

Dynamics for the containment of COVID-19 transmission in a city in the interior of Amazonas State

Dinâmica para contenção da transmissão da COVID-19 em um município do interior do Amazonas

Dinámica de contención de la transmisión del COVID-19 en interior del Amazonas

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Abstract

Problem: The COVID-19-CoV pandemic caused by the novel coronavirus (SARS-CoV-2) has become one of the greatest public health challenges of this century. **Method:** This was an experience report study carried out by final-year students in medicine, nursing and dentistry at Amazonas State University (Universidade do Estado do Amazonas, UEA), in the discipline of “Rural Internship in Collective Health,” in the municipality of Itapiranga, state of Amazonas. The experience that prompted the students’ report took place in August and September of 2020. **Results:** The students were included in the municipality’s family health teams, with which they developed activities such as visits to riverside communities, consultations, and nursing, medical and dental care. COVID-19 prevention measures in the municipality were implemented with the guidance of health professionals in the management of the disease. The use of masks, social distancing and closing of shops were some measures adopted after the first confirmed case of the virus, which occurred on April 21, 2020. Mass testing was carried out in the population to detect symptomatic and asymptomatic cases. In addition, more health professionals including physicians, nurses, psychologists and nursing technicians were hired to reinforce the health team. **Conclusion:** The Rural Internship in Collective Health in Itapiranga represented a unique opportunity for interaction between students and the health teams in the municipality, and made it possible for students to have a broader view of the functioning of primary health care, especially in a pandemic period, when the level of care proved to be as important for early diagnosis of the disease as for the effectiveness of containment measures.

Keywords: Coronavirus infections; Containment of biological risks; Disease prevention.

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Resumo

Problema: A pandemia da COVID-19 causada pelo novo coronavírus (SARS-CoV-2) tornou-se um dos maiores desafios de saúde pública deste século. **Método:** Trata-se de um estudo do tipo relato de experiência, realizado por alunos finalistas dos cursos de Medicina, Enfermagem e Odontologia da Universidade do Estado do Amazonas (UEA), na disciplina de “Estágio rural em saúde coletiva”, no município de Itapiranga, estado do Amazonas. A experiência que deu origem a este relato ocorreu nos meses de agosto e setembro de 2020. **Resultados:** Os alunos foram inseridos nas equipes de saúde da família do município, com as quais desenvolveram atividades como visitas domiciliares, ações educativas em saúde, testes rápidos para COVID-19, visitas a comunidades ribeirinhas, consultas e atendimentos de enfermagem, medicina e odontologia. As medidas de prevenção da COVID-19 no município começaram com a orientação dos profissionais de saúde para o manejo da doença. Uso de máscaras, isolamento social e fechamento do comércio foram algumas providências adotadas após o primeiro caso confirmado do vírus, ocorrido no dia 21 de abril de 2020. Foi realizada testagem em massa na população para a detecção dos casos sintomáticos e assintomáticos. Além disso, foram contratados mais profissionais de saúde como médicos, enfermeiros, psicólogos, técnicos de enfermagem e fisioterapeutas a fim de reforçar a equipe de saúde. **Conclusão:** O estágio rural em saúde coletiva na cidade de Itapiranga representou uma oportunidade ímpar de interação entre os discentes e as equipes de saúde do município, além da possibilidade de se ter uma visão mais ampla da funcionalidade da atenção primária à saúde, principalmente em período pandêmico, quando esse nível de atenção se mostrou tão importante para o diagnóstico precoce da doença quanto para a efetividade das medidas de contenção.

Palavras-chave: Infecções por coronavírus; Contenção de riscos biológicos; Prevenção de doenças.

Resumen

Problema: La pandemia de Covid-19-CoV causada por el nuevo coronavirus (SAR-2)S se ha convertido en uno de los mayores desafíos de salud pública de este siglo. **Método:** Se trata de un estudio de relato de experiencia, realizado por estudiantes del último año de las carreras de medicina, enfermería y odontología de la Universidade do Estado do Amazonas (UEA), en el curso de internado rural en salud colectiva, en el municipio de Itapiranga, estado de Amazonas. **Resultados:** La experiencia que dio origen a la salud de los estudiantes no ocurrió el 20/09/19, visitas a comunidades ribereñas, enfermería, consultas y consultas médicas y odontológicas. Se implementaron medidas de prevención del Covid-19 en el municipio con la orientación de profesionales para el manejo de la enfermedad. Uso de mascarillas, aislamiento social y cierre de comercios fueron algunas de las medidas adoptadas tras el primer caso confirmado del virus, ocurrido el 21 de abril de 2020. Se realizaron tests masivos en la población para detectar síntomas sintomáticos. Además, se contrataron profesionales de la salud como médicos, enfermeros, psicólogos y técnicos de enfermería para fortalecer el equipo de salud. **Conclusión:** La pasantía de salud rural en el municipio de Itapiranga representa una oportunidad única de interacción entre los estudiantes y, como equipos de salud del municipio, la oportunidad de una visión más amplia de la funcionalidad de la atención primaria de salud, especialmente en un período de pandemia. La atención es igual de importante tanto para la atención de la enfermedad como para la alerta de medidas de contención.

Palabras clave: Infecciones por coronavirus; Contención de riesgos biológicos; Prevención de enfermedades.

INTRODUCTION

The COVID-19 pandemic caused by the novel coronavirus (SARS-CoV-2) has become one of the greatest public health challenges of this century.¹ The outbreak started in a group of patients with pneumonia of unknown cause and was linked to a local seafood market in Huanan, Wuhan, Hubei Province, China, in December 2019.² Initial features of the disease included pyrexia, acute respiratory distress, reduced white blood cells, lymphopenia, and failure to resolve after three to five days of treatment with antibiotics.^{3,4}

The disease, which started in China, in a short time reached pandemic levels, being diagnosed for the first time in Brazil on February 26, 2020. The patient was an elderly man living in São Paulo, who was returning from a trip from Italy. The disease spread quickly and, shortly after the confirmation of the first case, there was already community transmission in some cities.⁵

In the state of Amazonas, COVID-19 was first reported on March 13, 2020; the patient was a 39-year-old female with recent travel to London, England. Afterwards, up to February 2022, more than 570 thousand cases were reported with more than 14 thousand deaths, thus making the state one of the worst scenarios of the disease in Brazil and in the world.⁶

Among various problems that threaten the health situation of the population in the Amazon region, COVID-19 adds to the list of growing threats faced mainly by the rural population. The Brazilian Legal Amazon accounts for more than 17% of coronavirus infections and deaths in the country, mainly in the states of Amazonas and Pará, which appear respectively in 15th and 12th position in national statistics.⁷

In the first months of 2021, Amazonas faced the second epidemic wave, driven by the emergence of the gamma variant (P1), first identified in December 2020. The highest daily average of cases was recorded in January 2021, with 2,927 cases in a single day. This was a period in which the state faced chaos in the health system, with a lack of oxygen in hospitals due to overcrowding caused by the second wave of the coronavirus.⁸

From March 2020 to December 2021, 40,796 hospitalizations of patients with COVID-19 were recorded throughout the Amazon. In the same period, 13,802 deaths were reported as resulting from the disease. Of the total number of individuals who died, 69% were residents of the capital and 31% of the countryside.⁸

Much attention was paid to the critical situation in the state capital, especially to the early collapse of the health system, which heralded a possible tragedy faced by other states and social groups less visible in the national and international media.^{7,9} Still in 2021, the capital was responsible for 53% of the cases registered throughout the state, while the interior accounted for approximately 47%. Accordingly, we describe what happened in municipalities in Amazonas that face situations similar to those generated in the capital, but which are not presented to the eyes of the world.⁹

The Amazon population and the population of the interior of other states in the North Region live a peculiar reality in relation to other states, as they face peculiarities typical of the Amazon region, such as long distances from large centers and difficulty in accessing health services.^{10,11} Such difficulty may have been a key factor both in the increase in the number of cases and in the deaths caused by the disease. In the North Region, a study conducted with riverside fishermen on the Machado do Ji-Paraná River, in Rondônia, showed that the most common problems were the lack of medications, delay in scheduling appointments and shortage of specialists in the health services.¹²

When it comes to Amazonas, this reality extends to all 61 municipalities in the interior of the state. Thus, to mitigate the conditions imposed by Amazonian peculiarities on people living in the northern region of the country, especially in relation to coping with COVID-19, it is necessary to plan actions that involve different agents and actors. Therefore, the planning process must include strategies and measures that confront the determinants identified as aggravating the health of the local population.^{11,13}

In this context, it is understood that reporting the dynamics adopted by a municipality in the interior of Amazonas to minimize the transmission of the disease and to promote its control among the resident population may facilitate decision-making during new waves of the disease. Thus, this study aimed to present an experience report of final-year students in nursing, medicine and dentistry at the Amazonas State University (Universidade do Estado do Amazonas, UEA) in the city of Itapiranga, AM, as well as the measures promoted by the Health Department for containing COVID-19 cases.

METHODS

We as final-year students in medicine, nursing and dentistry at UEA, in the discipline of “Rural Internship in Collective Health” carried out a study of the experience report type in Itapiranga (AM). The experience that gave rise to this report took place in August and September 2020. The study

followed a qualitative approach, which describes the difficulty designed on the basis of descriptive and observational methods.¹⁴

Six final-year students in medicine, nursing and dentistry and a professor of the UEA “Rural Internship” participated in the study. Another study participant was a nurse working in the municipality’s primary care.

As sources of evidence, the following data collection techniques were used: participant observation, participation in the organizational activities of the containment plan and dialogue with the municipal health workers.¹⁵

The municipalities of the state of Amazonas are characterized by their distance from the capital and by their displacements by waterways.¹⁶ Unlike the vast majority, Itapiranga is a municipality that, despite being on the left bank of the Paran de Itapiranga River, has access to the Amazonas capital — Manaus, which is 222 km in a straight line — by land.¹⁷

In the last census carried out in 2010, the municipality had 8,211 inhabitants; in 2020, the estimated population was 9,230.¹⁶ Of this number, the majority (4,322 inhabitants) were female and the predominant age group was 10 to 14 years (1,038 people).¹⁸

The municipality is considered small, and its economy is basically linked to commerce, tourism and mainly to the public services of the prefecture. Agriculture and fishing are prominent activities, considered the main source of income for the population.¹⁷ This reality does not differ from the vast majority of municipalities in the state, since the economy of Amazonas relies mainly on agriculture, with an emphasis on harvesting bananas, oranges and cassava.^{14,19}

The municipality has four Basic Family Health Units (UBS), one of them a Basic Fluvial Unit (UBSF), with a Family Health Strategy (ESF) team and coverage of 100% of the population. UBSFs are vessels equipped with furniture, ambience and equipment necessary to serve the riverside population. The purpose of such units is to respond to the specificities of these regions, ensuring care for populations residing in remote and difficult-to-access areas, as provided for in the National Primary Care Policy (PNAB).²⁰

In the units, medical, dental and nursing consultations are carried out, considering the programs recommended by the Ministry of Health. In addition, some procedures are performed such as removal of stitches, changing dressings, nebulization and medication administration.²⁰

The secondary level regional hospital, with 18 beds, provides medical and nursing care and assistance and outpatient (gynecological and pre-surgical) and urgency/emergency care, and it performs surgeries of small and medium complexity, thus integrating the services provided, aiming at referral and counter-referral.²¹

In Itapiranga, health indicators are agreed upon through management instruments, one of which is SISPACTO. This is a virtual instrument that aims to complete and record a pact with priorities, goals, objectives and 23 health pact indicators, such as the Mortality Information System (SIM), the Live Birth Information System (SINASC) and the Notifiable Diseases Information System (SINAN).²²

On the basis of these indicators, it is possible to know the main diseases and conditions that affect the municipality, to carry out health planning according to the real needs of the population.²²

In 2019, the birth rate in the municipality was 31.0%, and the infant mortality rate was 23.12 per thousand live births. Compared with all the municipalities in the state, Itapiranga ranks 19 out of 62 and 56 out of 62, respectively. When compared to cities in Brazil, these positions are 1,883 out of 5,570 and 4,734 out of 5,570, respectively.^{16,23}

Still in 2019, the mortality rate in the municipality was around 8%, with diseases of the circulatory system being the leading cause of death with 48.3%, which is no different from other municipalities or regions of the country.²³⁻²⁵

RESULTS AND DISCUSSION

On the basis of the schedule proposed by the university, the students were included in the municipality's ESF and gave educational lectures at the UBS on various topics, such as the importance of measures to prevent COVID-19, reporting symptomatic cases in the community and the importance of early diagnosis of the disease.

Another important point was the carrying out of mass rapid tests in the city and in the rural area of the municipality, through joint efforts in the UBS during extended hours, associations of people with disabilities, in schools and homes. There were also consultations and nursing, medical and dental care, training of community health agents and home visits, to monitor the evolution of patients who tested positive for the virus.

To comply with the calendar of activities, the students were also included in the ESF of the UBSF, with which they were able to carry out visits to riverside communities and determine the main difficulties and needs of this population and make quick tests in schools and homes of people who lived in difficult-to-reach areas, being able to identify and guide individuals and family members who were asymptomatic and positive for the virus. Consequently, such activities were intended both for student learning and to reinforce the teams of the health units. So in this way, it was possible to exchange knowledge and practices with comprehensive care.

Regarding the cases of COVID-19 up to May 24, 2021, the municipality had 3,032 cases, with more than 40 deaths, where it was 32nd in number of deaths in the state.²⁶

As for the measures to combat the disease in the municipality, in February 2020, the protocols recommended by the Health Surveillance Foundation of Amazonas (Fundação de Vigilância em Saúde do Amazonas, FVS-AM) were adopted. Health professionals were instructed in how to manage the disease. Technical reports on the pathological process were periodically passed on to both hospital teams and the UBS. Such reports were carried out in meetings with groups of professionals who worked in the health units and also with the population that sought the services.

At the beginning of the COVID-19 pandemic, measures like these were adopted across much of the country. At the time, there was little knowledge about the symptoms of the disease and especially about containment measures.¹⁰ In this scenario, health education proved to be extremely important in the planning and development of measures, because in addition to aiming at disease prevention, it showed the importance of basic care for the prevention and control of contagion.²⁷

Another measure adopted as of the second half of March 2020, still at the beginning of the disease cases in the state, was the installation of a physical barrier at the entrance and exit of the municipality to provide guidance on wearing masks and monitoring people coming from other states and, above all, from Campo do Azulão.

Located in the municipality of Silves, near Itapiranga, Campo de Azulão is a natural gas exploration region that will be the first to produce this fuel in the Amazon Basin, under the responsibility of an oil company. With workers from other states and also from nearby municipalities, it provides a high turnover of human resources in the region, thus causing a high flow of people and clusters in the municipality and causing a strong impact on the dynamics of containing the virus.²⁸

The monitoring of people who passed through the barrier was carried out via daily phone calls, for a period of 15 days, when knowledge of the health of those involved in these movements was sought. Physical or sanitary barriers, measures considered classic in public health, in addition to isolation and

quarantine, were widely used from the 14th century to the mid-19th century, having significantly influenced the course of epidemics of smallpox, bubonic plague and the Spanish flu.^{29,30}

The sanitary barrier worked from 07:00 to 19:00 hours until the first confirmed case of the disease in the municipality. After that, the open hours were extended to 24 hours a day, and the barrier was expanded in the division between Itapiranga and the neighboring municipality, Silves, to control the entry of people. During this period, intercity travel was suspended, which lasted until the end of June 2020.

After the first confirmed case, guidelines were intensified and mass testing was carried out on employees of the oil company operating in Campo do Azulão, as most employees were staying in Itapiranga.

In March 2020, the first suspected case of the disease occurred in the city, reported in a resident of Itapiranga who had arrived a few days before from the state of São Paulo and who had flu-like symptoms. This and five other suspected cases, which were negative, were confirmed using the reverse transcription polymerase chain reaction (RT-PCR) test.

Despite the efforts of the municipality, on April 21, 2020, the first case of the disease was confirmed in Itapiranga, in an employee of the oil company who was not a resident of the municipality but remained there because of his work. From this first case, measures such as server isolation and mass testing of other workers who had contact with him were adopted.

The first case of COVID-19 in Amazonas took place in March 2020, and in April of the same year, the disease was reported in 22 more municipalities in the state.²⁶ At the time, there were already government decrees that indicated the adoption of containment measures, such as the suspension of the operation of all commercial establishments and non-essential services intended for recreation and leisure, the mandatory use of masks to combat the proliferation of the new coronavirus and the suspension of classes within the public and private state education network. All these decrees brought measures that could contain the number of cases and a probable collapse of the state health system.^{31,32}

In the municipality of Itapiranga, eight exclusive beds were opened for patients with COVID-19, and a mechanical ventilator was installed; in addition, two pink rooms were created (exclusive for the care of the disease), along with an office for the care of respiratory symptoms. Physicians, nurses, psychologists, nursing technicians, physiotherapists and general service employees were also hired for reinforcement in cases of the disease. The hospital received from the state government materials and supplies necessary to face the pandemic.

Between April and May, distancing measures were intensified, with the closing of private and public schools and non-essential businesses, the systematic disinfection of buses that circulated in the municipality and greater investment in guidance measures for the public and health servers.

At the same time, there was an epidemiological survey with active search through home visits or telephone calls of all confirmed cases in progress and the tracking of signs and symptoms of contacts and family members. This measure was also extended to rural communities, where the entire community was tested for the disease when there was a positive case.

Despite these measures, the municipality presented its highest number of cases on May 31, 2020 (345 confirmations). Until that date, four deaths from the disease had been confirmed, representing 0.83% of the population and 1.16% of the case fatality rate.²⁶ This was a reality not very different from the rest of the state and the country, which had a high number of cases at the time, considering the state of Amazonas as the epicenter of the pandemic in Brazil.³³

After the peak of the disease, in May 2020, mass testing of the population was carried out, which was only possible with the help of private companies that operate in the region and provided part of the kits and supplies for testing. Carrying out mass diagnostic testing in the population makes it possible to intensify

the isolation of infected people, especially asymptomatic cases, improve monitoring of the evolution of the epidemic, objectively guiding decision-making to face the virus.³⁴

Health professionals emphasized that during the months with the highest number of cases of the disease in 2020, they faced several difficulties, such as lack of materials, medicines and personal protective equipment (PPE). This reality affected all of Brazil, directly reflecting the increased risk of infection by health professionals due to the lack of sufficient PPE and the decline in the quality of care provided to patients affected by the disease.³⁵

In September 2020, with the decrease in cases, when the municipality recorded a fall, with a changing average of 13.28,²⁶ businesses, schools and other establishments were reopened and sanitary barriers were dismantled. However, protective measures such as the mandatory use of a mask and social distancing were maintained.

In January 2021, the state of Amazonas suffered a new wave of COVID-19, even more intense than the one that occurred in 2020, and only in the months of January, February and March of that year were there more deaths from the disease than during all of 2020.^{26,33} This new wave also reached the municipality of Itapiranga, in which during these months, 1,228 new cases were recorded, with 14 deaths.²⁶

CONCLUSION

The municipality of Itapiranga is considered a small municipality, but like the other municipalities in the interior of Amazonas, it had a rapid spread of the virus. Although preventive measures were taken, even before the first confirmed case, they were unable to inhibit the increase in the number of cases, but they did minimize the rapid spread of the disease and did prevent a total collapse of the health of the municipality.

The “Rural Internship in Collective Health” in the city of Itapiranga provided students with professional and personal experiences that will help and guide them throughout their careers, as it represented a unique opportunity for interaction between students and health care teams, in addition to giving them the possibility of having a broader view of the functioning of primary health care — especially in a pandemic period, when this level of care proved to be as important for the early diagnosis of the disease as for the effectiveness of containment measures.

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CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTION

YBC: Project management, Formal analysis, Writing – first draft, Writing – review & editing, Visualization. JACA: Project management, Writing – first draft, Writing – review & editing. GZSM:

Conceptualization, Data curation, Writing – review & editing. TCBM: Investigation, Methodology, Funding acquisition, Resources. SESC: Software, Supervision, Validation. ARPO: Writing – first draft, Writing – review & editing, Methodology.

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