Esc Anna Nery 2021;25(spe):e20200509

RESEARCH | PESQUISA

www.scielo.br/EAN

A study assessing the quality of the COVID-19 Panel Data for children, adolescents and young individuals, Espírito Santo – Brazil, 2020

Estudo da qualidade dos Dados do Painel COVID-19 para crianças, adolescente e jovens, Espírito Santo – Brasil, 2020

Estudio de calidad de datos del Panel COVID-19 para niños, adolescentes y jóvenes, Espírito Santo – Brasil, 2020

Ethel Leonor Maciel[1]
Pablo Medeiros Jabor[2]
Etereldes Goncalves Jr[3]
Priscila Carminati Siqueira[1]
Thiago Nascimento do Prado[1]
Eliana Zandonade[1]

1. Universidade Federal de Espírito Santo, Programa de Pós-Graduação em Saúde Coletiva. Vitória, ES, Brasil.

2. Instituto Jones dos Santos Neves. Vitória, ES, Brasil.

3. Universidade Federal de Espírito Santo, Centro de Ciências Exatas. Vitória, ES, Brasil.

Abstract

Objective: to describe the completeness of the data and evaluate the quality of the COVID-19 Panel Database in Espírito Santo in 2020, as to the completeness of its variables, as well as to analyze the confirmation of the disease and its evolution by children, adolescents and young people. **Methods:** exploratory descriptive study. Completeness of filling in the form on the COVID-19 Panel was classified as excellent (less than 5% incomplete), good (5% to 10%), fair (10% to 20%), poor (20% to 50%) or very bad (50% or more). **Results:** regular quality was observed for the confirmation criterion (16%), poor for the classification of the disease (44%) and notification status (30%) and very poor for the evolution (79%). Regarding the epidemiological variables, the race-skin color variable with regular completeness (17%) stands out. **Conclusion and implications for the practice:** permanent education of professionals is necessary to fill in the data correctly. in the case of a pandemic due to a new virus, these data must be available immediately, and with quality so that control measures can be adopted.

Keywords: Coronavirus Infections; Pandemics; Epidemiology; Health Information Systems; Disease Notification.

Resumo

Objetivo: descrever a completude dos dados e avaliar a qualidade do Banco de dados do Painel COVID-19 no Espírito Santo em 2020, quanto à completude de suas variáveis, bem como analisar a confirmação da doença e sua evolução por crianças, adolescentes e jovens. **Métodos:** estudo descritivo exploratório. A completude no preenchimento da ficha no Painel COVID-19 foi classificada como excelente (menos de 5% de preenchimento incompleto), bom (5% a 10%), regular (10% a 20%), ruim (20% a 50%) ou muito ruim (50% ou mais). **Resultados:** observou-se qualidade regular para o critério de confirmação (16%), ruim para a classificação da doença (44%) e status de notificação (30%) e muito ruim para a evolução (79%). Quanto às variáveis epidemiológicas, destaca-se a variável raça/cor da pele com completude regular (17%). **Conclusão e implicações para a prática:** é necessário educação permanente dos profissionais para o preenchimento dos dados de forma correta. Tratando-se de uma pandemia por um vírus novo, esses dados devem estar disponíveis imediatamente, e com qualidade para que medidas de controle possam ser adotadas.

Palavras-Chave: COVID-19; Pandemia; Epidemiologia; Sistemas de Informação em Saúde; Notificação de Doenças.

Resumen

Objetivo: describir la exhaustividad de los datos y evaluar la calidad de la Base de Datos Panel COVID-19 en Espírito Santo en 2020, en cuanto a la exhaustividad de sus variables, así como analizar la confirmación de la enfermedad y su evolución en niños, adolescentes y jóvenes. **Métodos:** estudio descriptivo exploratorio. La exhaustividad al completar el formulario en el Panel COVID-19 se clasificó como excelente (menos del 5% incompleto), buena (5% a 10%), regular (10% a 20%), deficiente (20% a 50%) o muy mala (50% o más). **Resultados:** se observó calidad regular para el criterio de confirmación (16%), mala para la clasificación de la enfermedad (44%) y estado de notificación (30%) y muy mala para la evolución (79%). En cuanto a las variables epidemiológicas, se destaca la variable raza-color de piel con exhaustividad regular (17%). **Conclusión e implicaciones para la práctica:** es necesaria la formación permanente de los profesionales para completar correctamente los datos. En el caso de una pandemia por un nuevo virus, estos datos deben estar disponibles de manera inmediata y con calidad para que se puedan adoptar medidas de control.

Palabras clave: Infecciones por Coronavirus; Pandemias; Epidemiología; Sistemas de Información en Salud; Notificación de Enfermedad.

Corresponding author:
Ethel Leonor Maciel.
E-mail: ethel.maciel@gmail.com.

Submitted on 12/18/2020.
Accepted on 05/01/2021.

DOI:https://doi.org/10.1590/2177-9465-EAN-2020-0509

INTRODUCTION

The new coronavirus identified in Wuhan at the end of 2019 is a disease of immediate compulsory notification, which must be reported to the Ministry of Health within 24 hours after the treatment of a suspected or confirmed case[1]. To analyze and understand the cases notified due to COVID-19, it is necessary to be able to count on a reliable and good quality information system, to present the fields filled in correctly, with complete and updated data[2]. For this purpose, the information only of the data is not sufficient, but the observation and demonstration of differences and social inequalities that can exert an influence on outcomes, such as cure and death. The low quality of data filling in the COVID-19 notification form limits the epidemiological analysis of the disease and makes it difficult to monitor its dynamics, compromising the adoption of appropriate intervention measures to minimize the effects of the disease and its expansion to other regions[3].

Completeness refers to the registration of all information relevant to the inclusion of cases in the Health Information Systems (*Sistemas de Informações de Saúde*, SIS). Through this indicator, it is possible to assess the quality of the notifications of a specific disease[4]. A direct and easy measure to assess the quality of the data is to examine the percentage of "unknown" or "blank" answers to items present in the epidemiological surveillance forms, since it reflects the completeness and validity of the recorded data[2,3]. Thinking of a continental country like Brazil, regional differences are fundamental for the organization of resources and inputs for integrated and effective action according to the principles of the Unified Health System (*Sistema* Único *de Saúde*, SUS). Therefore, health information is indispensable in times of pandemics, where the requirement for rapid response is paramount for political decisions and, therefore, availability of the data, as well as its quality analysis, become necessary[5].

During the COVID-19 pandemic, an arrangement that until then had never been made in the country, began to be put into action, that is, availability of the data on online panels. This availability, in addition to transparency, mobilizes a group of researchers who are dedicated to analyzing and reporting based on the data reported on coronavirus infections.

High quality data systems would allow identifying the profile of children and young individuals most likely to be contaminated by SARS-CoV-2, and assisting in defining a safer time for the return to face-to-face classes in elementary and high schools from the COVID-19 clinical epidemiological data in the community and especially among schoolchildren. In this sense, this study aimed to describe the completeness of the data and to evaluate the quality of the COVID Panel Database in Espírito Santo in 2020, as to the completeness of its variables, as well as to analyze the confirmation of the disease and its evolution by children, adolescents and young people.

METHOD

A descriptive exploratory study assessing the completeness and quality of the COVID-19 Panel database was carried out, available on the following website: https://coronavirus.es.gov.br/painel-covid-19-es, of the Espírito Santo State Health Secretariat (*Secretaria de Estado da Saúde*, SESA)[6].

The database has 320,870 COVID-19 cases notified from February 17th to August 20th, 2020. All the data from suspected COVID-19 cases, from the panel, aged from 0 to 19 years old were analyzed, totaling 27,351 records.

The COVID-19 Panel database contains 41 variables, which were selected for the study:

- Variables for confirming the disease and evolution: Classification (confirmed, discarded and suspected), Evolution (cure or death due to COVID-19), Confirmation Criterion (clinical, clinical-epidemiological and laboratory), Notification Status (open and closed)[7].
- Sociodemographic variables: Neighborhood, Age Group (0-4 years old, 5-9 years old, 10-14 years old and 15-19 years old), Gender (male, female and undetermined), Race/Skin color (Asian, white, Indigenous, brown, black and unknown), Schooling (Illiterate, incomplete 1st to 4th grades of ES, complete 4th grade of ES, incomplete 5th to 8th grades of ES, Complete Elementary School, Incomplete High School, Complete High School, Incomplete Higher Education, Complete Higher Education, Does not apply and Unknown)
- Symptoms variables, with yes or no answers: Fever, Breathing Difficulty, Coughing, Runny Nose, Sore Throat, Diarrhea and Headache.
- Comorbidities variables, with yes or no answers: Lung Comorbidity, Cardiovascular Comorbidity, Renal Comorbidity, Diabetes Comorbidity, Smoking Comorbidity, Obesity Comorbidity.
- Other variables, with "yes" or "no" answers: Was Hospitalized, Trip in Brazil, International Trip, Health Professional, Has a Disability, Street Person.

The data were analyzed according to the data quality assessment criteria proposed by Romero and Cunha[8], and adapted by the Economic Commission for Latin America and the Caribbean (ECLAC)[9]. For the analysis of this article, the non-completeness of variables indicator proposed in the ECLAC was used, with data from the COVID-19 panel.

The score used for the incompleteness rates has the following degrees of assessment: "excellent", when the variable presents less than 5% incompleteness, "good" (5% to 10%), "fair" (10% to 20%), "poor" (20% to 50%) and "very poor" (50% or more)[8-10].

For the classification variable, the "suspected" category was considered as missing data category, which indicates non-investigation of the case. For all other variables, the categories "blank", "unknown" and "not informed" were considered as missing.

Absolute and percentage frequencies were calculated, with an association between the variables. The program used was

SPSS, version 20.0. Association chi-square tests were performed. The significance level adopted was 5%.

This study was assessed by the Research Ethics Committee of the Health Sciences Center of the Federal University of Espírito Santo (*Comitê de* Ética *em Pesquisa/Centro de Ciências da Saúde/ Universidade Federal do Espírito Santo*, CEP/CCS/UFES) and approved under opinion No. 3,908,434 of 05/20/2020.

RESULTS

A total of 27,351 records of children, adolescents and young individuals aged from 0 to 19 years old were evaluated in Espírito Santo. 7,153 (26.2%) were found in the age group from 0 to 4 years old; 4,298 (15.7%), from 5 to 9 years old; 4,697 (17.2%), from 10 to 14 years old; and 11,203 (41.0%), from 15 to 19 years old.

The "classification of the patients" variable, which informs how much these patients were investigated by epidemiological surveillance, points out 6,099 (22.3%) confirmed, 9,190 (33.6%) discarded and 12,062 (44.1%) suspected cases.

Table 1 shows the results of the categories with lack of information, with the percentages and the quality classification, according to Romero and Cunha. It is observed that, for the classification variable, the "suspected" category is the one that refers to its incompleteness while, for the others, the missing categories are "blank", "unknown" and "not informed". Among the variables of confirmation of the disease and evolution, fair quality is observed for the confirmation criterion (16%), poor for the classification (44%) and notification status (30%) and very poor for the evolution (79%). As for sociodemographic variables, we highlight race/skin color with fair completeness (17%) and schooling as poor (25%). Also in Table 1, in the group of symptoms and comorbidities variables, both had all variables classified as excellent completeness. It is observed that these variables are already filled out with the option "No" in the electronic form of the Strategy for computerization of the Unified Health System (*Estratégia de informatização do Sistema* Único *de Saúde*, ESUS). As for the other variables, such as "was hospitalized" and national and international trips, they were classified as with poor completeness.

Table 2 below presents the correlation of three variables, Classification, Evolution and Diagnostic Confirmation Criteria. The percentages are presented per line and a large number of cases are observed with evolution in blank, as well as a large number of suspected cases, mainly with evolution in blank and without information for the confirmation criterion.

Another important piece of information is regarding the notification status (status of the notification). Table 3 presents the results of the notification by classification and evolution. It is noteworthy that 5,315 (44.6%) of the suspected cases were closed without being investigated. This shows the poor quality of the database, presenting inconsistencies when the variables are associated.

Table 4 crosses the variables of the sociodemographic profile with the "confirmed", "discarded" and "suspected" categories of the classification variable. With the exception of the gender variable ($p = 0.823$), all the others obtained a lower p-value equal to 0.001, indicating the inhomogeneity of the groups studied.

There is inequality of the brown (46.7%) and black race/skin color (5.3%) variables as suspected cases, as well as illiterate people (12.1%) in this group. These percentages are higher in the suspected group. Another observation is finding a large percentage of symptoms in the suspected group.

DISCUSSION

International data suggest that children under the age of 18 represent nearly 8.5% of the reported cases, with relatively few deaths compared to other age groups and generally have a mild illness[11].

The study pointed out that the available data of the cases recorded up to 19 years of age on the electronic panel for COVID-19 in the state of Espírito Santo presented a classification between poor and fair for many variables necessary for planning actions and making health decisions for the control of the disease. Fair quality stands out for the confirmation criterion and race/skin color, poor quality for the classification of the case, status of notification and schooling, and very poor quality for the evolution of the case. In addition to the fact that many cases classified as suspected do not have information about the evolution of the case. Furthermore, when performing an analysis comparing variables of the epidemiological profile of the children, adolescents and young individuals with the "confirmed", "discarded" and "suspected" categories of the classification variable, it was observed that the groups studied were not homogeneous.

Unlike adults, children infected with SARSCoV-2 have mild or asymptomatic clinical forms in most of the cases described in the literature. Probably, the condition of asymptomatic carrier has a great impact on the ways in which the virus is transmitted in the community, since the identification of asymptomatic carriers is a major challenge worldwide[12]. It is extremely important that the data referring to this age group are filled in correctly and that the suspected cases are completed, so that positive cases can be identified as early as possible and the profile of this population that is contaminated can be identified and, therefore, adopt preventive measures to reduce viral circulation, preventing the spread of the disease.

International and Brazilian studies have pointed to the social issue of the COVID-19 pandemic, spreading from the wealthiest areas of large cities to the poorest with low schooling and mostly black-skinned individuals[13-17]. These variables, schooling and race/skin color, allow tracing the epidemiological profile of the individuals affected by the pandemic and thinking about strategies in the health field, linked to social actions that can mitigate the event on the most affected population[18]. However, as observed in studies assessing the epidemiology of COVID-19 or other infectious diseases of importance to public health in Brazil, the schooling and race/skin color variables do not have good completeness[13-17]. Regarding the race/skin color variable, a study conducted with data on hospitalizations due to COVID-19 in Brazil showed only 62% of completeness[13]. In fact,

Table 1. Incompleteness of variables of the individuals aged from 0 to 19 years old notified and made available on the COVID-19 electronic panel in Espírito Santo.

Variable	Category	N	%	Classification
Classification	Suspected	12,062	44%	P
Evolution	Blank	21,725	79%	VP
Confirmation Criteria	Blank	4,334	16%	F
Notification Status	Open	8,267	30%	P
Neighborhood	Blank	82	0%	E
Gender	Unknown	5	0%	E
Race/Skin color	Unknown	4,758	17%	F
Schooling	Unknown	6,959	25%	P
Fever	In blank	77	0%	E
Difficulty Breathing	Blank	74	0%	E
Coughing	Blank	73	0%	E
Runny Nose	Blank	71	0%	E
Sore Throat	Blank	100	0%	E
Diarrhea	Blank	71	0%	E
Chronic Headache	Blank	95	0%	E
Lung Comorbidity	Blank	93	0%	E
Cardiovascular Comorbidity	Blank	87	0%	E
Renal Comorbidity	Blank	87	0%	E
Diabetes Comorbidity	Blank	89	0%	E
Smoking Comorbidity	Blank	89	0%	E
Obesity Comorbidity	Blank	98	0%	E
Was Hospitalized	Unknown	312	1%	E
	Not informed	11,998	44%	P
Trip in Brazil	Unknown	502	2%	E
	Not informed	7,768	28%	P
International Trip	Unknown	402	1%	E
	Not informed	10,751	39%	RU
Health Professional	Unknown	1,603	6%	B
	Not informed	199	1%	E
Has a Disability	Not informed	2,869	10%	G
Street Person	Not informed	3,105	11%	R

Source: ES COVID panel, 2020.
E = Excellent, G = Good, F = Fair, P = Poor, VP = Very Poor

the role of the black movement in the insertion of this variable in the COVID-19 notification form should be highlighted since, although Ordinance No. 992 of May 13th, 2009, which institutes the National Policy for the Comprehensive Health of the Black Population (*Política Nacional de Saúde Integral da População Negra*, PNSIPN) and Ordinance No. 344 of February 1st, 2017, which provides for the filling out of the race/skin color question in the forms of the health information systems, at the beginning of the epidemic in Brazil this variable was not available in the disease notification form for COVID-19, being included and established as mandatory after actions by the black movement[19,20].

It was evidenced that the proportion of information unknown and left blank was high for the variables of conclusion of the cases due to COVID-19, implying a classification of completeness between poor and fair. The confirmation criterion presented fair completeness; and the case classification and status of the

Table 2. Frequency of the classification result versus evolution and confirmation criterion for the notifications due to COVID-19 of individuals aged from 0 to 19 years old in Espírito Santo, 2020.

Classification	Evolution	Confirmation Criteria							
		Without Information		Clinical		Clinical-Epidemiological		Laboratory	
		N	%	N	%	N	%	N	%
Confirmed	Cure	42	.8%	177	3.3%	852	15.8%	4,333	80.2%
	Blank	61	9.0%	6	0.9%	45	6.6%	566	83.5%
	Death due to COVID-19	0	0.0%	0	0.0%	0	0.0%	17	100.0%
Discarded	Cure	2	14.3%	0	0.0%	3	21.4%	9	64.3%
	Blank	271	3.0%	266	2.9%	466	5.1%	8,133	89.0%
	Death due to other causes	0	0.0%	1	2.5%	0	0.0%	39	97.5%
Suspected	Cure	8	5.3%	86	57.0%	49	32.5%	8	5.3%
	Blank	3,950	33.2%	6317	53.0%	1,343	11.3%	301	2.5%

Source: ES COVID panel, 2020.

Table 3. Frequencies between the classification and the notification status of individuals aged from 0 to 19 years old made available on the COVID-19 electronic panel in Espírito Santo, 2020.

Classification	Evolution	Notification Status			
		Open		Closed	
		N	%	N	%
Confirmed	Cure	24	0.4%	5,380	99.6%
	Blank	595	87.8%	83	12.2%
	Death due to COVID-19	0	0.0%	17	100.0%
Discarded	Cure	3	21.4%	11	78.6%
	Blank	1,032	11.3%	8,104	88.7%
	Death due to other causes	1	2.5%	39	97.5%
Suspected	Cure	16	10.6%	135	89.4%
	Blank	6,596	55.4%	5,315	44.6%

Source: ES COVID panel, 2020.

notification, poor completion. Very poor quality for the evolution of the case was also observed. In addition to the fact that many cases classified as suspected do not have information about the evolution of the case. The presence of inconclusive cases, for which it was not possible to discard or confirm the disease, can be due to insufficient data, to fields in the form left blank or improperly filled out, or to non-collection of samples for conducting the diagnostic tests[2]. These variables are extremely important for closing the case and for a more active role in epidemiological surveillance. Since such data are not collected at the first moment of the investigation, it becomes necessary to monitor them for later filling in these variables in the notification forms of health problems[2].

The closing of notified cases of a health problem in a timely manner allows knowing the confirmed and discarded cases, as well as the adoption of control measures in a timely manner by epidemiological surveillance, especially in a pandemic caused by a new virus. The under-recording of the cases can be attributed to several factors, such as delay in notifications, data typing, problems in processing and transferring the information, as well as delays in the release of the test results, lack of data update or feedback information from the notifying source, which can also generate discouragement and discontinuity in the process of investigation and closure of the case[2,21,22].

CONCLUSION AND IMPLICATIONS FOR THE PRACTICE

The results found in the evaluation of the quality of the data of the ES COVID Panel show poor to fair completeness for several variables of the study. The analyses carried out based on poor quality data may not represent the real epidemiological profile of the diseases, hampering the adoption of more adequate control measures and the identification of risk regions[2,23]. Thus, the need

Table 4. Association between the study variables and the classification of the cases of notifications due to COVID-19 of individuals aged from 0 to 19 years old in Espírito Santo, 2020.

Variable	Category	Classification					
		Confirmed		Discarded		Suspected	
		N	%	N	%	N	%
Gender	F	3,188	52.3%	4,769	51.9%	6,318	52.4%
	M	2,909	47.7%	4,420	48.1%	5,742	47.6%
Race/Skin color	Asian	439	7.2%	509	5.5%	925	7.7%
	White	2,141	35.1%	2,956	32.2%	3,089	25.6%
	Unknown	1,161	19.0%	1,830	19.9%	1,767	14.6%
	Indigenous	18	.3%	28	.3%	11	.1%
	Brown	2,114	34.7%	3,463	37.7%	5,630	46.7%
	Black	226	3.7%	404	4.4%	640	5.3%
Schooling	Illiterate	449	7.4%	910	9.9%	1,454	12.1%
	Incomplete 1st to 4th grade of Elementary School	502	8.2%	843	9.2%	1,175	9.7%
	Complete 4th grade of Elementary School	151	2.5%	197	2.1%	294	2.4%
	Incomplete 5th to 8th grade of Elementary School	776	12.7%	1,045	11.4%	1,413	11.7%
	Complete Elementary School	306	5.0%	475	5.2%	604	5.0%
	Incomplete High School	779	12.8%	997	10.8%	1,345	11.2%
	Complete High School	746	12.2%	1,060	11.5%	1,220	10.1%
	Incomplete Higher Education	151	2.5%	216	2.4%	190	1.6%
	Complete Higher Education	48	.8%	84	.9%	67	.6%
	Unknown	1,683	27.6%	2,319	25.2%	2,957	24.5%
	Does not apply	508	8.3%	1,044	11.4%	1,343	11.1%
Age group	0-4 years old	1,212	19.9%	2,410	26.2%	3,531	29.3%
	5-9 years old	879	14.4%	1,516	16.5%	1,903	15.8%
	10-14 years old	1,219	20.0%	1,542	16.8%	1,936	16.1%
	15-19 years old	2,789	45.7%	3,722	40.5%	4,692	38.9%
Fever	Yes	2,817	46.6%	4,164	45.4%	7,060	58.6%
Difficulty Breathing	Yes	834	13.8%	1,905	20.8%	2,253	18.7%
Coughing	Yes	2,572	42.6%	4,542	49.5%	7,272	60.3%
Runny Nose	Yes	2,220	36.7%	3,693	40.2%	6,143	50.9%
Sore Throat	Yes	1,502	24.9%	2,475	27.0%	4,087	34.0%
Diarrhea	Yes	791	13.1%	1,307	14.2%	1,545	12.8%
Chronic Headache	Yes	2,444	40.4%	3,192	34.8%	5,117	42.5%
Lung Comorbidity	Yes	402	6.7%	910	9.9%	1,184	9.8%
Cardiovascular Comorbidity	Yes	63	1.0%	115	1.3%	95	.8%
Renal Comorbidity	Yes	17	.3%	23	.3%	9	.1%
Diabetes Comorbidity	Yes	28	.5%	36	.4%	26	.2%
Smoking Comorbidity	Yes	23	.4%	40	.4%	104	.9%
Obesity Comorbidity	Yes	81	1.3%	132	1.4%	108	.9%
Was Hospitalized	Yes	50	.8%	173	1.9%	46	.4%
Trip in Brazil	Yes	230	3.8%	396	4.3%	382	3.2%
International Trip	Yes	2	.0%	31	.3%	3	.0%
Health Professional	Yes	97	1.6%	210	2.3%	144	1.2%
Has a Disability	Yes	252	4.1%	269	2.9%	374	3.1%
Street Person	Yes	28	.5%	38	.4%	61	.5%

Source: ES COVID panel, 2020.

to adopt a systematic assessment of the quality of the information generated by the health information systems is evidenced.

Although the study reveals important findings for the surveillance and evaluation of the quality of the health information considering the availability of open data in real time, it has a limitation that resides, precisely, in its regional characteristics, specific to Espírito Santo, not extensive to the reality of other states in the country, since each state adopted different operating modes of information in this context of the COVID-19 pandemic, with no standardization of data availability at the federal level.

It must be taken into account that, at the beginning of the COVID-19 pandemic, Brazil made notifications of suspected cases through an online form called FormSus, in which only health managers in the states have access to information. However, on March 29th, the state of Espírito Santo started to carry out notifications through the e-SUS VS online application[24]. This application developed by the Espírito Santo State Health Secretariat provides real-time information to all spheres of management and health, by filling and editing the forms online, in which it covers notifications to all health care units and brings clarity and speed to the data. However, there is a need for permanent education of the health professionals, to train them to correctly fill in the data in the e-SUS, avoiding leaving blank fields or filling them out as 'Unknown', and making them aware that, through the epidemiological profile, the risk groups and the populations which are most vulnerable to becoming ill will be verified and, in the case of a pandemic due to a new virus, these data must be available immediately, and with good quality so that preventive measures and disease control strategies can be implemented by the public services and bodies.

AUTHOR'S CONTRIBUTIONS

Study design. Ethel Leonor Maciel. Eliana Zandonade. Thiago Nascimento do Prado.

Data extraction. Eliana Zandonade. Etereldes Goncalves Jr.

Data analysis. Ethel Leonor Maciel. Etereldes Goncalves Jr. Eliana Zandonade.

Interpretation of the results. Ethel Leonor Maciel. Etereldes Goncalves Jr. Priscila Carminati Siqueira. Thiago Nascimento do Prado. Eliana Zandonade.

Writing and critical review of the manuscript. Ethel Leonor Maciel. Pablo Medeiros Jabor. Etereldes Goncalves Jr. Priscila Carminati Siqueira. Thiago Nascimento do Prado. Eliana Zandonade.

Approval of the final version of the article. Ethel Leonor Maciel. Pablo Medeiros Jabor. Etereldes Goncalves Jr. Priscila Carminati Siqueira. Thiago Nascimento do Prado. Eliana Zandonade.

Responsibility for all aspects of the content and integrity of the published article. Ethel Leonor Maciel. Pablo Medeiros Jabor. Etereldes Goncalves Jr. Priscila Carminati Siqueira. Thiago Nascimento do Prado. Eliana Zandonade.

ASSOCIATED EDITOR

Gerson Luiz Marinho

SCIENTIFIC EDITOR

Ivone Evangelista Cabral

REFERENCES

1. Portaria n. 264 de 17 de fevereiro de 2020 (BR). Altera a Portaria de Consolidação n. 4/GM/MS, de 28 de setembro de 2017. Diário Oficial da União [periódico na internet], Brasília (DF), 19 fev 2020 [citado 13 fev 2021]. Disponível em: http://www.in.gov.br/en/web/dou/-/portaria-n-264-de-17-de-fevereiro-de-2020-244043656
2. Siqueira PC, Maciel ELN, Catão RC, Brioschi AP, Silva TCC, Prado TN. Completude das fichas de notificação de febre amarela no estado do Espírito Santo, 2017. Epidemiol Serv Saude. 2020;29(3):e2019402. http://dx.doi.org/10.5123/S1679-49742020000300014. PMid:32555932.
3. Klaucke DN, Buehler JW, Thacker SB, Parrish G, Trowbridge FL, Berkelman RL, Surveillance Coordination Group. Guidelines for evaluating surveillance systems: recommendations from the guidelines working group. Morb Mortal Wkly Rep [Internet]. 1988 May [citado 2020 ago 18];37(Suppl 5):1-18. Available from: https://www.cdc.gov/mmwr/preview/mmwrhtml/00001769.htm
4. Braz RM, Tauil PL, Santelli ACFS, Fontes CJF. Avaliação da completude e da oportunidade das notificações de malária na Amazônia Brasileira, 2003-2012. Epidemiol Serv Saude. 2016;25(1):21-32. PMid:27861675.
5. Ministério da Saúde (BR). Norma operacional da assistência à saúde do Sistema Único de Saúde. NOAS - SUS. Brasília: Ministério da Saúde; 2002.
6. Espírito Santo. Governo do Estado. Painel Covid-19 - Estado do Espírito Santo [Internet]. [citado 20 ago 2020]. 2020. Disponível em: https://coronavirus.es.gov.br/painel-covid-19-es
7. Espírito Santo. Governo do Estado. Secretaria Estadual de Saúde. NOTA TÉCNICA COVID-19 N. 073/2020 – GEVS/SESA/ES [Internet]. Vióría (ES): Secretaria Estadual de Saúde; 2020 [citado 2021 fev 10]. Disponível em: coronavirus.es.gov.br>Coronavirus>NotasTecnicas
8. Romero DE, Cunha AB. Avaliação da qualidade das variáveis sócio-econômicas e demográficas dos óbitos de crianças menores de um ano registrados no Sistema de Informação Sobre Mortalidade do Brasil (1996/2001). Cad Saude Publica. 2006;22(3):673-84. http://dx.doi.org/10.1590/S0102-311X2006000300022. PMid:16583111.
9. Comisión Econômica para América Latina y el Caribe. Gestión orientada a asegurar la calidad de los dados en los institutos nacionales de Estadística. Santiago de Chile: Comisión Económica para América Latina y el Caribe; 2003.
10. Felix JD. Padrões espaço-temporais da mortalidade por câncer de mama em mulheres no Estado do Espírito Santo - um estudo ecológico [dissertação]. Vitória: Universidade Federal do Espírito Santo- UFES; 2011.
11. World Health Organization. Coronavirus disease (COVID 19): schools [Internet]. Genebra: WHO; 2020 [citado 2021 fev 13]. Disponível em: https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-schools
12. Martins MM, Prata-Barbosa A, Magalhães-Barbosa MCD, Cunha AJLA. Características clínicas e laboratoriais da infecção por sars-cov-2 em crianças e adolescentes. Rev. paul. pediatra. [Internet]. 2021 [citado 2021 fev 18];39:e2020231. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-05822021000100507&lng=en
13. Baqui P, Bica I, Marra V, Ercole A, van der Schaar M. Variações étnicas e regionais na mortalidade hospitalar por COVID-19 no Brasil: um estudo transversal observacional. Lancet. 2020;8(8):e1018-26.
14. Cavalcante JR, Abreu ADJL. COVID-19 in the city of Rio de Janeiro: spatial analysis of first confirmed cases and deaths. Epidemiol Serv Saude. 2020;29(3):e2020204. http://dx.doi.org/10.5123/s1679-49742020000300007. PMid:32520107.
15. Krouse HJ. COVID-19 and the Widening Gap in Health Inequity. Otolaryngol Head Neck Surg. 2020;163(1):65-6. http://dx.doi.org/10.1177/0194599820926463. PMid:32366172.

16. Goes EF, Ramos DDO, Ferreira AJF. Desigualdades raciais em saúde e a pandemia da Covid-19. Trab Educ Saúde. 2020;18(3):e00278110. http://dx.doi.org/10.1590/1981-7746-sol00278.
17. Millett GA, Jones AT, Benkeser D, Baral S, Mercer L, Beyrer C et al. Assessing differential impacts of COVID-19 on black communities. Ann Epidemiol. 2020;47:37-44. http://dx.doi.org/10.1016/j.annepidem.2020.05.003. PMid:32419766.
18. Santos HLPC, Maciel FBM, Santos KR, Conceição CDVS, Oliveira RS, Silva NRF, et al. Necropolítica e reflexões acerca da população negra no contexto da pandemia da COVID-19 no Brasil: uma revisão bibliográfica. Ciênc. saúde coletiva. 2020;25(Suppl 2):4211- 24. https://doi.org/10.1590/1413-812320202510.2.25482020.
19. Portaria n° 992, de 13 de maio de 2009 (BR). Institui a Política Nacional de Saúde Integral da População Negra (PNSIPN). Diário Oficial da União, Brasília (DF); 2009.
20. Portaria n° 344, de 1º de fevereiro de 2017 (BR). Dispõe sobre o preenchimento do quesito raça/cor nos formulários dos sistemas de informação em saúde. Diário Oficial da União, Brasília (DF); 2017.
21. Silva GDM, Bartholomay P, Cruz OG, Garcia LP. Avaliação da qualidade dos dados, oportunidade e aceitabilidade da vigilância da tuberculose nas microregiões do Brasil. Cien Saude Colet. 2017;22(10):3307-19. http://dx.doi.org/10.1590/1413-812320172210.18032017. PMid:29069186.
22. Meirelles MQB, Lopes AKB, Lima KC. Vigilância epidemiológica de HIV/Aids em gestantes: uma avaliação acerca da qualidade da informação disponível. Rev Panam Salud Publica. 2016;40(6):327-34. PMid:28718491.
23. German RR, Westmoreland D, Armstrong G, Birkhead GS, Horan JM, Center for Diseases Control and Prevention, et al. Updated guidelines for evaluating public health surveillance systems: recommendations from the guidelines working group. Morb Mortal Wkly Rep. [Internet]. 2001 Jul [citado 2020 maio 8];50(RR13):1-35. Disponível em: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm
24. Ministério da Saúde (BR). DATASUS [Internet]. 2020 [citado 2020 ago 23]. Disponível em: https://www.saude.ce.gov.br/2020/03/26/datasus-disponibiliza-nova-plataforma-para-notificacao-de-casos-de-covid-19/&sa=D&ust=1602420619162000&usg=AFQjCNFg-o8itmWCqKdweQNSjblpCUdeog