

Study of cases of Covid-19 positivity, hospitalized at the Regina Apostolorum Hospital of Albano Laziale, Rome, Italy

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ABSTRACT

In the second half of 2020, a second wave of the covid-19 infection occurs worldwide, due to the SARS-COV-2. The second wave forced Italy again and the whole world to consider new restrictive rules, so as not to allow the pandemic to proliferate and spread, as happened in March of the same year. In this context it was made important to evaluate all the relevant cases of Covid-19 infection in depth, in order to obtain information useful for the mitigation of this new disease, still little known. In this context, at the Queen Apostolorum Hospital of Albano Laziale, Rome, Italy, the cases of infection were analyzed whose results were presented in this study.

Keywords: Covid-19, SARS-CoV-2, Hospitalization, Pandemic, Italy. 2021.

INTRODUCTION

The Covid-19 pandemic is a widespread epidemic on a global level still in progress, of the so-called "disease from the new Coronavirus", better known with the Covid-19 acronym. The first known cases involved mainly workers in Wuhan's wet market. In the

first weeks of January 2020 scientists identified in these strange pneumonites caused by a new coronavirus, designated Sars-Cov-2 (severe acute respiratory syndrome from Coronavirus 2), a result to be similar to at least 70% of its gene sequence to that of SARS-COV [1] [2] [3] [4]. At the end of January 2020 the characteristics of the virus had not yet been determined, although the ability to transmit from person to person was ascertained, and uncertainties remained on the exact methods of transmission and pathogenicity (the ability to create damage) [5]. The associated disease was recognized with the name of Covid-19 [6].

The first signs of the spread of the virus in Italy had reached 30 January 2020, when two Chinese tourists were positive for the SARS-COV-2 in Rome [7]. In response, the Italian government suspended all flights from and to China and declared the state of emergency [8]. On January 31, the Council of Ministers Italian Giuseppe Conte, appointed Angelo Borrelli, Head of Civil Protection, Special Commissioner for Emergency from Covid-19 [9] [10]. An unsound group of COVID-19 cases was then subsequently detected starting from 16 cases confirmed in Lombardy on 21 February and 2 in Veneto, in the province of Padua [11]. On 22 February the Council of Ministers of the Italian Republic announced a

new law decree to contain the epidemic, which foreseen the quarantine of over 50,000 people from 11 different municipalities in northern Italy [12], while on March 4th, the government ordered the complete closure of all the schools and universities of every order and at national level, having registered in the country 100 deaths due to the disease. All the main sporting events, including Serie A football matches, should be kept behind closed doors until April [13]. On February 21st, at least ten cities in Lombardy and Veneto, with a total population of 50,000 inhabitants, were blocked in a quarantine procedure following an epidemic burst in Codogno, in the province of Lodi. The police imposed a curfew, closing all public buildings and checking access through police locking places to the so-called "red area", with sanctions for violations. The Regional President of Basilicata, Vito Bardi, instead of a mandatory quarantine of 14 days for the people who arrived from the areas of Northern Italy affected by the epidemic [14]. On 8 March 2020, the PDC Conte stated that much of the territories of Northern Italy, including Milan, Venice and the whole Lombardy region, would have been quarantined, with movement restrictions that would affect about 16 million people. A draft of d.p.c.M. It was widespread by the printing bodies the night before the entry into force, and even if the first voices spoke of a leak of about 20 thousand people from Milan to Southern Italy between Saturday 7 and Sunday 8 March. [15] [16]. On the evening of 9 March 2020 the quarantine was then extended to all of Italy and all public activities were closed, outside of groceries, supermarkets, pharmacies, and other supplier activities of basic necessities [17].

Right at that time, from the first cases of positivity, the Queen Apostolorum hospital organized, at the explicit request of the competent ASL, to contain and treat coronavirus infections, within the respiratory disease department, and within a few days the entire hospital was converted, for the care and assistance of patients suffering from Covid-19 respiratory syndrome.

1.0 – METHOD

The study was carried out drawing on the data relating to the admissions carried out within the Queen Apostolorum hospital in Albano Laziale, Rome, Italy, after the second pandemic wave, occurred in Italy starting from the autumn period. As we can see the data of this study are purely statistical and non-experimental, because the researchers wanted to make a photograph of the pandemic trend, measured within the nosocomium, also to understand what was the degree of nursing care employee With regard to patients released to the respiratory system disease department.

The data was then scrutinized at the end of patient admissions, after the second national pandemic wave.

1.1 – European Pandemic Data.

To date, the pandemic data relating to the latest OMS data. Source: Health Emergency Dashboard, 03 March 10.18 am, are the following [18]:

- 114.315.846 Cases confirmed in the world from the beginning of the pandemic.
- 2.539.427 dead.
- United Kingdom: Confirmed cases: 4.182.013 dead 122.953.

(Latest data, included Italy, source Dashboard ECDC, 25 February 2021):

- France confirmed cases 3.605.181, morti 84.306.
- Spain confirmed cases 3.153.971, morti 67.636.
- Italy confirmed cases 2.809.246, morti 95.718.
- Germany confirmed cases 2.390.928, morti 67.903.

With over 114 million patients and over 2.5 million deaths, the case of the Covid-19 pandemic, it appears to be an important emergency problem, in the area not only worldwide, but also national, also in the face of

the fact that the pandemic is not over when this study has been published, but still last.

The European Center for Prevention and Disease Control has updated the risk assessment relating to the mutations of SARS-COV-2 on 15 February 2021, as visible in the Fig. 1 [18] [19]. In December 2020, the United Kingdom had to address a rapid increase in Covid-19 cases, associated with the emergence of a new SARS-COV-2 variant (VOC 202012/01), at the same time, South Africa reported Another SARS-COV-2 variant, (indicated as 501.V2), also potentially worrying, while in January 2021 Brazil reported the presence of a further local variant. In recent weeks, although a decline in the overall incidence of SARS-COV-2 has been observed, the epidemiological situation is still a reason for serious concern throughout the EU. From 21 January 2021, the EU / EEA countries have observed a substantial increase in the number and percentage of cases of

SARS-COV-2 of the variant B.1.1.7, reported for the first time in the United Kingdom. Due to the greater transmissibility of the virus, the risk is currently evaluated as high / very high for the overall and very high population for vulnerable individuals [18]. The analysis of the models shows that, unless the non-pharmaceutical interventions (NPI) do not continue or reinforced in the coming months, a significant increase in the cases and deaths related to Covid-19 in the EU / EEA should be provided. Although vaccination will mitigate the effect of replacement with more transmissible variants and seasonality could potentially reduce transmission during the summer months, the premature loosening of the measures will lead to a rapid increase in incidence rates, serious cases and mortality. Rapid vaccine distribution between priority groups is required to reduce admissions, intensive care shelters and deaths due to Covid-19 [18].

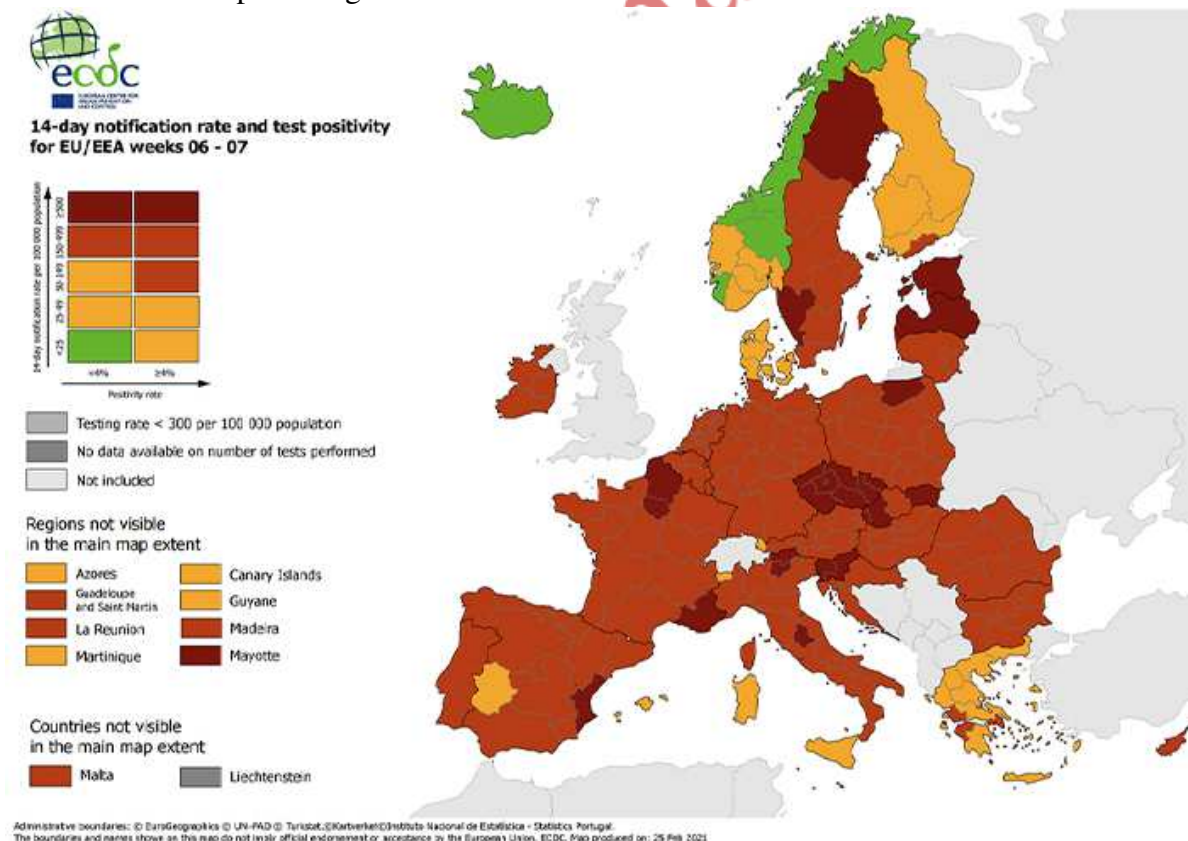


Fig. 1 - Maps in support of the Council Recommendation on a coordinated approach to travel measures in the EU. Combined indicator: 14-day notification rate, testing rate and test positivity, updated 25 February 2021. It highlights the great risk of European regions for pandemic infection. Credits: ECDC Europa.

Data that appear important in a pandemic context that has lasted for over a year and that must soon take serious measures to break down the infection from Coronavirus.

1.2 – Period considered in the study.

This study was strongly desired by the nursing staff engaged in direct assistance to the sick, within the Covid-19 isolation departments, to which the Queen Apostolorum Hospital of Albano Laziale, Rome, Italy has endowed, to face the pandemic crisis in the Lazio region.

The data considered in this study are the one from 1 October 2020 to 12 February 2021, a period in which, nosocomio has become a reference health care center within the province of Rome. This period is coincided with the second national wave [20], and saw a greater increase in patients suffering from Covid-19, compared to the first wave started in March 2020.

The study of the data obtained from the hospital stay, has continued until the month of March 2021, in full pandemic crisis determined not only by the second variant of the Covid-19, but more generally from the second and the beginning of the third wave of national infection [20]. The data is not very comforting for our country, as it turns out to be more dead on the European continent (95.718) [18].

1.3 – Data analysis.

To start the data they considered the period in which this study has continued. How can you see in **Fig. 2**, we can observe the distribution of hospitalization cases for COVID-19 out of a total of 255 cases, which occurred between 1 October 2020 and 12 February 2021. In this distribution, some non-undervaluation characteristics can be noted.

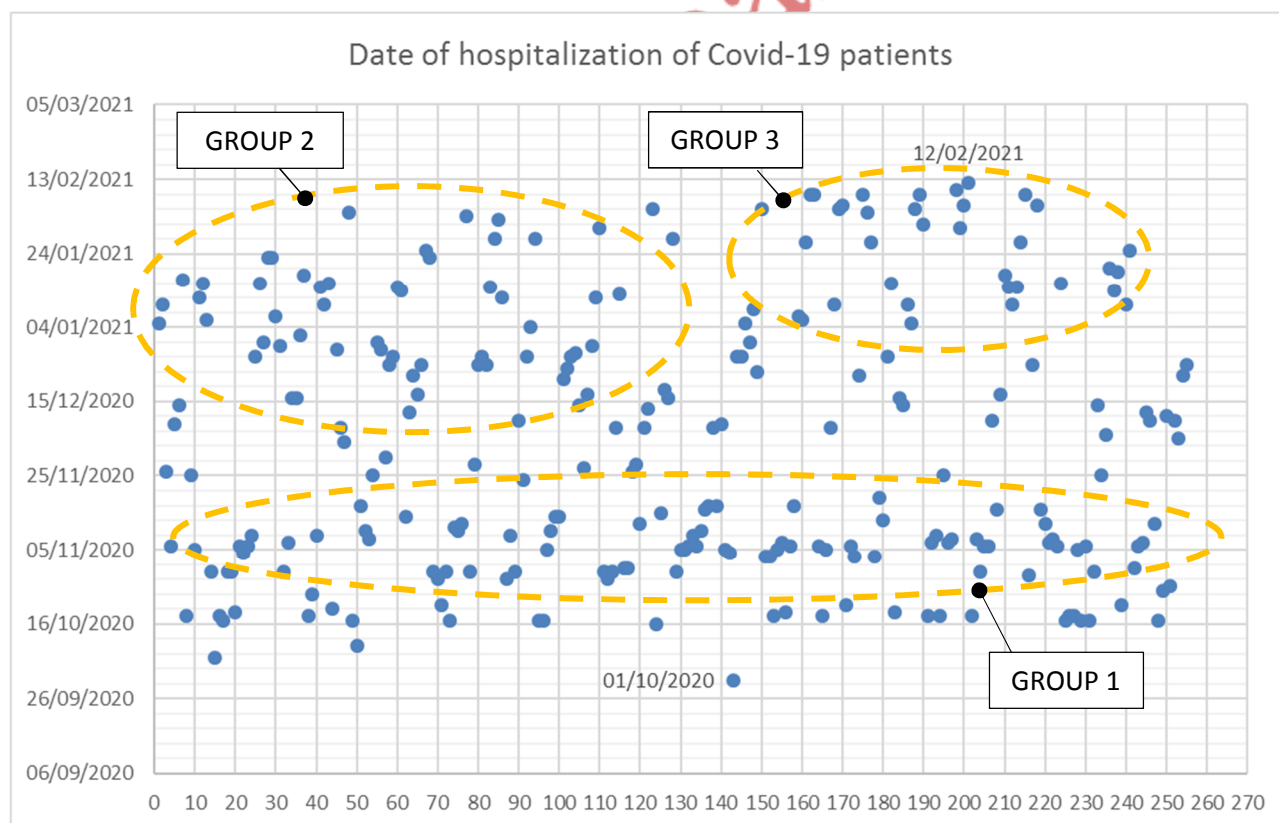


Fig. 2 – It highlights the distribution of cases of infection during the year considered in this study. There are three distinct groups of cases of greater infection, which occurred at the beginning of the second national pandemic wave (group 1) and at the beginning of the third wave (group 2 and group 3). Credits: Queen Apostolorum Hospital, Albano Laziale, Rome, Italy.

As regards the period of the beginning of hospital stay, the data show important data that cannot be underestimated. We have a first group of infected people who are hospitalized from second half of October 2020, and 15 November 2020 (group 1). This period concerns the "second Italian wave" of cases with positivity to the Covid-19.

A second group of admissions we find it between 15 December 2020 and 10 February 2021. In this time spectrum we note two small waves that can be defined group 2 (December 15, 2020 and 4 February 2021) and Group 3

(between January 5th 2021 and 12 February 2021) and which mostly affect patients from RSA and various welfare communities. This indicates that the infection in Italy and in the province of Rome took place in sobs, probably mediated by the narrow and the loosening of the restrictions issued by the Italian government by DPCM (Fig. 2).

Outside these groups, the distribution appears homogeneous with hospitalizations started between 1 October 2020 and the last hospitalization occurred on 12 February 2021 (duration of the study).

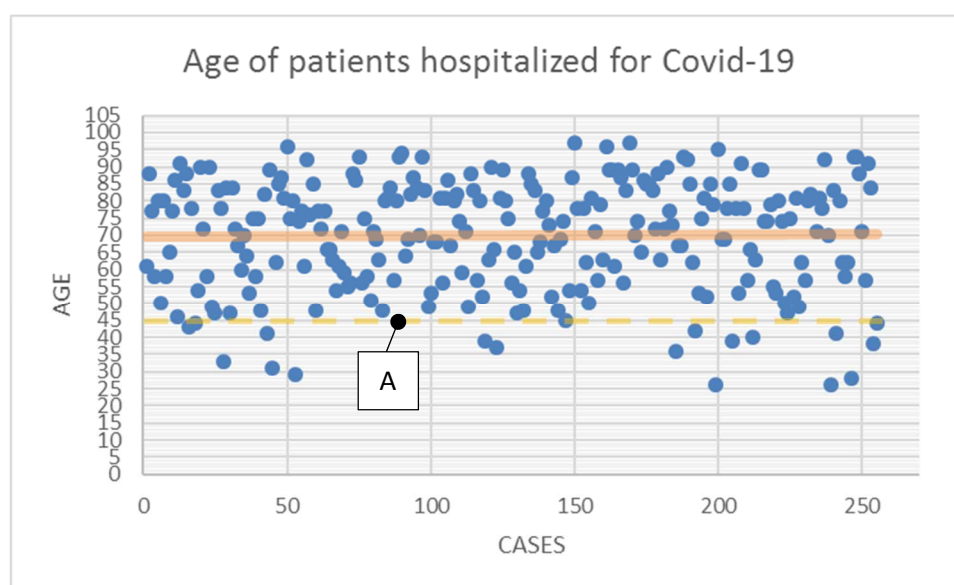


Fig. 3 – It highlights the distribution of the relationship of the patients suffering from Covid-19 in the time period considered in this rove. It is highlighted an average age of 70 and a number greater than infection cases over 45 years. Credits: Queen Apostolorum Hospital, Albano Laziale, Rome, Italy.

Another important figure is the age of the patients received in the hospital structure and suffering from the Covid-19.

The average age is that of 70 years, while from the graph it is possible to observe how to decrease of the age in an important way the number of hospitalizations, the data is directly proportional to the registry age.

The study highlighted a personal age of patients between 26 and 97 years. The alarm age beyond which the number of cases seems to increase considerably is that of the 45 years, as visible in Fig. 3.

According to such data, the ISS - Superior Health Institute, it is estimated that the average age of patients who have contracted the infection from SARS-COV-2 is around 48 years [21], tali dati, sono quasi in linea con quelli ricavati dal presente studio, dove si osserva (Fig. 3), an exponential increase in patients hospitalized for Covid-19 around 45 years (A).

This indicates how the figure is also confirmed by the national average. Obviously this study contemplates data coming from a close time window, which therefore does not take into account the data relating to the SARS-COV-2 infection analyzed before the second wave.

This means that although the data are minor than the total ones of the national trend, there is still a certain overlap of the data with respect

to the national trend of the Covid-19 and that considered in this study.

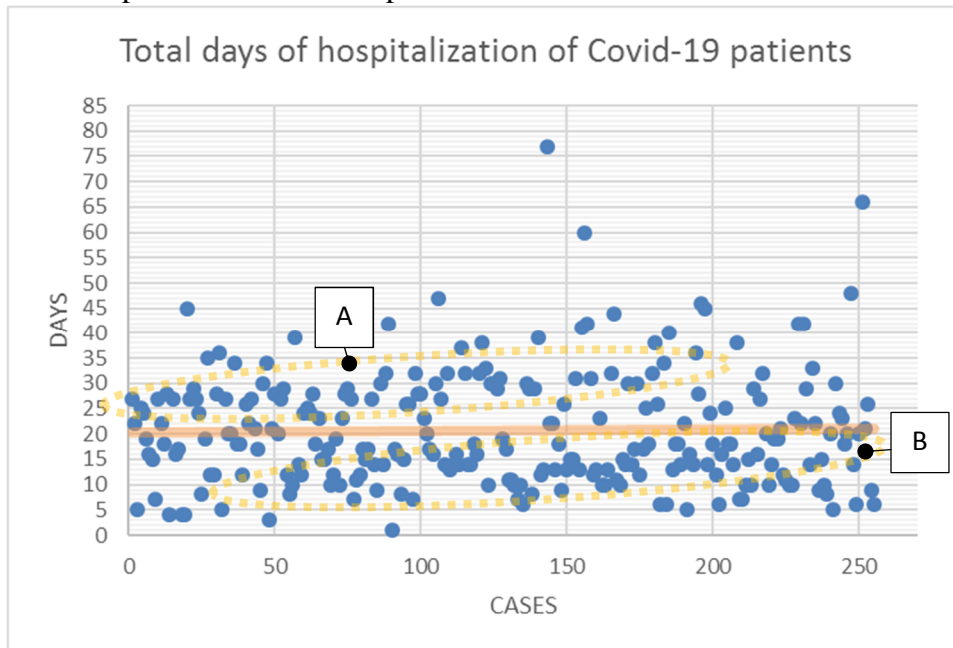


Fig. 4 – The graph shows the distribution of the number of hospitalization days for each patient. It is evident that the average is that of the 20 - 21 days of hospitalization, with isolated peaks that exceed 60 days, up to a 77-day case. The largest number of hospitalization cases appear to be overhanged from 10 to 33 days before actual discharge. Credits: Queen Apostolorum Hospital, Albano Laziale, Rome, Italy.

The first group is the one ranging from 10 to 17 days of hospital stay (A), while the second group seems to consolidate between 25 and 33 days of hospital stay (B).

The average of the total number of days of stay stands around 21 days. It includes how there is

an important duration of hospitalization, for the majority of patients ranging from 10 to 33 days of hospitalization before discharge and more precisely a first group ranging from 10 to 15 days and a second group from 25 to the 35 days of hospitalization, as visible in the **Fig. 4**.

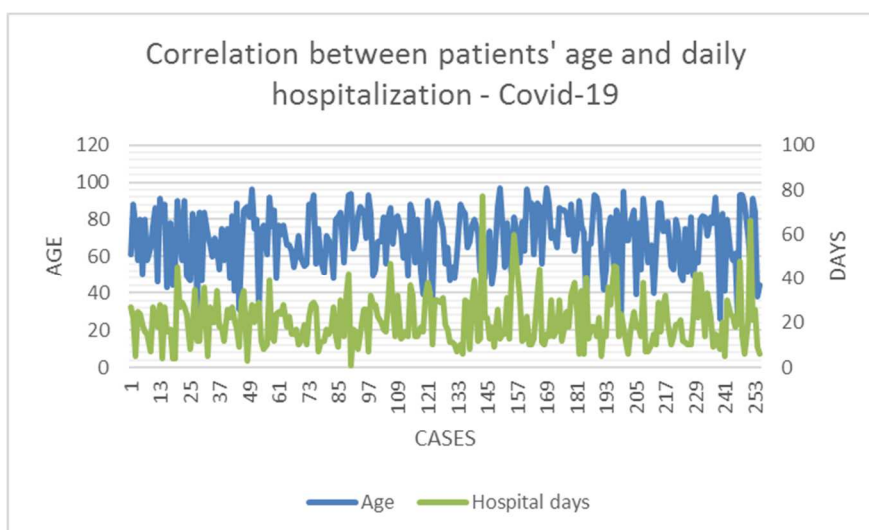


Fig. 5 – The graph shows the progress of the relationship between registry age and number of days of hospitalization. It is evident how to increasing the registry age, considerably increases the number of days of hospitalization for patients. Credits: Queen Apostolorum Hospital, Albano Laziale, Rome, Italy.

The agency's data compared to the duration of the stay, show a clear correlation between the alarm age of positive patients to the Covid-19 and the duration of their admission.

The more you are older and the more admission stretches (Fig. 5). These data confirm the national and that not only in the European continent.

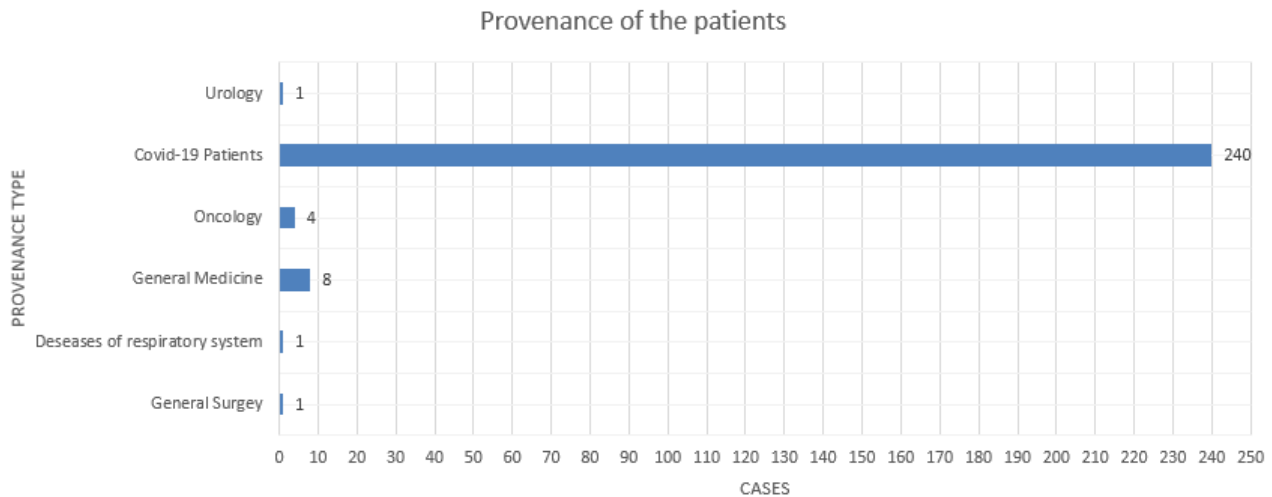


Fig. 6 – The graph shows the origin of patients released then to the isolation department for Covid-19. The majority of patients is that from other health facilities external to the Queen Apostolorum hospital in Albano Laziale, Rome, Italy, with 240 admissions. Then we have the different suspenders within the hospital. Credits: Queen Apostolorum Hospital, Albano Laziale, Rome, Italy.

The origin of the patients, as visible in the Fig. 6, it is external to the Queen Apostolorum hospital in Albano Laziale, Rome, Italy, or from health facilities present in the Lazio

Region with 240 admissions (94.11% of the total). Then we have the admissions coming from the Queen Apostolorum hospital, or from its internal departments:

- General medicine – 8 casi – 3,13%.
- Oncology– 4 casi – 1,5%.
- Respiratory diseases – 1 casi – 0,39%.
- Urology – 1 casi – 0,39%.
- General surgery – 1 caso – 0,39%.

5,89%

This indicates how the Queen Apostolorum Hospital has provided a valid support to the Lazio Region and the ASL of competence, for the care of patients suffering from Covid-19, as visible in the Fig. 6, going to hospitalize for 94.11% of the total, the beds required by 118 and therefore from the ASL expertise.

compared to the total SARS-COV-2 infections treated in the hospital.

It was also interesting to analyze the data coming from the hospital itself, with a maximum of total cases of infection from SARS-COV-2 of 13 cases, identified within the health structure (5.89% of the total of admissions). A non-underestable percentage,

The data relating to the patient's discharge (Fig. 7), They are extremely interesting. On a total of 255 patients treated in the Queen Apostolorum hospital in Albano Laziale, Rome, Italy, 193 (24.31%) are after states discharged and transferred to their home; 39 (15.29%) the deaths are; 11 (well 4.3%) were then transferred to territorial residential facilities. At these percentages are added the others, or patients transferred to other institutions: 5 cases (1.9%); those transferred

to an institute for rehabilitation: 4 cases (1.5%); And finally those who voluntarily resigned from hospital: 3 cases (1.17%).

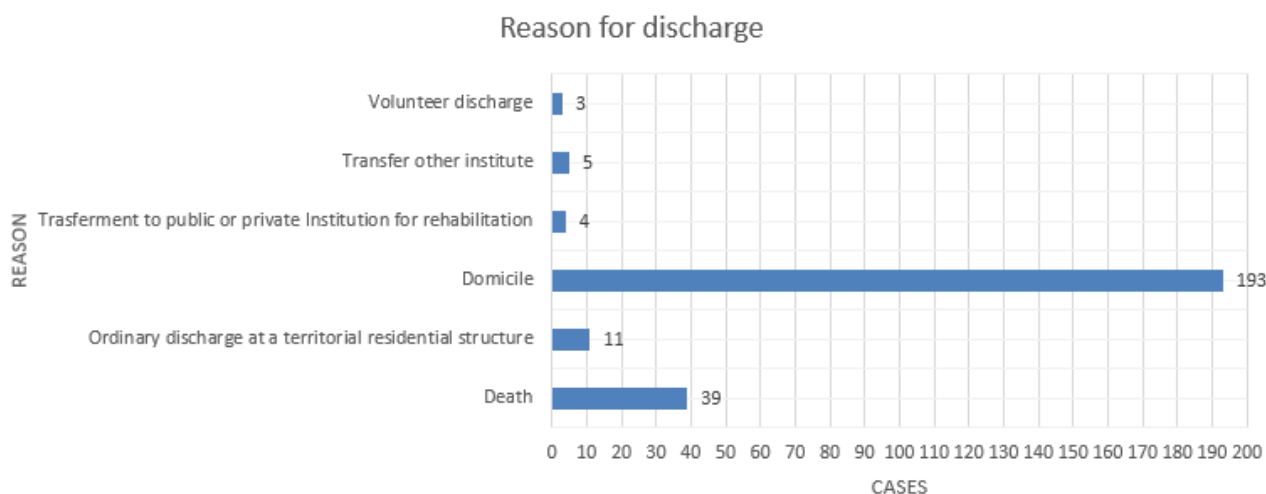


Fig. 7 – The graph shows the data relating to the discharge of patients who concluded their hospitalization at the Queen Apostolorum Hospital of Albano Laziale, Rome, Italy, on a total of 255 treated admissions, BE 39 were deceased, 193 transferred to their home and Other transferred to other health facility. Credits: Queen Apostolorum Hospital, Albano Laziale, Rome, Italy.

The mortality of 15.29% remains a high percentage also seen the average age of patients admitted, this percentage had to take into account other pathologies to which the patients were affected.

2.0 – CONCLUSIONI

In conclusion the data obtained from the study conducted on SARS-COV-2 infections and on patients suffering from Covid-19, showed features before unknown to the Italian pandemic trend, while considering the small sample analyzed, compared to national or regional cases. That being said, the first consideration that can be done is that however such data reflected, although a small percentage of a national type of kind, then going to recolare albeit the general pandemic trend in a small way.

It was understood, going to analyze the data, which the second wave was characterized by three distinct groups of infections (**Fig. 8**), Groups that before the study had never been highlighted. It is, as was reiterated with micro-

variations of the second wave, which, however, contemplating a actual trend of the infections to Lazio and in the province of Rome.

An important fact if you take into account that the progress of SARS-COV-2 infection is not linear, but it has to all the purposes of the minimum and maximums, within a national increase. In this context the study managed to highlight this data.

- Between the second half of October 2020, and 15 November 2020 (Group 1).
- Between 15 December 2020 and 4 February 2021 (Group 2).
- Between 5 January 2021 and 12 February 2021 (Group 3).

It is not clear whether the third group is part or not of the beginning of the third national wave. In this context the data confirms that there are increases and decreases of national pandemic infection, on whose causes we would certainly become light.

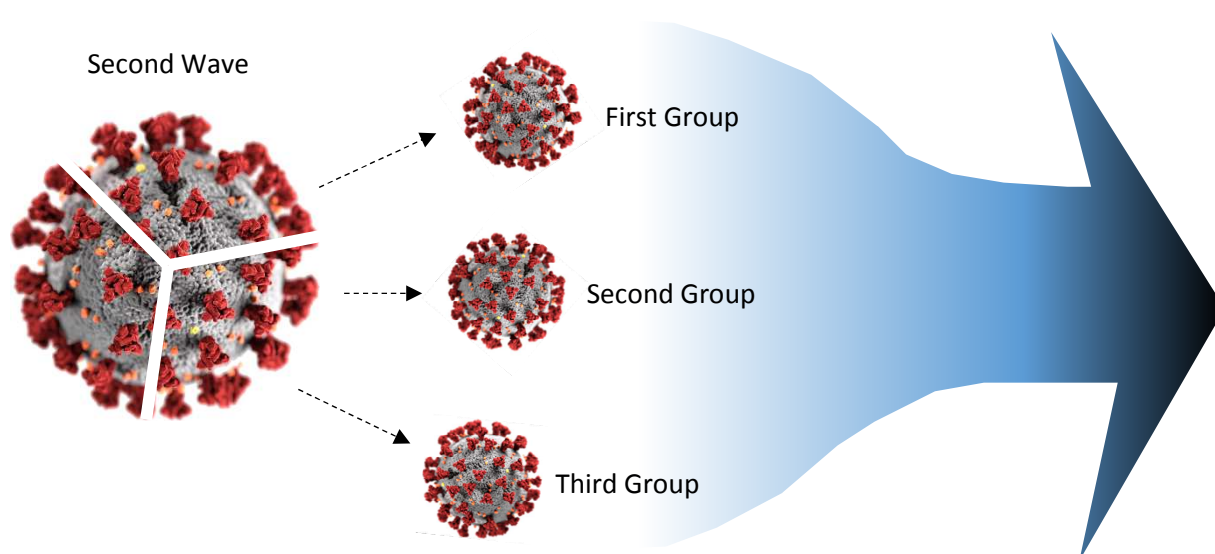


Fig. 8 – Trend of the second wave from SARS-COV-2 infection. The data extrapolated by patients admitted to the Regina Apostolorum Hospital of Albano Laziale, Rome, Italy, showed the presence of three small groups associated with the infection from Coronavirus, which were identified by the duration of hospitalization from Covid-19. Credits: Queen Apostolorum Hospital, Albano L.

Another important data leaked by the study is that relating to the days of hospitalization of patients. The trend was certainly not random. It includes how there were two general groupings in the duration of the hospitalizations, the first grouping is what ranges from 10 to 17 days of hospitalization, while a second grouping is visible between 25 and 33 days.

It is not known whether or not on such groupings affect the early start of a certain antiviral or anti-inflammatory therapy (missing the medical relevance data), or if the duration is to be related to the alaric age of the subjects hospitalized. It is plausible to think that on the two groupings both hypotheses affect. In this regard, however, the study showed that hospitalization stretches to increase the relationship of the patients admitted, confirming national data.

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