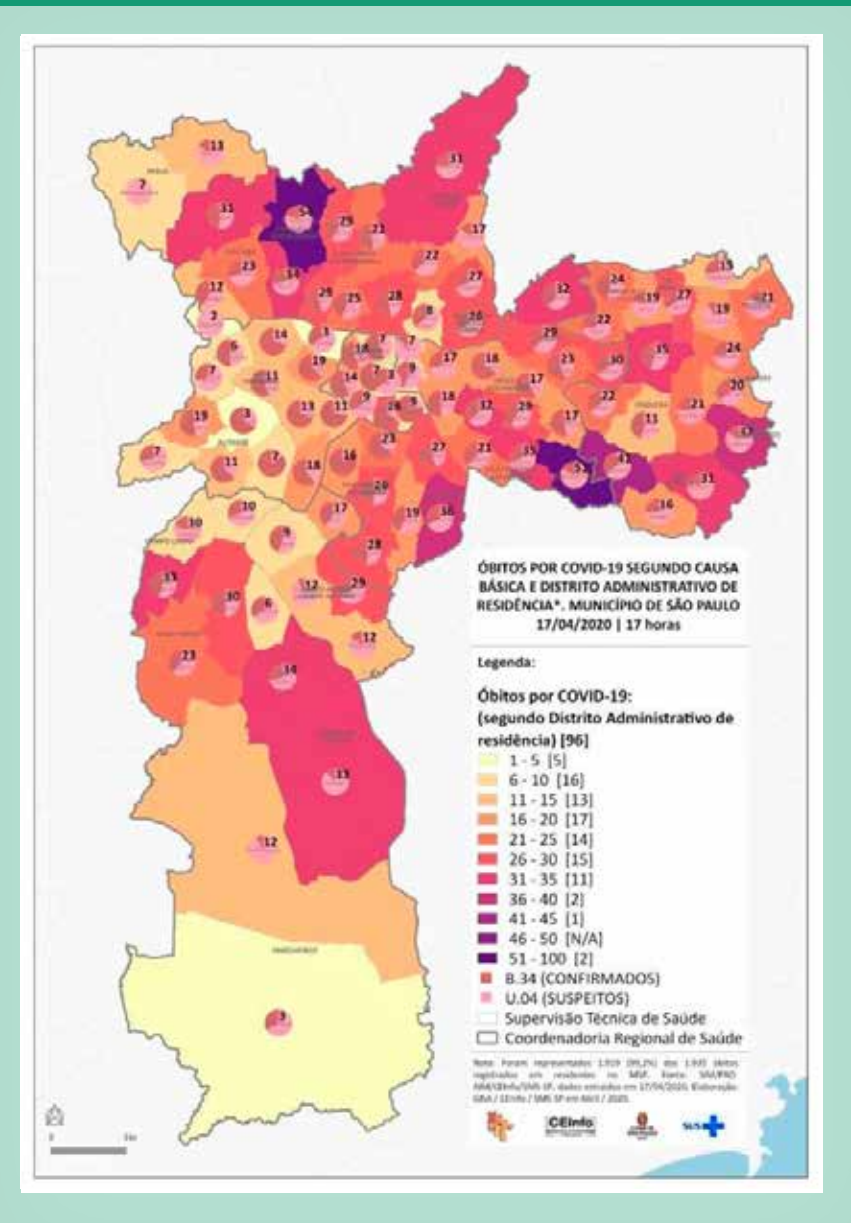
periphery of São Paulo and in the Amazon region, as shown in the map below, which reveals the occurrence of a greater number of death cases in the Administrative Districts of Brasilândia and Sapopemba on the suburbs of São Paulo<sup>9</sup>

- Understanding the stages of investigating an outbreak<sup>10</sup> and

making a critical analysis of the current situation, such as the statements made by some groups, like GROUP 1:

“We currently see outbreak investigation applied to the COVID-19 pandemic, which has now been classified by the WHO as an ongoing pandemic, it is an acute respiratory disease caused

Death map, according to Administrative Districts, City of São Paulo, 2020.



by the new Corona family virus (2019-nCoV). The disease has been identified for the first time in Wuhan, in the province of Hubei, People's Republic of China, on December 1st, 2019, but the first case was reported on December 31 of the same year. The virus is believed to have a zoonotic origin because the first confirmed cases were mainly linked to the Huanan Wholesale Seafood Market, which also sold live animals."

### 1° Step - Preparing for fieldwork:

In the first stage, it is necessary to hold a preliminary meeting. In the outbreak of COVID-19 in December last year, meetings were requested to analyze the actions to be taken, considering the city's equipment, the administrative aspects. They also surveyed data and bibliographic references to determine what was happening in that city. Government agencies participated in order to obtain (search) information about infected people and keep the population informed about epidemiological data. On December 31st, 2019, cases of pneumonia of unknown etiology detected in the city of Wuhan, Hubei province, were reported to the World Health Organization (WHO) office in China.

### 2° Step - Confirm the occurrence of the emergency:

The second stage aims to confirm whether the event is really an unusual situation for the place, region or nation. By determining the number of expected cases, comparing with the number of observed cases.

From December 31st, 2019 to January 3rd, 2020 in China, a total of 44 patients with pneumonia of unknown etiology were found, being notified to WHO by China national authorities. During this reported period, the causative agent was not identified.

Only on January 7th, 2020, Chinese authorities identified a new type of

Corona virus, which was isolated. And on January 11th and 12th, 2020, WHO received more detailed information from the National Health Commission of China that the outbreak was associated with exposures at a seafood market in Wuhan City, Hubei province of China.

### 3° Step - Check the diagnosis:

The third stage has the objective of discarding the erroneously classified cases, by clinical, laboratory, filling, etc. Reviewing all research forms and clinical records. And interviewing the health professionals who attended the patients, as well as the patients and relatives themselves. And then standardize and classify the clinical picture.

For the outbreak of COVID-19, it was defined that the clinical picture was mainly respiratory, such as: fever, cough and difficulty breathing, among other flu-like symptoms. For in the beginning, it was found in Wuhan, China that many of the patients with outbreaks of respiratory illnesses caused by 2019-nCoV had some connection to a large seafood and live animal market, suggesting that the spread occurred from animals to people. However, an increasing number of patients reportedly had no exposure to the animal market, also indicating the occurrence of spread from person to person.

Chinese officials report that sustained spread from person to person was taking place in China.

### 4° Step - To count and identify the cases:

The fourth step has the function of identifying new cases, performing the total count of confirmed, deaths and suspected COVID 19.

The number of hospitalizations for Severe Acute Respiratory Syndrome (SARS) increased by 277% in 2020.

To perform control and number of cases, patients with flu-like signs and breathing difficulties are submitted to a laboratory procedure (PCR - C-reactive

protein) that performs the detection of the Corona virus, which is requested among with the Computed Tomography, as the first moment it demonstrates the characteristics of the lung, presenting the finding "Frosted glass". The patient with alteration in the image exam and with respiratory alterations remains in hospital for control of the condition. Patients who have flu-like signs, but without respiratory changes, remain in quarantine for 14 days awaiting the results of the examination, with no need for hospitalization.

To control this pandemic, it is necessary to complete the "COMPULSORY NOTIFICATION FORM", as it helps in the counting and control of the virus. Performing standardization in the identification of new cases, excludes those that are not cases, identifying the largest possible number of suspected cases and monitoring results.

### 5° Step - Organize the information:

The fifth stage aims to explain how and why the outbreak happened. Initially, the inhabitants of Wuhan, in the province of Hubei, People's Republic of China, were the first to be affected. They found that the virus most affected the elderly population over 60 years old and those with chronic diseases, such as diabetes and cardiovascular diseases.

An outbreak or epidemic is a concentration of new cases over time. The existence of an epidemic is recognized by an epidemic curve.

Like the display of the current graphs of new cases and deaths of COVID-19 in Brazil<sup>3</sup>.

### 6° Step - Hypotheses formulation:

COVID-19 started in China specifically in the city of Wuhan, it is believed that the origin of the contamination was the Huanan Wholesale Seafood Market, with the first case on December 31, 2019. Several studies started then to map the virus genome, initially at the beginning of the outbreak, Chinese scientists

isolated COVID-19, and realized that it was 70% similar in genetic sequence to SARS-CoV, and subsequently mapped and made available its genetic sequence.

## 7º Etapa: Testing the Hypotheses

The testing of these hypotheses can be done through analytical epidemiology: Cohort study; case-control study, using statistics that are a tool.

## 8º Step - Planning and developing additional studies:

Through the findings, it is sometimes necessary to complement the study through methods such as: Epidemiological study or additional studies (environmental or laboratory). In the case of CO-

VID-19, new studies are currently being carried out for certain of the drug prophylaxis for this virus, as well as studies and testing for a vaccine.

## 9º Step - Implement control measures:

The ninth stage aims to control the source of the pathogenic organism, interrupt transmission and control the host's response to exposure.

One of the measures to contain the spread of the virus was social isolation, being determined by the Governors, the closing of environments that promote agglomerations, such as stadiums, shopping malls and leisure environments in general. Supermarkets, pharmacies, food delivery suppliers and manufac-

turers related to the food trade remain open, considering all prevention measures previously guided by governors and health entities.

And hand hygiene with soap and water, as one of the main means of preventing transmission. When it is not possible to wash your hands with soap and water, it is necessary to wash your hands with 70% alcohol hand sanitizer. And the cleaning of floors, handrails, door handles and bathrooms must be done with 70% alcohol or bleach solution.

## 10º Step - Communicate the results:

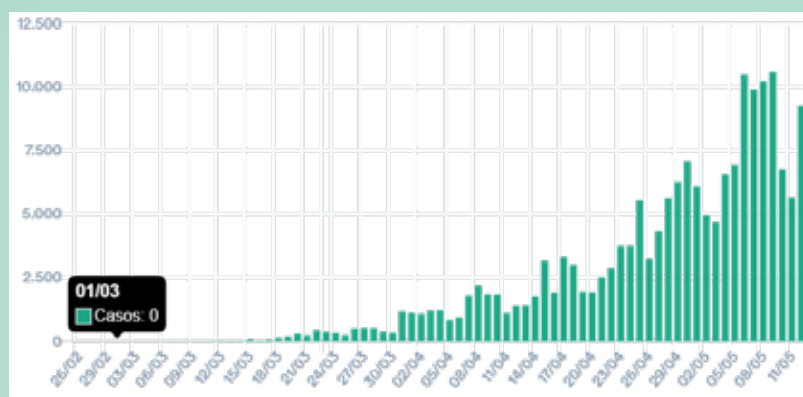
The Ministry of Health, beside with other agencies, is providing daily updated information on COVID-19 across various medias such as, reports, daily bulletins and epidemiological bulletins, notes and news on news programs, as well as using entertainment programs to disseminate news, social media, among others.

The final activity is a Virtual Proposal for the implantation of a basic health unit in a territory of the city of São Paulo, with emphasis on the Family Health Strategy (FHS), based on information systems and bibliographic texts on the use of health surveillance and management in primary health care.

By the end of the work, the student should be able to discuss critically and reflexively in the face of theory and perceived reality.

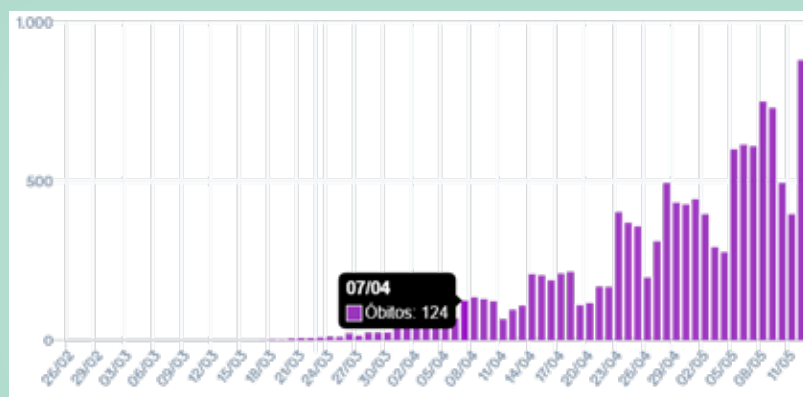
The work construction process is being guided by active methodologies, which are followed at the end of each class by the teacher. The work is being discussed in groups at the end of all classes in the discipline and should start with data collection, territoriality analysis and health data to justify the location of the territory. The groups must present the data and reflections weekly to the teacher, who must accompany the reasoning for the implantation of a basic health unit, with emphasis on the Primary Care Health Unit FHS and be prepared for alignments and doubts of the working groups.

New cases of COVID-19 by notification date, Brazil, until May 11th, 2020.



Source: Ministry of Health

COVID-19 deaths by notification date, Brazil, until May 11th, 2020



Source: Ministry of Health

At the end of the semester, students will present their work with indication of activity planning suggestions to positively impact the researched health problems indicated by the health indicators and complement the learning experience of performing the situational diagnosis in a micro area of an FHS team, project carried out during the 3rd semester of graduation<sup>11,12,13,14,15</sup>.

## CONCLUSION

The choice of the educational approach and strategies chosen for the development of the curricular structure of Health Surveillance are of paramount importance so that our future nurses can deal more accurately with the emerging and reemerging situations that are and will be hovering between all places of human experience.

All health professionals must be prepared to provide health-disease assistance not only to individuals in particular, but also in relation to the community,

seeking to understand the situations to which each population in each territory is subjected and the imminent possibility spread of diseases between locations, aiming at ease of movement and the current behavior of globalized society.

Regardless of the sector in which these nurses come to work, whether in the public or private area; primary, secondary or tertiary care; in management, education or research, that they have a firm understanding that there is no greater or lesser importance of work due to the type of technology used.

The most important thing is to carry out the provision of auxiliary care in the construction of a continuous, functional and well-communicated assisted network.

We emphasize that the centrality of the entire work process must be the user / client / patient and that is why society sees us and gives us importance as a professional utility.

In Brazil we have a Unified Health System – SUS – very important and de-

mocratic that needs to be strengthened and respected, because the less affluent social classes have total dependence on it and the other parts of society make use of it without knowing, as in the cases of services provided by epidemiological, environmental, sanitary and other surveillance, which they are responsible for maintaining the quality of the products and services we consume and are also responsible for controlling and eradicating diseases, among other activities.

At each semester subjects that affect the health-disease process of the Brazilian population are added to this curricular unit, such as what happened when the Brumadinho dam collapsed, and linked to the search for data, bibliographies and critical analysis about the fact, with the use of theory and development of epidemiological reasoning, and group discussion.

The students are very interested and participative and have taken their final works to scientific events in the area of knowledge. 🐦

## References

1. Fuchs, A. Covid-19: infectologista Estevão Portela fala sobre medidas preventivas e aspectos clínicos. <https://portal.fiocruz.br/noticia/covid-19-infectologista-estevao-portela-fala-sobre-medidas-preventivas-e-aspectos-clinicos>. [Acessado 11/05/20].
2. OPAS. Brasil. Folha informativa – COVID-19 (doença causada pelo novo coronavírus). [https://www.paho.org/bra/index.php?option=com\\_content&view=article&id=6101:covid19&Itemid=875](https://www.paho.org/bra/index.php?option=com_content&view=article&id=6101:covid19&Itemid=875). [Acessado 13/05/20]
3. Brasil. Ministério da Saúde. Ministério da Saúde. <https://covid.saude.gov.br/>. [Acessado 13/05/20]
4. Castells. M. Fim do milênio: era da informação: economia, sociedade e cultura. 2ª ed. São Paulo: Paz e Terra. Vol 3. 2000.
5. Cuetos, M. O Covid-19 e as epidemias da Globalização. <http://www.revistahscm.coc.fiocruz.br/o-covid-19-e-as-epidemias-da-globalizacao/> [acesado 11/05/20].
6. Brasil. Secretaria de Vigilância em Saúde/Ministério da Saúde. Infecção Humana pelo Novo Coronavírus (2019-nCoV). Boletim Epidemiológico nº8 do Centro de Operações de Emergências em Saúde Pública | COE-nCoV. COE 09 de abril de 2020. Disponível em: <https://www.saude.gov.br/images/pdf/2020/Abril/09/be-covid-08-final.pdf> [Acessado 11/05/20].
7. Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde. Coordenadoria Geral de Desenvolvimento de Epidemiologia em Serviços. Guia de Vigilância em Saúde: volume único [recurso eletrônico]/ Ministério da Saúde. Secretaria de Vigilância em Saúde. Coordenadoria Geral de Desenvolvimento de Epidemiologia em Serviços - 2ª ed. – Brasília: Ministério da Saúde, 2019, 705 p. (<http://www.portalarquivos2.saude.gov.br/images/PDF/2019/outubro/16/Volume-Unico-2019.pdf>).
8. Thomaz, E. B. A. F. et al. Conceitos e ferramentas da epidemiologia. Judith Rafaelle Oliveira Pinho (Org.) - Universidade Federal do Maranhão. UNASUS/UFMA. São Luís: EDUFMA, 2015.
9. Mamede, S. et al. Aprendizagem baseada em problemas: anatomia de uma nova abordagem educacional. Fortaleza: Hucitec, 2001.
10. Madalosso, G. INVESTIGAÇÃO DE SURTOS: passos e análises possíveis. In: ALEXANDRE, L. B. S. P. Epidemiologia para os serviços de saúde. São Paulo: Martinari, 2012.
11. Campinas, L. L. S. L.; Martines, W. R.V. Unidades básicas de saúde. In: PEREIRA, I. L.; CHANES, M.; GLVÃO, C. R. (orgs). Gestão em saúde: tendências, inovações e perspectivas. 1 ed. . São Paulo. Centro Universitário São Camilo, 2010.
12. Santos, A.S. Gestão em atenção primária à saúde e enfermagem: reflexão e conceitos importantes. In: SANTOS, A. S.; MIRANDA, S. M. R. C. (orgs). A enfermagem na gestão em atenção primária à saúde. Barueri. São Paulo. Manole, 2007.
13. Miranda, S. M. R. C. Gerenciamento da unidade básica de saúde a experiência do enfermeiro. In: SANTOS, A. S.; MIRANDA, S. M. R. C. (orgs). A enfermagem na gestão em atenção primária à saúde. Barueri. São Paulo. Manole, 2007.
14. Alves, L. A. A. R. Perfil gerencial do enfermeiro para atuar na atenção primária à saúde. In: SANTOS, A. S.; MIRANDA, S. M. R. C. (orgs). A enfermagem na gestão em atenção primária à saúde. Barueri. São Paulo. Manole, 2007.
15. São Paulo (SP). Secretaria Municipal da Saúde. Coordenação de Epidemiologia e Informação - CEInfo. Boletim CEInfo Saúde em Dados | Ano XVIII, nº 18, Junho 2019. São Paulo (SP). Secretaria Municipal da Saúde, 2019, 24p.