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INCIDENCE OF COVID-19 IN THE NEIGHBORHOODS OF SALVADOR AS A GUIDANCE FOR REHABILITATION: A DESCRIPTIVE STUDY

INCIDÊNCIA DE COVID-19 NOS BAIRROS DE SALVADOR COMO NORTEADORA PARA REABILITAÇÃO: UM ESTUDO DESCRITIVO

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Abstract: Introduction: The city of Salvador-BA presents a region with a strong tendency to increase cases of COVID-19, disease caused by coronavirus, and, consequently, prone to the aggravation of the disease, which implies the need to develop policies aimed to the recovery of people infected by the virus in the territories with the highest occurrence of cases. **Objective:** To describe the data on the incidence of COVID-19 in the 161 neighborhoods of the city of Salvador-BA in order to guide human and financial resources for post-COVID-19 rehabilitation actions. Methods: A quantitative study was carried out with secondary data from a document with information for the population and health professionals, about measures taken by the Health Department to face the pandemic. The variables studied were confirmed cases, incidence coefficient, total population and recovered cases, from June 2020 to January 2021, distributed in the neighborhoods of Salvador-BA. Results: The neighborhoods with the highest prevalence of confirmed and recovered cases of COVID-19 in the studied period were Brotas, Pituba and Itapuã, while the neighborhoods with the lowest median of confirmed cases and recovered cases were Ilha dos Frades, Ilha de Bom Jesus dos Passos and Porto Seco Pirajá. Conclusion: It is understood that regions with a high prevalence of recovered cases demand more professionals working in health rehabilitation, after all, the coronavirus can impact on disabilities and local health disparities, demanding more rehabilitation centers for places with potential users of the Unified Health System.

Keywords: Covid-19; Health policy; Rehabilitation; Unified health system.

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INTRODUCTION

A In December 2019, in Wuhan, China, an outbreak of pneumonia of unknown origin was reported. Subsequently, it was discovered that this pneumonia was associated with SARS-CoV-2, a virus of the *Coronaviridae* family that infects humans^(1,2), leading to the appearance of symptoms such as cough, fever and dyspnea⁽¹⁾. In March 2020, the World Health Organization (WHO) declared the new coronavirus outbreak (COVID-19) a global pandemic⁽³⁾.

Due to the spread of the virus, Brazil has adopted social distancing measures to reduce contact between people, leading to the cancellation of public events, class interruptions and the closure of companies. With this, the pandemic provided a socioeconomic and human health conditions⁽⁴⁾. It is known that the diagnosis of COVID-19 can have a reserved prognosis and lead to hospitalization, resulting in hypomobility and sequelae and having repercussions on the structure, function, activity and social participation, as well as requiring environmental facilitators and better access to public health services⁽⁵⁾.

Primary Care health services are responsible for health care through primary and secondary prevention measures, avoiding the spread and long-term effects of the disease. Knowing that patients affected by the coronavirus can attend with functional disabilities, it is essential that there is medium and long-term assistance with functional rehabilitation^(6,7).

The city of Salvador - BA presents itself as a region with a strong trend of increase in cases and, consequently, prone to the worsening of the disease. This imposes the need for the elaboration of public policies directed to the rehabilitation of people infected with the virus in the territories with the highest incidence of cases⁽⁸⁾.

Therefore, it is important to investigate the territories in which the incidence of SARS-CoV-2 infection was higher, in order to contribute to the formulation and implementation of public policies whose effectiveness, efficiency and effectiveness results, exactly, from their adaptation to the needs, priorities and capabilities of the multiple actors of territories relevant to this purpose⁽⁹⁾. Thus, the objective of this study is to describe the COVID-19 incidence data in the 161 neighborhoods of the city of Salvador - BA, in order to guide human and financial resources for post-COVID-19 rehabilitation actions, since diagnosed patients are potential users of public health services, which require visualization and decision-making actions in this new scenario.

METHODS

The investigation of the incidence of COVID-19 cases in the neighborhoods of Salvador - BA was carried out from the secondary data, available on the Covid-19 Transparency SMS/Salvador website, of the city of Salvador - BA. Such data come from informative documents for the population and health professionals on decision-making of the Department of Health to face the pandemic.

The secondary data were analyzed quantitatively through the statistical software Rstudio and graphical language in Python with the packages Pardas, Numpy and Seaborn, and descriptive statistics were performed through frequency and measure of central trend (median). Graphs and tables were used to present the distribution and behavior of the variables.

The variables were used: confirmed cases of coronavirus, incidence coefficient, total population of the neighborhoods of Salvador - BA and recovered cases of coronavirus from June 2020 to January 2021, available on the platform of the city of Salvador-BA. The data were extracted from this platform in December 2021 and recorded in spreadsheets in the Microsoft Excel software. Subsequently, the data were analyzed and interpreted.

RESULTS

The results of the 161 neighborhoods were analyzed, as shown in Table 1, and the three neighborhoods with the highest prevalence of confirmed cases of COVID-19, in the period from June 2020 to January 2021, were Brotas, Pituba and Itapuã. The neighborhoods with the lowest prevalence of confirmed cases, in this same period, were Ilha dos Frades, Ilha de Bom Jesus dos Passos and Porto Seco Pirajá. The neighborhoods with the highest median of recovered cases were Brotas, Pituba and Itapuã and those with the lowest median of recovered cases were Ilha dos Frades, Ilha de Bom Jesus dos Passos and Porto Seco Pirajá.

NEIGHORHOOD	POPULATION	CONFIRMED	RECOVERED	NEIGHORHOOD	POPULATION	CONFIRMED	RECOVERED
ACUPE	11213	282	269	ILHA DOS FRADES*	733	1	1
AEROPORTO	-	9	7	IMBUÍ	26540	862	825
ÁGUAS CLARAS	37029	774	682	ITACARANHA	16088	296	260
ALTO DA TEREZINHA	14010	92	82,5	ITAIGARA	10874	445	429

Table 1 – Median population, confirmed cases and recovered cases in each neighborhood of Salvador - BA.

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Brazilian Journal of Functional Health

INCIDENCE OF COVID-19 IN THE NEIGHBORHOODS OF SALVADOR AS A GUIDANCE FOR REHABILITATION: A DESCRIPTIVE STUDY

ALTO DAS POMBAS	3823	138	136.5	ΙΤΔΡΙΙÃ**	66961	1393	1327 5
ALTO DO	17051	107	150,5	JARDIM	00501	100	200.5
ALTO DO	17051	197	179,5	ARMAÇAO JARDIM	3025	409	398,5
COQUEIRINHO	11145	120	111	CARJAZEIRAS JARDIM DAS	7572	152	135,5
AMARÁLINA	4125	266	247	MARGARIDAS	4592	254	247,5
AREIA BRANCA	2594	27	18	ESPERANÇA	14008	235	220,5
ARENOSO	16604	361	345,5	JARDIM SANTO INÁCIO	8670	134	122,5
ARRAIAL DO RETIRO	8938	99	88	LAPINHA	5004	40	38
BAIRRO DA PAZ	19407	180	159	LIBERDADE	41802	1260	1181
BAIXA DE QUINTAS	2135	98	86,5	LOBATO	29169	714	642
BARBALHO	9227	230	211,5	LUIZ ANSELMO	11503	222	202
BARRA	17298	582	552	MACAÚBAS	8556	128	117,5
BARREIRAS	17960	249	242.5	MARECHAL RONDON	19470	304	270.5
DADDIS	1815	140	134.5	MADES	2350	16	36.5
BEIRU TANCREDO	50416	140	104,5	MARES	2359	40	50,5
NEVES	50416	1298	1253	MASSARANDUBA	20160	525	475,5
BOA VIAGEM	2322	128	83	MATA ESCURA	32349	505	481
ROTAS	2964	18	11	MATATU	10542	349	331
BOA VISTA DO SÃO CAETANO	17688	276	253,5	MIRANTES DE PERIPERI	-	80	78
BOCA DA MATA	8068	152	137,5	MONTE SERRAT	6590	107	101
BOCA DO RIO	48032	1008	961	MORADAS DA LAGOA	16189	7	7
BOM JUÁ	15528	45	27	MUSSURUNGA	30838	523	469,5
BONFIM	9446	327	297	NARANDIBA	14368	271	263,6
BROTAS**	70158	1909	1806	NAZARÉ	12571	377	370.5
CABULA VI	10728	331	303	NORDESTE DE AMARALINA	21887	890	858,5
	23869	1147	1079 5	ΝΟΥΑ ΒΡΑΣΊΙΙΑ	16716	543	515
CAIXA D'ÁGUA	22446	521	483.5	NOVA CONSTITUINTE	9410	41	40
	1137	56	22	NOVA ESPERANÇA	6732	73	71
	2264	50	15.5	NOVA ESPERANCA NOVA	100052	75	/1
CAJAZEIRAS IV	3364	46	45,5	SUSSUARANA	12206	53	42
CAJAZEIRAS V	5422	91	88	NOVO HORIZONTE	12952	121	116,5
CAJAZEIRAS VI	7341	64	60	MAROTINHO	4238	43	41
CAJAZEIRAS VII	4524	101	93	PALESTINA	6007	87	74
CAJAZEIRAS VIII	13013	213	205	PARIPE	55039	1070	990
CAJAZEIRAS X	8513	193	181,5	PATAMARES	6156	492	483
CAJAZEIRAS XI	16899	258	242	PAU DA LIMA	24693	698	641
CALABAR	6484	46	39	PAU MIÚDO	20740	429	371,5

Brazilian Journal of Functional Health

INCIDENCE OF COVID-19 IN THE NEIGHBORHOODS OF SALVADOR AS A GUIDANCE FOR REHABILITATION: A DESCRIPTIVE STUDY

CALABETAO	7298	106	101,5	PERIPERI	47179	890	793,5
CALCADA	5024	63	61.5	PERNAMBUÉS	64983	2172	2095.5
CAMINHO DAS ÁRVORES	12323	437	427,5	PERO VAZ	22054	454	412,5
CAMINHO DE AREIA	12318	169	156	PIATÃ	11441	510	487,5
CAMPINAS DE PIRAJÁ	11673	262	237,5	PITUBA**	65160	1796	1735
CANABRAVA	13664	268	250,5	PORTO SECO PIRAJÁ*	72	5	4
CANDEAL	13553	371	353	RESGATE	6708	144	142
CANELA	5339	140	132,5	RETIRO	262	61	58
CAPELINHA	16033	187	177	RIBEIRA	19578	564	548,5
CASSANGE	4633	44	32,5	RIO SENA	16379	224	202
CASTELO BRANCO	33510	608	541,5	RIO VERMELHO	18334	614	585,5
CENTRO	15695	841	780,5	ROMA	3636	100	79
ADMINISTRATIVO DA BAHIA	-	27	21	SABOEIRO	6682	234	247,5
CENTRO HISTÓRICO	2253	22	20	SANTA CRUZ	27083	1140	1300
CHAME CHAME	-	162	152	SANTA LUZIA	7702	11	8
CHAPADA DO RIO VERMELHO	21955	29	26,5	SANTA MÔNICA	7389	118	110,5
CIDADE NOVA	18722	371	345,5	SANTO AGOSTINHO	4796	10	9
COLINAS DE PERIPERI	-	14	13	SANTO ANTÔNIO	4170	77	67,5
COMÉRCIO	1345	58	56	SÃO CAETANO	51159	831	741,5
COSME DE FARIAS	38341	854	778,5	SÃO CRISTÓVÃO	53906	1180	1124
COSTA AZUL	20204	419	399,5	SÃO GONÇALO	17275	298	286,5
COUTOS	26005	533	478	SÃO JOÃO DO CABRITO	21284	77	61
CURUZU	16681	259	239	SÃO MARCOS	28591	1110	1084
DOIS DE JULHO		450,5	435,5	SÃO RAFAEL	25790	51	28
DOM AVELAR	11842	186	175,5	SÃO TOMÉ	7207	127	118
DORON	7378	190	178	SARAMANDAIA	11272	117	111
ENGENHO VELHO DA FEDERAÇÃO	24555	576	546,5	SAÚDE	6232	97	93,5
ENGENHO VELHO DE BROTAS	25703	797	766	SETE DE ABRIL	18215	337	308
FAZENDA COUTOS	24255	579	562,5	STELLA MARIS	20641	454	441
FAZENDA GRANDE DO RETIRO	53806	1413	1316	STIEP	13646	238	226
FAZENDA GRANDE I	11459	117	108,5	SUSSUARANA	28809	821	769
FAZENDA GRANDE II	18159	283	262,5	TORORÓ	4717	144	139
FAZENDA GRANDE III	7464	92	85,5	TROBOGY	7158	125	119,5
FAZENDA GRANDE IV	4774	86	81	URUGUAI	30370	700	638,5

Brazilian Journal of Functional Health

INCIDENCE OF COVID-19 IN THE NEIGHBORHOODS OF SALVADOR AS A GUIDANCE FOR REHABILITATION: A DESCRIPTIVE STUDY

FEDERAÇÃO	36362	1219	1162	VALE DAS PEDRINHAS	5162	70	58,5
GARCIA	14180	359	341	VALE DOS LAGOS	12860	50	41
GRACA	18454	430	400	VALÉRIA	26210	407	347,5
GRANJAS RURAIS PRESIDENTE	1000	29	25		11010	227	207.5
VARGAS	1998	28	25	VILA CANARIA	11218	227	207,5
FLORESTAL	-	563,5	547	VILA LAURA	14524	450	436,5
				VILA RUY BARBOSA /			
IAPI	24452	507	469	JARDIM CRUZEIRO	19448	409	374
ILHA AMARELA	-	152,5	144	VISTA ALEGRE	-	49	47,5
JESUS DOS PASSOS*	1465	5	5	VITÓRIA	5225	149	144,5
ILHA DE MARÉ	4236	136	131				

*Neighborhoods with higher and lower prevalence of confirmed cases.

Source: Elaborated by the authors.

The data represented in Table 2 portray the descriptive statistics of the three neighborhoods with the highest median prevalence of confirmed and recovered cases, in Salvador, in the period from June 2020 to January 2021. Thus, Brotas, Pituba and Itapuã showed a median of confirmed cases of 1909, 1796 and 1393, respectively. As for the recovered cases, the medians were, respectively, 1806, 1735 and 1327.5, for the same neighborhoods. The total population, in turn, had a median of 70,158 for Brotas, 65,160 for Pituba and 66,961 for Itapuã.

Table 2 – Descriptive statistics of the neighborhoods of Salvador – BA with the highest numbers of confirmed cases of COVID-19.

	Average	Range	First quartile (25%)	Median (50%)	Third quartile (75%)	DP
Brotas Population	70158	70158 - 70158	70158	70158	70158	0
Brotas Confirmed Cases	1931,6	373 - 3386	1287	1909	3031,5	934
Recovered Brotas	1677,9	122 - 3235	704,5	1806	2895,8	1054,8
Itapuã Population	66961	66961 - 66961	66961	66961	66961	0
Itapuã Confirmed Cases	1476	213 - 2762	923	1393	2436	803,1
Recovered Itapuã	1276,5	50 - 2654	387,8	1327,5	2339	903,6
Pituba Population	65160	65160 - 65160	65160	65160	65160	0
Pituba Confirmed Cases	2132,6	366 - 4340	1296,5	1796	3774,5	1283,3
Recovered Pituba	1896,8	121 - 4204	658,8	1735	3650,8	1400,6

SD- Standard Deviation.

Source: Prepared by the authors.

INCIDENCE OF COVID-19 IN THE NEIGHBORHOODS OF SALVADOR AS A GUIDANCE FOR REHABILITATION: A DESCRIPTIVE STUDY

The option for analyzing the median instead of the average is due to the non-normal distribution verified in the histogram, analysis of mean, median and fashion, as well as the skewness, kurtoses and the range of values, which presented a wide interval between the data.

DISCUSSION

The municipality of Salvador currently has an estimated population of 2,900,319 inhabitants⁽¹⁰⁾, distributed in a territorial area of 693,453km2²⁽¹¹⁾. The municipality is organized through political-sanitary units, the Sanitary Districts (DS). In all, there are 12 DS, which comprise a unit of territory that contains a population with epidemiological and social characteristics, with its needs and the health resources to serve it ⁽¹²⁾.

According to data from the Municipal Health Department of the municipality, from the first recorded cases of COVID-19 in 2020 to the 49th epidemiological week, there were 293,547 positive cases for the disease. In a brief historical resumption, in the first year of the pandemic, the month with the highest incidence of cases was June, with 1001.5/100 thousand inhabitants. In the same period the following year, an incidence reduction trend was observed, where in June 2021 an incidence of 405.4/100 thousand inhabitants was recorded. In November 2021, the lowest incidence value in the municipality was reached, since the beginning of the pandemic, 14.9/100 thousand inhabitants ⁽¹³⁾.

From the distribution analysis of confirmed cases that had the filling of the race/color field (67.2%), there is a predominance of black and brown people around 79%. The same is repeated when analyzing the death data, in which 73% were black and brown people. The total number of deaths recorded between March 2020 and November 2021 was 7,663 deaths. From April 2021, with the start of vaccination, there is a trend in reducing the number of deaths in the city ⁽¹³⁾.

The data found point to a higher prevalence in the neighborhoods of Brotas, Pituba and Itapuã, belonging respectively to the DS of Brotas, Barra - Rio Vermelho and Itapuã, while the neighborhoods with the lowest prevalence were Ilha dos Frades, Ilha de Bom Jesus dos Passos and Porto Seco Pirajá, the first two belonging to the DS Subúrbio Such data corroborate the descriptions presented in the Epidemiological Bulletin of December 13 of the municipality, whose document has as reference the accumulated incidence, the DS Barra - Rio Vermelho was among the districts with the highest incidence and the DS Subúrbio Ferroviário the one with the lowest incidence ⁽¹⁴⁾.

With regard to the municipality's service network, until June 2017 the Health Establishment Registration System points to the presence of 2,986 establishments from different sources of financing in the municipality. Among those linked to the SUS, 56.71% are under the responsibility of the municipal management. Regarding the distribution of services by DS, the largest concentration

is in DS Barra - Rio Vermelho (19.63%), with more than half of these being of a private/philanthropic nature, also concentrating services of high complexity (43%). On the other hand, the lowest concentration is in the DS Boca do Rio, Cajazeiras and São Caetano-Valéria, with emphasis on the absence of high complexity services in the DS São Caetano-Valéria ⁽¹⁴⁾.

Primary Care in the municipality has 11 Expanded Nuclei of Family Health and Primary Care (NASF-AB) and, despite the increase in the percentage in recent years of coverage, the municipality still has an incipient coverage of Family Health Units and NASF-AB teams. Only 10.5% of these nuclei are distributed in six districts: Barra - Rio Vermelho, Cabula, Cajazeiras, Itapuã, São Caetano-Valéria and Subúrbio Ferroviário ⁽¹⁴⁾.

It is important to signal the NASF-AB as a team composed of professionals historically linked to rehabilitation, such as physiotherapists, speech therapists, occupational therapists, social workers, psychologists, physical educators and others. This represents a great potential to think about territory and community-oriented care strategies for users who need this health care ⁽¹⁵⁾.

It is suggested, therefore, that an expansion of the coverage of NASF teams and Family Health Units, guided by the epidemiological and social profile of the districts and neighborhoods, as well as the establishment of flows for the referral and reception of these users associated with the training and training of these professionals, can cover the growing demands of users with sequelae after the infection and recovery of COVID-19.

Primary care has a resolution capacity of 80% of the population's health problems, as long as it is well structured and organized, having the Family Health Strategy as a priority strategy for reorientation of the SUS care model. This strategy presents in its structure health practices oriented by the territory and the health needs of the attached population, having the possibility of articulating strategies with other services that make up the network ⁽¹⁶⁾.

Using the potential already installed and expanding the coverage of family health units is a way to qualify care and expand access to the health services that the population needs, close to home and with tools of low technological density. The adoption of this posture allows a better oriented referral, better use of resources and consequent resolution of demands ⁽¹⁷⁾.

CONCLUSION

It is evident, therefore, that it is possible to say that the neighborhoods with the highest prevalence of confirmed cases are also those with the highest medians of recovered cases and the neighborhoods with the fewest confirmed cases are also those with the lowest medians of recovered cases. In view of this, it is suggested to use the data for strategies aimed at planning and decision-

making aimed at prevention and health promotion measures, through a vaccination and health education campaign, more engaged in the neighborhoods with the highest number of confirmed cases and recovered cases.

It is expected that regions with a high prevalence of recovered cases will require more professionals working in health rehabilitation, after all the coronavirus can impact on local disabilities and disparities in health. This requires more rehabilitation centers for places with potential users of the Unified Health System.

CONFLITO DE INTERESSE

There are no conflicts of interest between the authors of the article entitled "Incidence of COVID-19 in the neighborhoods of Salvador as a guide for rehabilitation: a descriptive study" submitted for consideration in the Brazilian Journal of Functional Health.

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