

UNIVERSIDADE ESTADUAL DE MONTES CLAROS

Beatriz Rocha Sousa Duarte

**Avaliação dos dados epidemiológicos da Covid-19 no município de Vitória
da Conquista, Bahia, Brasil**

Vitória da Conquista - BA

2021

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Dissertação a ser apresentada como requisito para obtenção do título de Mestre em Ciências da Saúde, pela Universidade Estadual de Montes Claros em parceria com o Instituto de Pesquisa e Extensão.

Área de concentração: Mecanismos e A. clínicos das doenças

Orientador: DSc. Sérgio Henrique Sousa Santos

Coorientador: DSc. Stenio Fernando Pimentel Duarte

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UNIVERSIDADE ESTADUAL DE MONTES CLAROS
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NOME DO(A) DISCENTE: BEATRIZ ROCHA SOUSA DUARTE

- Mestrado Acadêmico em Ciência Da Saúde
 Doutorado Acadêmico em Ciências Da Saúde

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BANCA (TITULARES)	ASSINATURAS
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APROVAÇÃO REPROVAÇÃO

*Dedico a presente dissertação à Deus, Nossa Senhora,
meus pais, meu esposo e minha filha, Elisa.*

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“Ore como se tudo dependesse de
Deus e trabalhe como se tudo
dependesse de você.”
(Santo Inácio de Loyola)

RESUMO

A COVID-19 é uma doença causada pelo novo Coronavírus SARS-CoV-2, que tem mostrado afetar principalmente as vias respiratórias do indivíduo. A rápida disseminação preocupou representantes de órgãos e entidades de todo o mundo visto que, com menos de um ano que a pandemia havia sido instaurada, mais de 44 milhões de pessoas haviam sido contaminadas em todo mundo. No Brasil o quadro não foi diferente, sendo o Nordeste a terceira região com maior número de casos confirmados. Ao considerar os inúmeros impactos negativos advindos da pandemia e a alta incidência da doença nas cidades nordestinas, a presente dissertação teve por objetivo avaliar os dados da Covid-19 no município de Vitória da Conquista. A cidade referida é considerada um polo de educação e saúde da região sudoeste da Bahia, sendo a terceira maior cidade do estado, com cerca de 348.718 habitantes. Quanto a metodologia, tratou-se de uma pesquisa epidemiológica, descritiva, de caráter transversal, observacional e quantitativa, sendo utilizado como base, o banco de dados de pacientes com quadro de síndrome gripal desenvolvido pelo Núcleo de Tecnologia da Informação da prefeitura da cidade referida. O sistema foi projetado para realizar a triagem, classificação e monitoramento dos casos de Síndrome Gripal (SG), Síndrome Respiratória Aguda Grave (SRAG) e casos confirmados para COVID-19. Quanto a análise estatística os dados foram categorizados a fim de proceder as análises descritivas e bivariadas, respeitando os princípios da bioestatística. Todas as variáveis citadas foram trabalhadas de forma categórica e tratadas por uma abordagem quantitativa. Ressalta-se que todas as análises foram realizadas utilizando o programa estatístico SPSS, na versão 23.0, software (SPSS, Chicago, IL) e que $p < 0,05$ foi considerado estatisticamente significativo. Salienta-se que a pesquisa é uma fração do projeto intitulado “Avaliação do efeito do distanciamento social no período da pandemia pelo Covid-19 sob os aspectos comportamentais, psicológicos e físicos” e que esta foi aprovada pelo Comitê de Ética e Pesquisa do Hospital Esaú Mattos (nº parecer 4.737.274). Dentre os resultados, foi observado um maior percentual de casos confirmados em indivíduos de 21 a 40 anos, correspondendo a 42,75% do total de infectados. Em relação ao sexo, notou-se uma maior incidência de casos confirmados em mulheres (56,53%), mas um maior percentual de óbitos em homens entre o total de casos confirmados em geral (0,98%).

Indivíduos com 60 anos ou mais apresentaram a maior taxa de letalidade (8,84%), enquanto nas demais faixas etárias os índices ficaram abaixo de 1,00%. Além disso, percebeu-se que houve significância estatística no que se refere a maiores chances de óbitos em portadores de Doença Cardiovascular, incluindo a Hipertensão Arterial Sistêmica (HAS), com 60 anos ou mais (p 0,0203). Dessa forma, pôde-se concluir que idosos, homens e pacientes com doença cardiovascular (DCV) fazem parte do que é considerado grupos de risco para COVID-19.

Palavras-chave: SARS-CoV-2. Doenças do trato respiratório. Pandemia.

ABSTRACT

COVID-19 is a disease caused by the new Coronavirus SARS-CoV-2, which primarily affects the airways. Its rapid spread worried representatives of agencies and entities around the world since, in less than a year since the pandemic had been established, more than 44 million people had been infected worldwide. In Brazil, the Northeast came to be the third region with the highest number of confirmed cases. When considering the numerous negative impacts arising from the pandemic and the high incidence of the disease in northeastern cities, this dissertation aimed to evaluate the data on Covid-19 in the municipality of Vitória da Conquista. The city is considered an education and health hub in the southwest region of Bahia, being the third largest city in the state, with about 348,718 inhabitants. With regard to methodology, it was an epidemiological, descriptive, cross-sectional, observational and quantitative research, using the database of patients with flu-like syndrome developed by the Information Technology Center of the city government as a basis. The system was designed to screen, classify and monitor cases of Flu Syndrome (SG), Severe Acute Respiratory Syndrome (SRAG) and confirmed cases for COVID-19. As for the statistical analysis, the data were categorized in order to carry out descriptive and bivariate analyses, respecting the principles of biostatistics. All variables mentioned were worked on categorically and treated using a quantitative approach. It is noteworthy that all analyzes were performed using the SPSS statistical program, version 23.0, software (SPSS, Chicago, IL) and $p < 0.05$ was considered statistically significant. It should be noted that the research is a part of the project entitled "Assessment of the effect of social distancing during the pandemic by Covid-19 under behavioral, psychological and physical aspects" which was approved by the Ethics and Research Committee of Esaú Mattos Hospital (no. opinion 4,737,274). Among the results, a higher percentage of confirmed cases was observed in individuals aged 21 to 40 years, corresponding to 42.75% of the total infected. Regarding gender, there was a higher incidence of confirmed cases in women (56.53%), but a higher percentage of deaths in men among the total number of confirmed cases in general (0.98%). Individuals aged 60 years or more had the highest mortality rate (8.84%), while in the other age groups the rates were below 1.00%. In addition, it was noticed that there was statistical significance with regard to greater chances of death in patients with Cardiovascular Disease, including Systemic Arterial Hypertension (SAH), aged 60 years or more ($p = 0.0203$). Thus, it could be concluded that the

elderly, men and patients with cardiovascular disease (CVD) are part of what are considered risk groups for COVID-19.

Keywords: SARS-CoV-2. Respiratory diseases. Pandemic.

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1 INTRODUÇÃO

A COVID-19 é uma doença causada pelo novo Coronavírus SARS-CoV-2, que teve início em Wuhan, na China, e tem mostrado afetar, principalmente, as vias respiratórias do indivíduo. Ademais, evidencia-se que não são todos os contaminados que apresentam sintomas, visto que, segundo a Organização Mundial de Saúde (OMS), parte dos casos dos que testaram positivo têm se mostrado assintomáticos ou oligossintomáticos, isto é, poucos sintomas (OMS, 2021; ZHU et al., 2020).

Quanto aos casos sintomáticos, pode-se citar como sinais mais frequentes febre, tosse seca, mialgia, cefaleia, coriza, dor de garganta, dispneia de leve a progressiva, adinamia, produção de escarro, diarreia e náuseas (AMARAL et al., 2020; TANG et al., 2020). Porém, quanto aos casos mais graves da doença, menciona-se: a) insuficiência respiratória, no qual as trocas gasosas do organismo não ocorrem de maneira eficaz e satisfatória; b) Síndrome do Desconforto Respiratório Agudo (SDRA), ocasionada devido a lesões nos alvéolos pulmonares; c) pneumonia atípica que, como o próprio nome já diz, é causada por microrganismos inabituais e é consideravelmente contagiosa; d) morte (GREENLAND et al., 2020; MORELLO et al., 2019).

Segundo o Ministério da Saúde (2020), caso o indivíduo apresente os sintomas ou tenha tido contato próximo com casos positivados para Covid-19, o médico requererá a testagem, podendo ser pelo RT-PCR, considerado o padrão-ouro de diagnose, no qual coleta-se a amostra de swab na garganta ou nariz do caso suspeito, ou pelos testes imunológicos, que irão detectar, caso o paciente tenha se infectado, a presença dos anticorpos por meio de coleta de sangue. Evidencia-se que o primeiro deve ser realizado na fase ativa da doença e o segundo, na fase convalescente (BRASIL, 2021).

Pela rápida transmissibilidade, muito se tem alertado sobre os métodos de prevenção, o que inclui, o distanciamento social e a intensificação das práticas de higiene (SILVA et al., 2020). Isto ocorre devido ao fato de que o Covid-19 é transmitido por meio do contato com secreções infectadas ou pelo ar e, por isso, o isolamento social, a quarentena e o fechamento de escolas e comércio foram vistos como a maneira mais eficaz de afastar-se do “perigo” (CASTRO et al., 2020). Dessa forma, pode-se afirmar que a pandemia trouxe consigo uma

intensa crise mundial que afetou não só o sistema de saúde, como também a economia, com a diminuição considerável da mobilidade urbana (FERNANDES, 2020; PORSSE et al., 2020; OZILI et al., 2020).

O transporte público, por exemplo, foi um dos setores que mais experimentou essa redução. Estudos também mostraram redução no ramo do comércio, com decréscimo nas vendas presenciais e aumento no número de lojas on-line. Entretanto, por ser algo novo para muitos compradores, essa dilatação nas vendas on-line não superou o quantitativo de vendas registrado no ano precedente à pandemia (ALOI et al., 2020; GONÇALVES; MALFITANDO, 2021; COUTO et al., 2020; BERT et al., 2020).

Conforme a pesquisa Pulso Empresa divulgada pelo Instituto Brasileiro de Geografia e Estatística (IBGE), na segunda quinzena de agosto de 2020, 33,5% das empresas em funcionamento afirmaram que a pandemia suscitou efeitos negativos sobre os negócios. Além disso, 21,4% delas tiveram de aderir a medidas de apoio ofertadas pelo governo, seja com o adiamento do pagamento de impostos e/ou apelo a uma linha de crédito emergencial para pagamento das despesas (IBGE, 2021).

Cabe ressaltar que portadores de Doenças Crônicas Não- Transmissíveis (DCNT) como a hipertensão, a diabetes e o câncer, por exemplo, são vistos como um grupo de risco, além das gestantes e idosos (COUTINHO et al., 2020; TANG et al., 2020; VERMA et al., 2020). Ademais salienta-se que os hormônios femininos, estrogênio e progesterona, possuem função anti-inflamatória, sendo estes responsáveis por: acelerar a produção de anticorpos; viabilizar o processo anabólico das células epiteliais do trato respiratório; e refrear a angiotensina 2, receptor considerado porta de acesso do Covid-19 no organismo. Estes fatores podem justificar o maior número de óbitos por SARS-CoV-2 no público masculino, uma vez que as mulheres, ao contrário dos homens, tendem a apresentar os hormônios referidos em maiores níveis séricos, sendo assim beneficiadas pelo seu efeito protetor (PINNA, 2020).

Conforme dados divulgados pelo Ministério da Saúde (2021), no Brasil, até o final do mês de setembro de 2021, foram confirmados 21.351.972 casos de Covid-19 e 594.443 óbitos, correspondendo a uma letalidade de 2,8% (BRASIL, 2021). Considerando a gravidade da doença mencionada e os impactos negativos advindos da mesma, a presente

dissertação teve por objetivo avaliar os dados epidemiológicos da Covid-19 no município de Vitória da Conquista, Bahia, Brasil.

2 OBJETIVOS

2.1 Objetivo Geral

Avaliar os dados epidemiológicos da Covid-19 no município de Vitória da Conquista, Bahia, Brasil.

2.2 Objetivos Específicos

- Identificar a faixa etária dos indivíduos que foram mais acometidos pela Covid-19 no município de Vitória da Conquista;
- Determinar possíveis fatores de risco para a doença em questão;
- Avaliar a possível influência de fatores externos com o aumento do número de casos de Covid-19 em Vitória da Conquista.

3 PRODUTOS CIENTÍFICOS

3.1 PRODUTO 1

Artigo 1: Analysis of 2020 data on COVID-19 in the municipality of Vitória da Conquista in the state of Bahia-Brazil

Carta de aceitação de manuscrito (ANEXO B)

Analysis of 2020 data on COVID-19 in the municipality of Vitória da Conquista in the state of Bahia-Brazil

Beatriz Rocha Sousa Duarte^{*}, Juliano Gusmão de Oliveira^{*}, Mylena Borges Dias Santos^{*}
Esther Gusmão Mendes^{*}, Alfredo Maurício Batista de Paula^{**}, Sérgio Henrique Sousa Santos^{***}

Stenio Fernando Pimentel Duarte (Instituto de Pesquisa e Extensão)

^{*}Instituto de Pesquisa e Extensão

^{**}Universidade Estadual de Montes Claros

^{***}Universidade Federal de Minas Gerais

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Abstract- The pandemic caused by SARS-CoV-2 virus started in December 2019, triggering several changes in health systems. In October 2020, Brazil was the third country with the highest absolute number of confirmed cases in the world ranking. This research aims to analyze COVID-19 data from 2020 in the municipality of Vitória da Conquista, which is the third largest city in the state of Bahia, Brazil. This is an epidemiological, descriptive, cross-sectional, observational, and quantitative research. The database of patients with flu-like illness developed by the Information Technology Center of Vitória da Conquista City Government was used as a basis. There were a higher percentage of confirmed cases in individuals aged 21 to 40 years, corresponding to 42,75% of the total infected. Compared to gender it was noted that a higher incidence of confirmed cases in women (56,53%), but a higher percentage of deaths in men among the total confirmed cases in general (0,98%). Individuals aged 60 years or more had the highest rate of lethality (8,84%). It was noted that elderly people, men, and patients with CVDs, are part of what is considered risk groups for COVID-19 and individuals older than 60 years with CVDs, including SAH, are more likely to die by COVID-19.

Index Terms- COVID-19; epidemiological analysis; pandemic; Brazil.

I. INTRODUCTION

Introduction

Originated at Wuhan City of China, COVID-19 is a disease caused by the new Coronavirus SARS-CoV-2, and has caused panic in the population, since statistics reveals the considerable growing of confirmed cases every day. By the end of October 2020, more than 44 million people worldwide had been infected with SARS-CoV-2, and about 1.17 million people had died (Khan and Khan, 2021; Mohamadian *et al.*, 2021).

According to an epidemiological bulletin released by the Ministry of Health in October 2020, Brazil was the third country with the highest absolute number of confirmed cases in the world ranking, recording 5.224.362 infected individuals. With respect to deaths, Brazil was in second place with 153,675 deaths, surpassed only by the United States with 218.599. The Northeast was the third Brazilian region with the highest incidence of confirmed cases, with 2.483.40 cases per 100.000 inhabitants (BRASIL, 2020).

The significant SARS-CoV-2 contagion expansion raised great concern in the population that, with flu-like symptoms appearing, started to look for hospitals more frequently. Of 819.845 individuals hospitalized with severe acute respiratory syndrome (SARS), 442.754 were confirmed for COVID-19, which is 54% of the patients. The 46% remaining were classified into one of the categories described below: unspecified SARS, ongoing investigation, diagnosed with Influenza, patients contaminated by other respiratory viruses or infected by other pathogens (Brasil, 2020; Fox, Trauer and McBryde, 2020).

During the pandemic period, many cities started to publish in their official networks the Epidemiological Bulletins, presenting the main data and briefly describing the monitoring of the disease each week. In these Bulletins, previously unknown terms to a large part of the population, were disclosed, including: "transmission

rate" which, according to Minas Gerais State Health Department, is the approximate calculation of how the virus spreads in the studied region/place; "confirmed cases", which is the number of individuals with a positive diagnosis for COVID through clinical evaluation and/or serology tests and/or RT-PCR; "number of deaths", that is, patients who died resulting from COVID and its injuries; "lethality", that measures the disease severity and thus estimates its probability of leading the subject to death; "active cases", which are those who have not died and do not yet fall under "recovered from COVID -19" (Christine and Gomes, 2015; Dias *et al.*, 2020; Medeiros, 2020).

Considering the numerous repercussions arising from the COVID -19 pandemic and the significant positive cases growth, this article aims to analyze COVID-19 data from the municipality of Vitória da Conquista.

II. METHODS

This is an epidemiological, descriptive, cross-sectional, observational, and quantitative research. The research was conducted in the municipality of Vitória da Conquista - BA, Brazil (latitude: 14° 51' 58"; longitude: -40° 50' 22) which, according to the census of the Brazilian Institute of Geography and Statistics (IBGE), has an estimated population of about 348.718 inhabitants (ATLAS BRASIL, 2017). Vitória da Conquista is the third largest city in the state of Bahia and it is considered an education and health hub in the southwest region of the state.

All age groups are included in the study and the data contain registers added in the system from March 15, 2020. In addition, to determine the date of the recorded data, the symptom onset date informed by the patient during the consultation was used. When this information was absent, the date of insertion of the data was used instead. This was necessary because the clinical outcome (death by COVID-19 or recovered cases from COVID-19) does not have a determined date in the system. Consequently, the data described in this work differ from those disclosed by Vitória da Conquista City Government (PMVC – Prefeitura Municipal de Vitória da Conquista, in Portuguese) through the epidemiological bulletins.

In this article, the following variables have been included:

- Transmission rate (R_t), which aims to measure the spread of a certain disease in the investigated population, as in the case of SARS-CoV-2 spread in Vitória da Conquista. It is obtained by means of a calculation that determines the number of people that an infected individual can infect. When $R_t > 1.00$, it is expected that there will be a considerable expansion of the disease within the next 8 days, otherwise. In contrast, $R_t < 1.00$ indicates that the disease is under control and the rate of new infections will decrease (Bettencourt and Ribeiro, 2008; Caicedo-Ochoa *et al.*, 2020).

- Notified Cases, which are all individuals who came into contact, via telephone, with the Call Center from the Municipality of Vitória da Conquista presenting COVID-19 suspicious symptoms and were registered in the Telemonitoring System.

- Confirmed cases, which are the individuals who tested positive for COVID-19 by RT-PCR or Antigen Test, in which a swab sample is collected from the throat or nose of the person, or by immunological tests that detect, if the patient has become infected, the presence of antibodies through blood collection. It is evidenced that RT-PCR and Antigen Test were performed from the 2nd to the 7th day of symptoms and the immunological test, from the 8th day of symptoms (Brasil, 2020).

- Number of deaths, which correspond to all patients who obtained the Basic Cause (CB) of COVID-19 death and its complications in their Death Certificate (DO).

- Recovered for COVID-19, which are those who had already completed the 14-day social isolation phase, that was the recommended confinement period of Brazil in 2020, and who had been more than 72 hours without symptoms of "flu-like syndrome" (FLS), thus presenting a good general health status (Hoang *et al.*, 2020; Sales, Silva and Maciel, 2020).

- Active cases, which were obtained from the number of confirmed cases, subtracted by the number of patients who died and those who recovered from COVID-19 (Moura *et al.*, 2020).

- Lethality, which is obtained by dividing the number of deaths per COVID-19 by the number of confirmed cases in the same period, thus measuring the disease hazardousness (Hugo *et al.*, 2021).

Regarding to statistical analysis, categorical variables were described by frequency and percentages and continuous variables, on the other hand, were described by averages and standard deviations. Patient characteristics were compared Chi squared or Fisher Exact Tests for categorical variables. Thus, using the Odds Ratio Test with a 95% confidence interval it is possible to determine whether the comorbidities reported by the individuals increased the risk of worse outcomes. All analyzes were performed using the SPSS statistical program, version 23.0, software (SPSS, Chicago, IL). $P < 0.05$ was considered statistically significant.

It is important to mention that this study was approved by the Ethics and Research Committee of Esaú Mattos Hospital, under approval number 4.737.274. Furthermore, the research was granted by the Education Pole of the municipality of Vitória da Conquista, thus allowing researchers access to the database of City Government Telemonitoring System.

III. RESULTS

In 2020, in Vitória da Conquista, a higher percentage of confirmed Covid-19 cases was observed in individuals aged between 21 and 40, which corresponds to 42,75% of the total infected. Those aged 41 to 59 were equivalent to 31,40% of the total confirmed cases. The ages with the lowest incidence of confirmed cases were, respectively: under 20 years old, representing only 11,37% of the total number of infected; and people aged 60 years and over, corresponding to 11,48% of confirmed cases. As for gender, the incidence of confirmed cases was higher in women compared to men, represented by 56,53% and 43,47%, respectively. In Figure 1 and Table 2 can be observed the age and sex profile of confirmed Covid-19 cases in Vitória da Conquista in 2020.

About lethality (Table 1) in 2020, it was observed that individuals aged 60 years or more had greater chances of dying by COVID-19, with lethality rate equal to 8,84. In the other age groups, the mortality percentages were below 1,00%. The data show that there was a greater number of confirmed cases in women, but a higher rate of deaths in men.

In respect of comorbidities (Figure 2), it was identified that among those who died by COVID-19 with pre-existing diseases, 62,50% were men, and 37,50% were women. The most pronounced pre-existing diseases, were CVDs, including Systemic Arterial Hypertension (SAH), which were noticed especially in elderly.

In the "others" group (Figure 2) were included, from the database, liver disease, chronic neurological or neuromuscular disease, renal disease, chronic pulmonary disease and immunosuppression, neoplasm (solid or hematological tumor), HIV infection and others. In addition, it was noticed that there was statistical significance with regard to greater chances of death in patients with Cardiovascular Disease, including Systemic Arterial Hypertension (SAH), aged 60 years or more ($p = 0.0203$), as shown in the Table 3.

The data in Table 5 were obtained by means of the Epidemiological Bulletins weekly released by the City Government. At first, it is necessary to mention the exacerbated increase of notified cases in epidemiological week from May 31 to July 6, 2020. This period coincides with the return of commercial activities in the city. The epidemiological week from July 12th to 18th, 2020, is also considerable to mention, in which there was a constant in the weekly average of hospitalized patients both in clinical beds and in Intensive Care Unit (ICU) beds. A significant event that should be highlighted occurred in the epidemiological weeks 06-12 and 13-19 December 2020, which show an increase of reported cases, confirmed cases and active cases of COVID-19.

IV. DISCUSSION

At first, it was observed that individuals aged between 21 and 59 (Figure 1) were the most affected group by COVID-19 in Vitória da Conquista. These ages coincide with the predominant age group of the working class, who naturally could not follow the "stay at home" campaigns in the media and the alerts on the Ministry of Health website, thus having greater contact with infected people (Dourado, 2020; IBGE, 2020; Oliveira *et al.*, 2020).

Children and young people under 20 represented the lower incidence of confirmed cases. They spent most of their time at home due to the suspension of in-person classes, which was replaced by remote learning. In addition to these, individuals aged 60 years or more, who constitute the elderly population of emerging countries, such as Brazil, also showed a lower incidence among confirmed cases. This can be justified by the fact that many of these elderly people are retired and are able to remain in their homes, having less contact with others (Camarano, Kanso and Fernandes, 2012; Camargo *et al.*, 2020; Saraiva, Traversini and Lockmann, 2020).

Regarding the gender, in confirmed cases, there was a greater number of infected women. These data were expected since, according to the 2010 census of the Brazilian Institute of Geography and Statistics (IBGE), the number of women is about 10% greater than the number of men aged between 20 and 60 years. This age range belongs to the highest percentage of people contaminated by SARS-CoV-2.

Regarding lethality, it was noted that those aged 60 years or more had greater chances of dying, thus confirming that the elderly are considered a risk group for COVID-19. It is known that the immune system of elderly tends to weaken over the years, and they are more vulnerable to autoimmune and infectious diseases, for example (Esquinazi, 2008; Fuentes *et al.*, 2017; Romero *et al.*, 2021).

As for the number of deaths, there was a higher percentage of deaths in the male, especially those aged 60 years or more, a statement confirmed by the mortality rate, which was shown to be above average. According to Souza, Randow and Siviero (2020), the percentage of deaths by COVID-19 in men in Brazil was 58,30% and 61,90% in Italy. This evidence a higher risk profile about mortality, confirming the data found in this research. This can be supported by the fact that women and men present distinctions both in behavioral habits, such as greater use of tobacco in men, as well as in physiological aspects (Souza, Randow and Lima, 2020).

Giagulli et al. 2020 explains that the greater number of deaths caused by SARS-CoV-2 in men may be related to serum testosterone levels, which are indispensable for preventing the occurrence of worse outcomes and/or death. The authors claim that it is possible that the low levels of this hormone can be related to the development of chronic diseases, such as cardiovascular diseases (CVDs), and even to the aging process. These factors contribute to systemic inflammation when the individual is exposed to infectious agents (Giagulli *et al.*, 2021).

Cardiovascular Diseases, including Arterial Hypertension, were among the most frequent comorbidities in cases of death by COVID-19 in patients with chronic diseases. The systematic review carried out by Gold et al. 2020 corroborates with these findings, since they place SAH and CVDs as dominant comorbidities, followed by Diabetes and Respiratory Diseases (RD), in which RD has the lowest percentage. It is noteworthy that comorbidities contribute to proliferation of pro-inflammatory agents, such as cytokines, which worsen respiratory failure and, consequently, the number of deaths (Gold *et al.*, 2020; Perrotta *et al.*, 2020).

It is noteworthy that among the main comorbidities found in confirmed Covid-19 cases for all ages, no statistical significance was found. However, some studies show that certain comorbidities may be associated with the risk of mortality in hospitalized patients, as demonstrated by Macedo et al. (2020), who investigated this situation in hospitalized patients in the state of Bahia, Brazil. Among the comorbidities analyzed by the authors, diabetes, chronic kidney disease, chronic respiratory diseases and cardiovascular diseases were the most frequent among deaths. Only immunosuppression and chromosomal disturbance were not statistically significant in this investigation (Macedo *et al.*, 2020).

Researchers performed a cohort study, on which was compared the outcomes of hypertensive and non-hypertensive individuals with COVID-19. The patients with SAH presented not only a greater number of deaths, but also more COVID-19 severe cases. It is verified that those diagnosed with SAH present an important increase in the C-reactive Protein, Interleukin-6 and procalcitonin indices, what shows that SAH tends to worsen the organic response in SARS-CoV-2 infection (Azevedo *et al.*, 2021).

Regarding the data from the Epidemiological Bulletin exposed by PMVC, there was an increase in the number of cases notified in epidemiological week of May 31 to June 06. With the reopening of commerce, the population, frightened by world news about COVID-19, started to contact the call center at the slightest sign of flu-like syndrome, seeking to know if they had been infected, which could have contributed for the increasing of reported cases.

Not only evidence-based information was disclosed by people in general media, but also the famous “fake news” which, according to Santos and Deccache-Maia (2020) harm the population as much as the virus itself (Fay, 2020). Uncertainties about the agent's control and doubts about the effectiveness of medications, for example, disturbed the psychological well-being of people, causing some scholars to name the period “a pandemic of fear” (Ornell *et al.*, 2020). This fear can explain the aroused peak of notifications in the cited epidemiological week. It is worth mentioning that in the week following the peak of notifications, the numbers decreased significantly, reducing from 4.124 to 427 notified cases.

In the epidemiological week from July 12th to 18th, 2020 was observed a constant in the weekly average of hospitalized patients both in clinical beds and in Intensive Care Unit (ICU) beds. With this episode, it was found that the virus circulating at the time had the same strain profile, remaining constant throughout the year. Thus, it can be said that the activities that took place during the year 2020 did not impact on a greater need for hospital beds. This constancy occurred not only in the occupation of beds, but also in the number of contaminated by SARS-CoV-2.

The increase in the number of confirmed, notified and active cases in the weeks of December 6th to 12th and 13th to 19th occurred due to the elections that took place between the 15th and 29th of November 2020 throughout Brazil. In this period people took to the streets in favor of defending their candidates and left their homes to exercise the right to vote, what led to a greater contact with people infected by the virus in question. However, it is noteworthy that this increase was not observed in the weekly average of hospitalized residents of Vitória da Conquista.

The impact of elections on the increase in confirmed and active cases is reaffirmed by other studies that evidenced the negative repercussions arising from elections, such as that which occurred in France. According to Bertoli et al. (2020), it is expected that the turnout of voters on election day will be higher if the competition

is being highly disputed, as what happened in Vitória da Conquista in 2020, leading many citizens to the voting centers (Bertoli and Guichard, 2020; Cassan and Sangnier, 2020).

V. CONCLUSION

Given the presented facts, it was noted that aging is an important factor about lethality and, consequently, the number of deaths by COVID-19. Elderly, males and patients with cardiovascular diseases, including Arterial Hypertension, are part of what is considered risk groups for the referred disease. Some factors tend to increase the inflammation process, thus generating worse outcomes for those infected with SARS-CoV-2, including: immunosenescence, pre-existing diseases, low levels of testosterone in men, among others.

For future studies, it is suggested to compare the number of confirmed cases and deaths by COVID-19 with urban mobility, in order to verify which are the main places of higher transmission of the virus. This possible study may contribute to the proposal of stricter measures to control social distancing, what can help minimizing contagion by SARS-CoV-2

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AUTHORS

Beatriz Rocha Sousa Duarte – master's student in health sciences, Instituto de Pesquisa e Extensão, beatrizrsousa97@gmail.com

Juliano Gusmão de Oliveira – physiotherapy student, Instituto de Pesquisa e Extensão, pesquisador01@inpesba.com.br

Mylena Borges Dias Santos – nutrition's student, Instituto de Pesquisa e Extensão, pesquisador02@inpesba.com.br

Esther Gusmão Mendes – physiotherapy student, Instituto de Pesquisa e Extensão, pesquisador03@inpesba.com.br

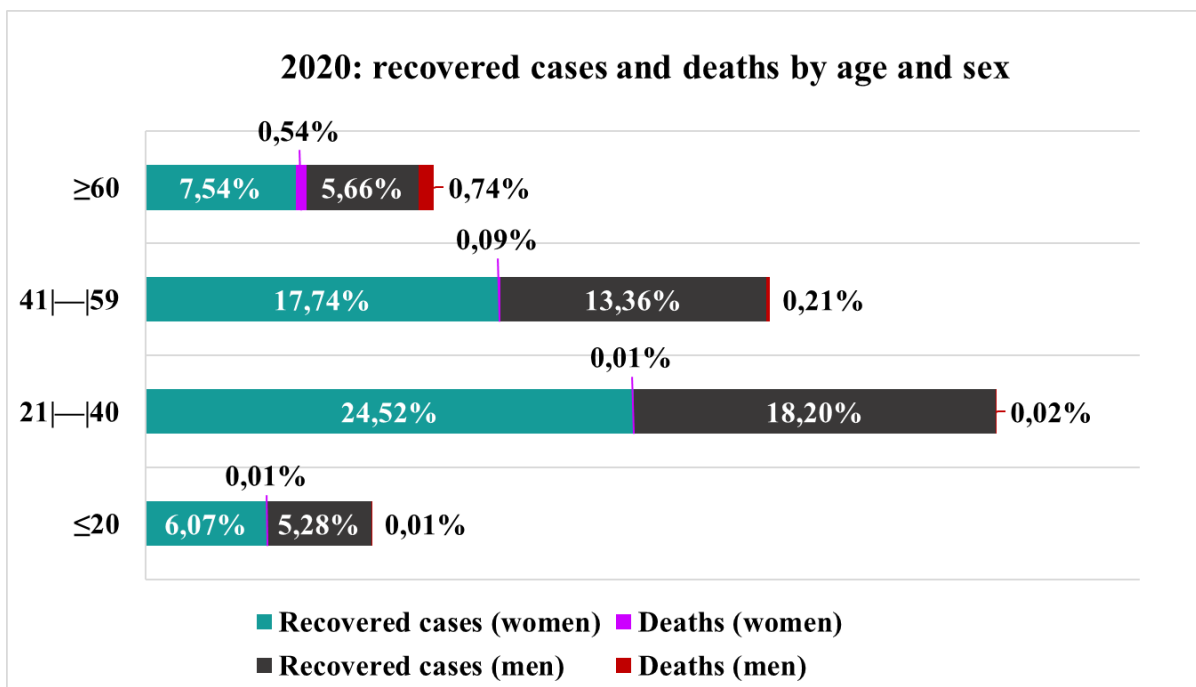
Alfredo Maurício Batista de Paula – doctor, Universidade Estadual de Montes Claros, pesquisador04@inpesba.com.br

Sérgio Henrique Sousa Santos – doctor, Universidade Federal de Minas Gerais, pesquisador05@inpesba.com.br

Stenio Fernando Pimentel Duarte – doctor, Instituto de Pesquisa e Extensão, stenio@inpesba.com.br

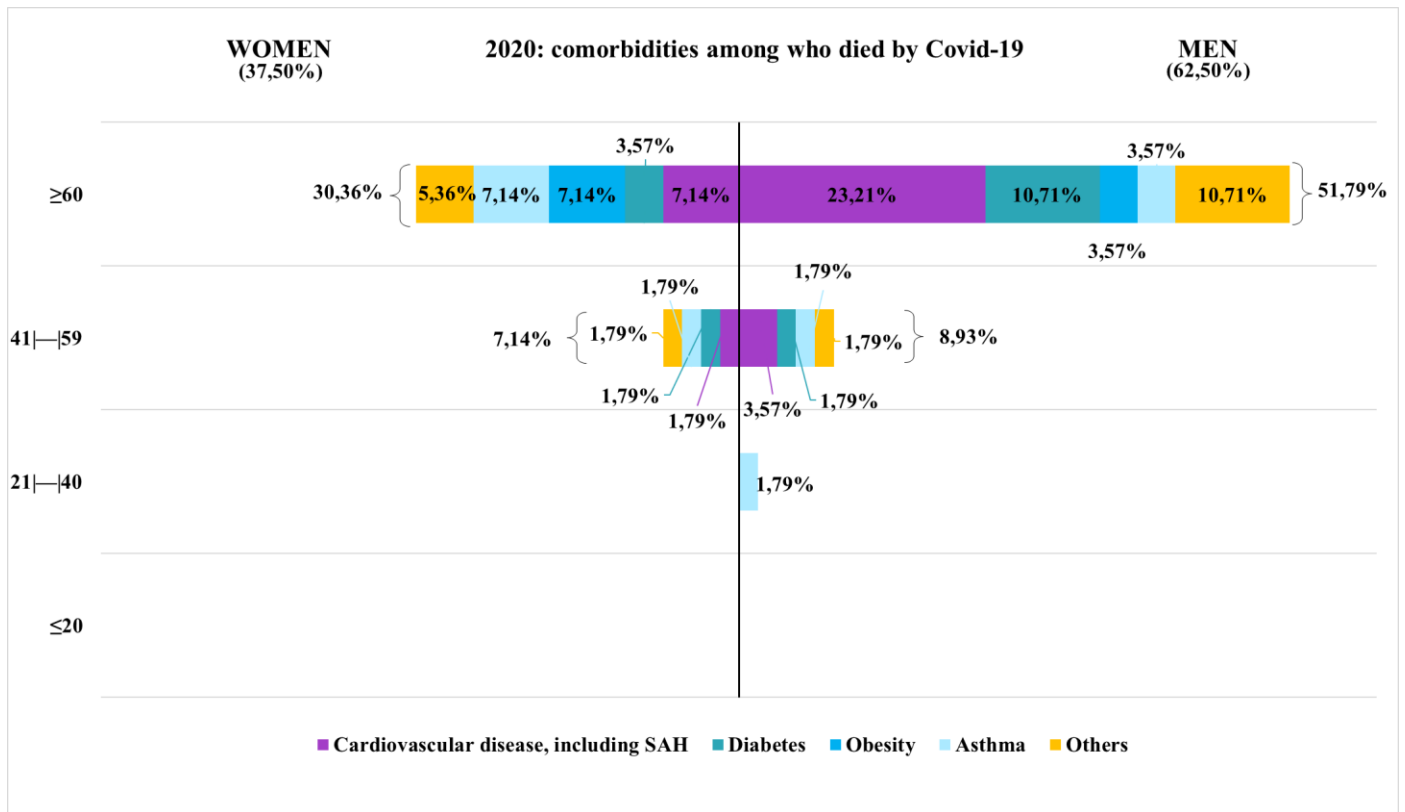
Correspondence Author – Beatriz Rocha Sousa Duarte, beatrizrsousa97@gmail.com, +55 77 99845-7430

Figure 1. Age and sex profile of confirmed Covid-19 cases in Vitória da Conquista in 2020



Source: Authors' elaboration with data from the Tele-Monitoring System developed by the PMVC Information Technology Center

Figure 2. Self-reported comorbidities among deaths by Covid-19 in Vitória da Conquista in 2020



Source: Authors' elaboration with data from the Tele-Monitoring System developed by the PMVC Information Technology Center

Table 1. Profile of the population of Vitória da Conquista diagnosed with Covid-19 in Vitória da Conquista in 2020

Age	Confirmed cases		Deaths		In general	Lethality	
	Women (%)	Men (%)	Woman (%)	Men (%)		Women	Men
≥ 60	8,09	6,40	0,54	0,74	8,84	6,70	11,56
41 - 59	17,83	13,57	0,09	0,21	0,96	0,49	1,56
21 - 40	24,53	18,22	0,01	0,02	0,07	0,03	0,12
≤ 20	6,09	5,28	0,01	0,01	0,19	0,24	0,14

Source: Authors' elaboration with data from the Tele-Monitoring System developed by the PMVC Information Technology Center

Table 2. Description of the ages and sex of confirmed Covid-19 cases in Vitória da Conquista in 2020

Month	Average (age)	Standard Deviation (age)	Women (n)	Women (%)	Men (n)	Men (%)
March	42,22	16,48	11	47,83	12	52,17
April	40,13	16,82	34	50	34	50
May	41,74	15,36	191	59,50	130	40,50
June	39,42	17,67	430	53,35	376	46,65
July	39,69	18,18	1261	55,38	1016	44,62
August	40,17	18,20	1352	58,45	961	41,55
September	41,19	18,11	1280	57,37	951	42,63
October	40,18	17,83	813	56,46	627	43,54
November	39,51	17,41	948	55,05	774	44,95
December	40,77	17,04	1405	57,02	1059	42,98
2020 (March to December)	40,28	17,72	7725	56,53	5940	43,47

Source: Authors' elaboration with data from the Tele-Monitoring System developed by the PMVC Information Technology Center

Table 3. Odds Ratio between not having a comorbidity and having one of the main self-reported comorbidities among confirmed cases and deaths of Covid-19 in Vitória da Conquista in 2020

Period	Cases	Age	Odds Ratio (CVD e SAH)		Odds Ratio (Diabetes)		Odds Ratio (Obesity)		Odds Ratio (Asthma)	
			<i>P</i> -value	(Confidence Interval 95%)	<i>P</i> -value	(Confidence Interval 95%)	<i>P</i> -value	(Confidence Interval 95%)	<i>P</i> -value	(Confidence Interval 95%)
2020 (March to December)	Recovered	≥60		1,978		1,170		1,200		1,222
	Deaths		0,0203	(1.146 to 3.414)	0,8357	(0.5526 to 2.475)	0,8560	(0.5077 to 2.838)	0,8260	(0.5164 to 2.891)
	Recovered	41 — 59		1,161		1,116		0,3800		1,789
	Deaths		0,8048	(0.3538 to 3.813)	0,8811	(0.2656 to 4.687)	0,4998	(0.02315 to 6.239)	0,7431	(0.4240 to 7.547)
	Recovered	21 — 40		1,967		2,485		4,280		8,268
Deaths	0,6409		(0.1013 to 38.187)	0,6782	(0.1280 to 48.272)	0,7520	(0.2200 to 83.271)	0,3733	(0.8556 to 79.902)	
Recovered	≤20		1,850		2,303		3,535		4,636	
Deaths		0,6311	(0.09479 to 36.096)	0,6672	(0.1178 to 45.020)	0,7289	(0.1800 to 69.398)	0,7626	(0.2352 to 91.392)	
2020 (March to December)	Recovered	Age in general		1,608		1,057		0,9745		1,454
Deaths	0,0632		(1.006 to 2.571)	0,9993	(0.5555 to 2.011)	0,9507	(0.4289 to 2.214)	0,3761	(0.7382 to 2.865)	

Source: Authors' elaboration with data from the Tele-Monitoring System developed by the PMVC Information Technology Center

Table 5. Data on the Covid-19 pandemic in the municipality of Vitória da Conquista in 2020

Epidemiological Week	Total Suspected Cases Notifications for Covid-19	Total Confirmed Covid-19 Cases	Average of Confirmed Cases	Weekly Average of Active Covid-19 Individuals	Weekly Average of Beds destined for Covid-19 in Municipality of Vitória da Conquista	Weekly Average of ICU Beds destined for Covid-19 in Municipality of Vitória da Conquista	Transmission Rhythm	Weekly Total Deaths by Covid-19	Lethality
03/05 to 09/05	164	11	1,57	8,43	-	-	1,50	1	8,89
10/05 to 16/05	159	29	4,14	16,57	-	-	2,68	0	5,41
17/05 to 23/05	283	33	4,71	40,57	-	-	3,03	0	3,74
24/05 to 30/05	182	38	5,43	33,86	6,86	4	1,06	1	3,45
31/05 to 06/06	4124	111	15,86	33,71	7,57	4,86	0,93	0	1,95
07/06 to 13/06	427	101	14,43	44,57	10,71	5,29	1,31	0	1,40
14/06 to 20/06	1236	129	18,43	71,71	12,71	7	1,81	7	2,47
21/06 to 27/06	1027	152	21,71	134,57	15,43	8,29	2,35	2	2,19
28/06 to 04/07	1341	264	37,71	242,14	18,14	9,57	2,02	5	2,11
05/07 to 11/07	1841	249	35,57	207,57	18,29	9,57	1,07	3	1,91
12/07 to 18/07	1849	436	62,29	294,71	28,86	13,57	1,36	5	1,70
19/07 to 25/07	1668	565	80,71	402,71	32,57	14,29	1,59	16	2,00
26/07 to 01/08	2933	420	60	431,71	41,14	17,14	1,17	14	2,22
02/08 to 08/08	2311	717	102,43	533,71	46,29	16	1,19	15	2,19
09/08 to 15/08	2030	545	77,86	540,14	39,14	14,29	1,24	13	2,22
16/08 to 22/08	1480	651	93	429,86	29,71	13,43	0,73	8	2,07
23/08 to 29/08	1807	754	107,71	425,14	37,43	17,43	0,98	7	1,91
30/08 to 05/09	1827	521	74,43	449	42,14	16,71	1,08	9	1,89
06/09 to 12/09	1405	422	60,29	363,86	39	15,71	0,78	11	1,94
13/09 to 19/09	1391	844	120,57	415,71	42,14	19,43	1,10	8	1,82
20/09 to 26/09	1557	601	85,86	390,14	42,86	18,29	1,00	11	1,82
27/09 to 03/10	1482	543	77,57	378	42,57	17,57	0,96	9	1,81
04/10 to 10/10	2143	636	90,86	387,14	39,29	15,57	1,00	13	1,83
11/10 to 17/10	1285	309	44,14	417,14	34,43	15	1,13	8	1,85
18/10 to 24/10	1155	542	77,43	459,86	27,86	14,86	1,09	9	1,84
25/10 to 31/10	386	363	51,86	385	28,43	15,29	0,86	6	1,84
01/11 to 07/11	774	339	48,43	352,29	29,43	12,14	0,89	4	1,81
08/11 to 14/11	1654	274	39,14	330	26,86	10,14	0,93	4	1,81
15/11 to 21/11	1646	398	56,86	395,29	28,43	12,57	1,17	4	1,78
22/11 to 28/11	1315	488	69,71	467,43	26,57	10,71	1,34	6	1,75
29/11 to 05/12	1899	509	72,71	569,57	19,29	8	1,28	2	1,70
06/12 to 12/12	3470	619	88,43	728,14	26,43	10,71	1,31	5	1,65
13/12 to 19/12	3185	710	101,43	813,14	31,29	17,71	1,19	4	1,59
20/12 to 26/12	2049	597	85,29	925,29	33,29	18,43	1,18	7	1,58
27/12/20 to 02/01/21	1700	471	67,29	963,43	36,43	18,43	1,09	8	1,58

Source: Authors' elaboration with data from the Epidemiological Bulletins released by PMVC

4 CONCLUSÃO

Com a presente pesquisa, obteve-se como resultado a confirmação de achados já expostos na literatura, certificando que indivíduos com idades mais avançadas tendem a ser um grupo de risco no que se concerne à Covid-19. Entretanto, deve-se ressaltar que não só o envelhecimento apresentou maiores taxas de letalidade, como também àqueles portadores de Hipertensão Arterial Sistêmica e demais doenças cardiovasculares. Em Vitória da Conquista foi possível observar um maior número de mulheres contaminadas pelo SARS-CoV-2, todavia os índices de morte em homens foram substancialmente maiores.

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ANEXOS

ANEXO A: Parecer consubstanciado do Comitê de Ética em Pesquisa

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SAÚDE DE VITÓRIA DA
CONQUISTA



PARECER CONSUBSTANCIADO DO CEP

DADOS DA EMENDA

Título da Pesquisa: AVALIAÇÃO DO EFEITO DO DISTANCIAMENTO SOCIAL NO PERÍODO DA PANDEMIA PELO COVID-19 SOB OS ASPECTOS COMPORTAMENTAIS, PSICOLÓGICOS E FÍSICOS

Pesquisador: BEATRIZ ROCHA SOUSA

Área Temática:

Versão: 2

CAAE: 42226821.8.0000.8089

Instituição Proponente: FUNDACAO PUBLICA DE SAUDE DE VITORIA DA CONQUISTA

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 4.737.274

Apresentação do Projeto:

O projeto AVALIAÇÃO DO EFEITO DO DISTANCIAMENTO SOCIAL NO PERÍODO DA PANDEMIA PELO COVID-19 SOB OS ASPECTOS COMPORTAMENTAIS, PSICOLÓGICOS E FÍSICOS é uma pesquisa epidemiológica, descritiva, de caráter transversal, observacional e quantitativa que será realizada no município de Vitória da Conquista - BA, Brasil. Os paciente serão escolhidos a partir do banco de dados de pacientes com quadro de síndrome gripal desenvolvido pelo Núcleo de Tecnologia da Informação da prefeitura de Vitória da Conquista e serão avaliados através de questionários. Os critério de inclusão são os indivíduos que concordem e assinem o Termo de Consentimento Livre e Esclarecido (TCLE); com 20 anos de idade ou mais, o que compreende uma amostra formada por adultos e idosos; ter permanecido em distanciamento social por, no mínimo, 14 dias; e ser residente no município de Vitória da Conquista. Os critério de exclusão são: indivíduos analfabetos; indivíduos com limitação cognitiva; indivíduos aprisionados. Os dados serão tratados e tabulados no programa Excel e, em seguida, feita a análise estatística no programa SPSS.

Objetivo da Pesquisa:

Objetivo Primário: avaliar o efeito do distanciamento social no período da pandemia pelo Covid-19 sob os aspectos comportamentais, psicológicos e físicos.

Objetivos secundários: identificar o perfil socioeconômico da amostra estudada; caracterizar os aspectos psicológicos como o estresse, a ansiedade e a depressão; determinar os hábitos

Endereço: Av. Macaúbas, 100

Bairro: PATAGONIA

CEP: 45.065-540

UF: BA

Município: VITORIA DA CONQUISTA

Telefone: (77)3420-6212

E-mail: cepfsvc@gmail.com

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Continuação do Parecer: 4.737.274

alimentares, qualidade de vida e satisfação corporal no decurso de uma pandemia; identificar a ação medicamentosa na melhoria do estado de saúde do indivíduo; avaliar o perfil alimentar da população durante o distanciamento social.

Avaliação dos Riscos e Benefícios:

Pesquisa de relevância científica, sendo que os benefícios superam os riscos e estão descritos no projeto de acordo com a legislação vigente.

Comentários e Considerações sobre a Pesquisa:

Pesquisa de relevância científica, está de acordo com a legislação vigente.

Considerações sobre os Termos de apresentação obrigatória:

Os termos estão de acordo com a legislação vigente.

Recomendações:

Não há recomendações.

Conclusões ou Pendências e Lista de Inadequações:

Não há pendências.

Considerações Finais a critério do CEP:

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_176185_2_É1.pdf	24/05/2021 19:29:48		Aceito
Outros	ADENDO.docx	24/05/2021 19:25:30	BEATRIZ ROCHA SOUSA	Aceito
Projeto Detalhado / Brochura Investigador	PROJETO_BEATRIZ_MAIO.pdf	24/05/2021 19:22:53	BEATRIZ ROCHA SOUSA	Aceito
Folha de Rosto	FOLHA_ROSTO.pdf	15/01/2021 22:08:05	BEATRIZ ROCHA SOUSA	Aceito
Projeto Detalhado / Brochura Investigador	PROJETO_CEP_2021.pdf	15/01/2021 22:06:14	BEATRIZ ROCHA SOUSA	Aceito
Outros	AUTORIZACAO_INSTITUCIONAL_PARA_COLETA_DE_DADOS.jpg	15/01/2021 21:47:37	BEATRIZ ROCHA SOUSA	Aceito
Outros	TERMO_COMPROMISSO_PESQUISA	15/01/2021	BEATRIZ ROCHA	Aceito

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UF: BA **Município:** VITORIA DA CONQUISTA
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Continuação do Parecer: 4.737.274

Outros	R.pdf	21:35:06	SOUSA	Aceito
Outros	TERMO_COMPROMISSO_ALUNO.pdf	15/01/2021 21:31:38	BEATRIZ ROCHA SOUSA	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TCLE.pdf	15/01/2021 21:27:27	BEATRIZ ROCHA SOUSA	Aceito
Outros	OFICIO_APRESENTACAO_DISCENTE.pdf	15/01/2021 21:26:08	BEATRIZ ROCHA SOUSA	Aceito
Declaração de Instituição e Infraestrutura	DECLARACAO_DE_INSTITUICAO_CO PARTICIPANTE.pdf	15/01/2021 21:24:00	BEATRIZ ROCHA SOUSA	Aceito

Situação do Parecer:

Aprovado

Necessita Apreciação da CONEP:

Não

VITORIA DA CONQUISTA, 26 de Maio de 2021

Assinado por:
PLINIO VASCONCELOS MAIA
(Coordenador(a))

Endereço: Av. Macaúbas, 100
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UF: BA **Município:** VITORIA DA CONQUISTA
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ANEXO B: Carta de aceitação de manuscrito

INTERNATIONAL JOURNAL OF DEVELOPMENT RESEARCH	INVOICE
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To: Beatriz Rocha Sousa Duarte,	ADDRESS: Instituto de Pesquisa e Extensão E-mail: beatrizsousa97@gmail.com
Respected Sir/Madam Congratulation!!! We are pleased to inform you that your manuscript entitled "ANALYSIS OF 2020 DATA ON COVID-19 IN THE MUNICIPALITY OF VITÓRIA DA CONQUISTA IN THE STATE OF BAHIA-BRAZIL" has been accepted for Publication in International Journal of Development Research. We cover the costs partially through article processing fees. Our expenses are split among editorial costs, electronic composition and production, journal information system, manuscript management system, electronic archiving, overhead expenses, and administrative costs. Moreover, we are providing research paper publishing in minimum available cost.	

Article Manuscript Number	Article Title	Processing fees (USD)	TOTAL (USD)
IJDR-23349	ANALYSIS OF 2020 DATA ON COVID-19 IN THE MUNICIPALITY OF VITÓRIA DA CONQUISTA IN THE STATE OF BAHIA-BRAZIL	150	150
TOTAL			150
TOTAL DUE			150

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