

Mortality Analysis Between 0 And 44 Years of Age, In The Time Range Between 2016 and 2021 in the European Continent

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ABSTRACT

The evaluation of the number of deaths linked to a certain population divided by age, in relation to a certain temporal context, gives us the opportunity to underestimate what happens in a populated geographical area, recently hit by the SARS-CoV-2 pandemic. In this short statistical study, the mortality of the population between 0 and 44 years, and the excess mortality calculated on the same age group, in the population affected by the pandemic health problem in the European continent was evaluated. The data allow us to understand the trend in deaths in age groups and adults, compared to the same period of time considered, i.e. from the 34th week of 2016 to the 32nd week of 2021. able to provide hypotheses able to partially justify the trend of deaths in the European population, and offer concrete solutions so that in the future we can mitigate the health problems that have recently plagued the European continent also due to the pandemic.

Keywords: Excess of mortality, Deaths, Pandemic, European continent, Young population, Mature population.

1. INTRODUCTION

The SARS-CoV-2 infection that occurred starting from 2020 in the European continent has posed enormous health problems due to the high number of patients infected with the new coronavirus and the increasing

number of deaths observed compared to previous years [3]. With the introduction of specific vaccination as a health prophylaxis, starting from December 2020, scientists are evaluating in this period how the epidemic trend is moving [1] [2] [4] and with it the number of deaths over the years precedents, in relation to the pandemic problem and the introduction of vaccination on the European continent. Some data are very significant to understand what is happening at European level, after the introduction of vaccination and more generally with respect to the mortality of young and adult populations, compared to previous years, as shown in Fig. 1 and 2 (graphs).

2. METHOD AND DATA

The data considered in this study and according to the estimation of this very important researchers for continent what has been happening in the European in recent years, have been elaborated by EuroMOMO. EuroMOMO is a European mortality monitoring activity, aiming to detect and measure excess deaths related to seasonal influenza, pandemics and other public health threats.

Official national mortality statistics are provided weekly from the 29 European countries or subnational regions in the EuroMOMO collaborative network, supported by the European Centre for Disease Prevention and Control (ECDC) and the World Health Organization (WHO), and hosted by Statens Serum Institut, Denmark [5]. These graphs were generated in

week 2021-33 with data from 29 participating countries: Austria, Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Germany (Berlin), Germany (Hesse), Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, UK (England), UK (Northern Ireland), UK (Scotland), UK

(Wales), and Ukraine. Ukraine, Germany (Berlin) and Germany (Hesse) were not included in the pooled data.

The data are those considered from the thirty-fourth week of 2016 to the thirty-second week of 2021 and the age group of the population is that considered young / adult, between 0 and 44 years of age.

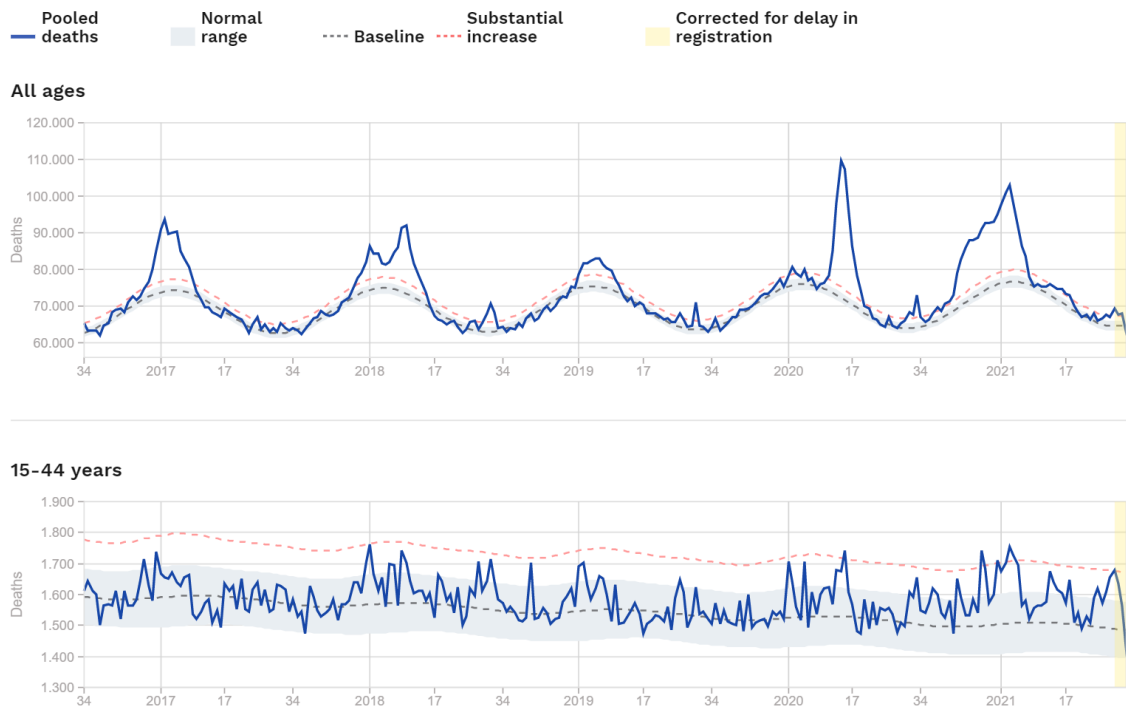


Fig. 1 - Cumulative number of deaths by age group, in the time range between the thirty-fourth week of 2016 and the thirty-second week of 2021. Credits: EuroMOMO - <https://www.euromomo.eu/>.

3. DISCUSSION

If we consider **Fig. 1**, it can be seen that between the end of 2016 and mid-2021 the number of deaths of the population between 0 and 44 years old increased, with the highest peak calculated between 2020 and 2021 in part precisely due to the COVID-19 pandemic. For example, if we only check the period included in the 2020-2021 annual range, pre and post vaccination, we can certainly notice important information on the trend in mortality. (**Fig. 1b**). It is interesting to note that in the same period (**A - B**) highlighted by the red dotted lines, in 2021 there is an increase in mortality, compared to 2020. In this case the greatest mortality (2021) concerns the post-vaccination period, in a period in which the population had been vaccinated (**Fig. 1b**). These data must make the scientific world and world researchers reflect, and we must immediately discuss what has been highlighted. Another important data is that relating to the excess mortality for young / mature age groups (0-44 years), again in the European continent, in the time range between the thirty-fourth week of 2016 and the

thirty-second week of 2021, and this time by calculating the excess it is possible to understand what happened (**Fig. 2**). Another important data is that relating to excess mortality for young / mature age groups (0-44 years), again in the European continent, in the time range between the thirty-fourth week of 2016 and the thirty-second week of 2021, and this time by calculating the excess it is possible to understand what happened (**Fig. 2**).

There is a net overall increase compared to other years for the adolescent and mature age group (15-44 years of age) in 2020.

In 2021 the excess is lower than in 2020, but in this case we had vaccination prophylaxis at european level, so the effect with fewer deaths may be due precisely to the extension of vaccination on the age groups at greater risk, carried out between the end of 2020 and the middle of 2021.

There is a net general increase compared to other years for the adolescent and mature age group (15-44 years of age) in 2020. In 2021 the excess is lower than in

2020, but in this case we have achieved European vaccine prophylaxis, therefore the effect with fewer deaths could be due precisely to the extension of vaccination to the age groups at greatest risk, carried

out between the end of 2020 and mid-2021. This data is extremely important, on which it can be done hypothesis to try to explain it.

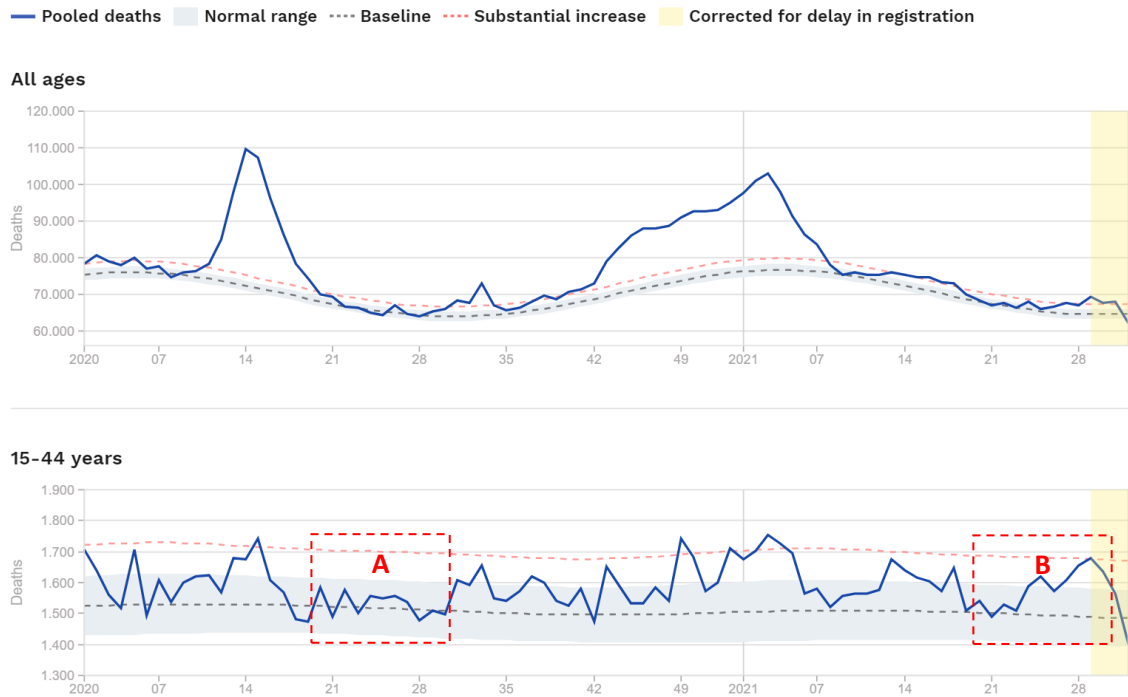


Fig. 1b - Cumulative number of deaths by age group, in the time range between 2020 and the thirty-second week of 2021. Credits: EuroMOMO - <https://www.euromomo.eu/>.

However, **Fig. 2** shows a marked increase in excess mortality in the total population (0-44 years) even after European vaccination prophylaxis. In this context, if we evaluate the excess mortality data for the age between 0 and 14 years, we note that after vaccination prophylaxis there was an increase, albeit lower than in 2020 (C).

If we look instead at the excess mortality calculated for 2021, in the age group between 15 and 44 years, the data indicates a net increase, greater than in other years.

This would seem an anomaly given that the period is the European post-vaccination period, i.e. characterized by a marked vaccination prophylaxis for the entire population (D), obviously if this depended on any problems determined by vaccination prophylaxis or the presence of new deaths due to SARS-CoV-2 infection.

But given that the graphs show the overall trend of deaths on the European continent, the causes of these deaths are of different etiology or cause.

One wonders why the adolescent / mature age group shows a sharp increase in excess mortality in 2021, compared to other years (from 2016).

On this it will be necessary to continue to study the data, for now partial and not definitive, and to understand what determined these characteristics of mortality.

The mapping (zoning) of deaths calculated for the fourteenth week of 2020 (peak) and 2021, shows how the number of deaths has significantly decreased compared to 2021, in this case it must be assumed that the decrease in deaths was caused precisely by the vaccination prophylaxis (**Fig. 3**) and this would almost completely eliminate the hypothesis that the increase in deaths is caused by infectious problems due to SARS-CoV-2.

The cause of the observed increase for excess mortality in the 15-44 age group in 2021 (Fig. 2) is still unclear, in this case the increase observed in 2021 between 15 and 44 years it is practically observed from the second week of 2021, up to the thirty-second week (time horizon considered in this study), i.e. the increase in

excess mortality includes the whole of 2021 compared to the other years considered (from the 34th week of 2016).

There is no isolated peak, but the trend is totally out of range compared to other years, in a context of strong European vaccination prophylaxis.

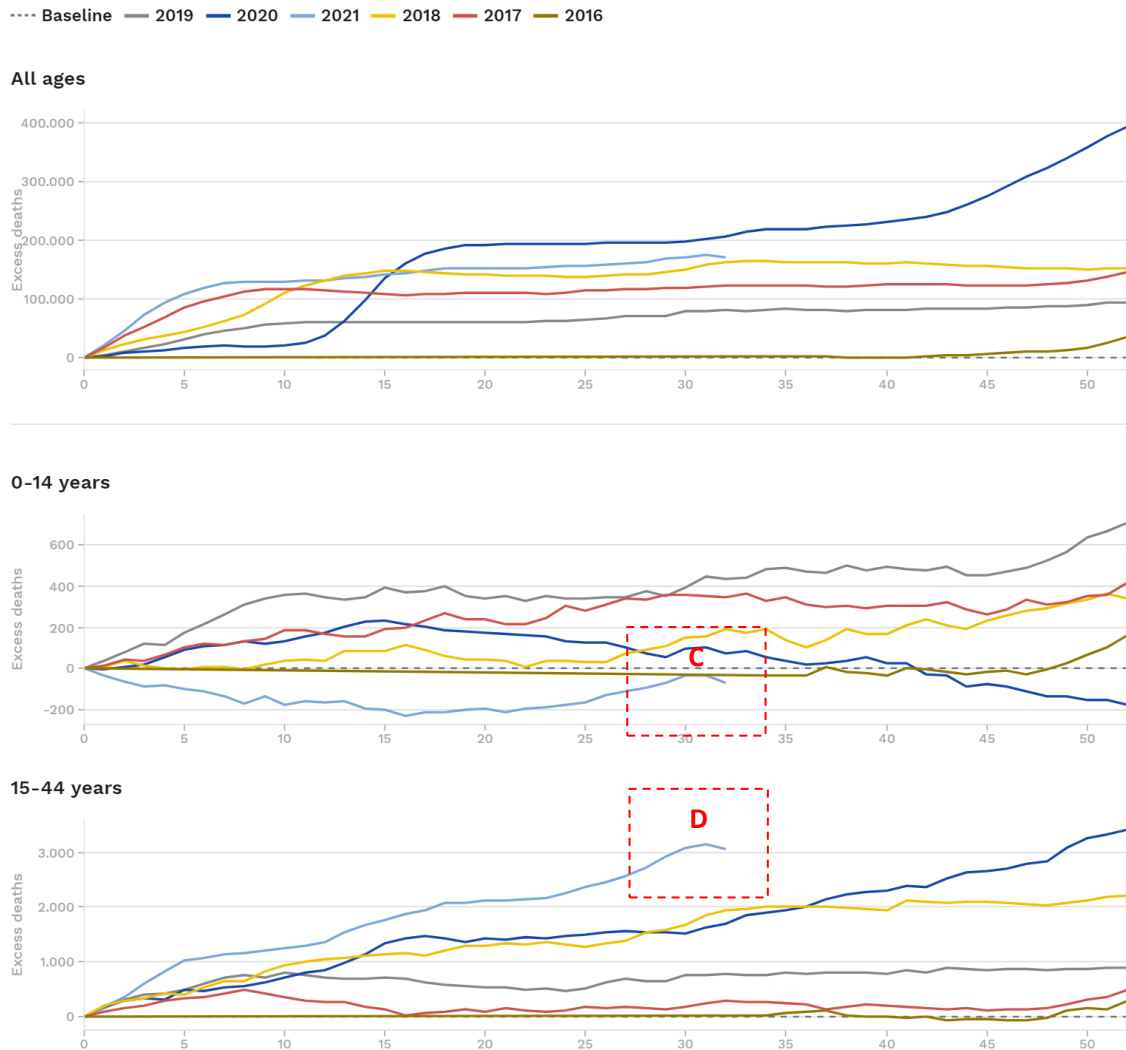


Fig. 2 - Excess Mortality between 0-44 years of age, in the time range between the thirty-fourth week of 2016 and the thirty-second week of 2021. Credits: EuroMOMO - <https://www.euromomo.eu/>.

4. CONCLUSIONS

In conclusion of this short statistical study, it can be stated that there is a greater excess of mortality in 2021 compared to the population aged 15 to 44 years, compared to the other years examined (2016-2020). This increase occurred in a post-vaccination period and on the European continent. It is true that the data are

not complete, but such completeness could affect the data minimally, given that we are talking about small areas in Germany and Ukraine, in this case the situation could even provide worse data than those already in possession.

Faced with this, researchers must analyze this information to better understand what caused this increase in excess mortality in the young age group compared to previous years: what is the cause?

- a. Could it be due to new infections caused by variants of SARS-CoV-2?
- b. Could it be due to the effects of vaccination prophylaxis on the immune system of the population under examination, exposing it to important health risks?
- c. Could it be due to infections caused by the novel coronavirus variant in the unvaccinated population?
- d. Could it perhaps be due to the lack of care and assistance of patients suffering from other serious diseases (tumors, bacterial infections, heart failure, etc.) who, during the pandemic restrictions issued by the various European states, were unable to cure themselves?
- e. Could it be due to other types of problems that are still difficult to identify?

Since these are general data that cover all types of deaths, it is necessary to work on the identification of the causes of death, collaborating between researchers by analyzing these cases of death to arrive at the solution of the problem, a problem that for now remains not very indicative and on which we can only do assumptions.

4.2 THE EUROPEAN-DEATH MONITORING SYSTEM

The overall objective of the original European Mortality Monitoring Project was to design a routine public health mortality monitoring system aimed at detecting and measuring, on a real-time basis, excess number of deaths related to influenza and other possible public health threats across participating European Countries. This objective was originally targeted in a DG Sanco (Directorate General for Health and Consumer Protection of the European Commission) supported project that ran from 2008-2011. During the three years, multiple partners from a number of European countries were engaged in developing a coordinated approach to doing exactly this: real-time standardized mortality monitoring across Europe. Technical developments, new systems and analyzes included some of the following:

- An inventory of existing mortality monitoring systems.
- Identification and definition of core attributes and minimal requirements for a mortality monitoring system.
- Retrospective analysis of mortality data to explore mortality dynamics (changes, trends, etc.) in different European settings as well as the underlying events that determine these dynamics. Also the added value of pooling mortality data from several European countries was looked into. Using historical mortality, morbidity and environmental data from different European countries and outputs from the inventory and the minimal requirements, data was analyzed using a variety of epidemiological and statistical techniques including regression techniques and other time-series analysis approaches, in order to explore the contribution of different infectious events (eg, influenza) or non-infectious (eg, temperature) events to mortality.
- Identification of a uniform analytical approach.
- Piloting of a consensus system for real-time mortality modeling in several European countries.

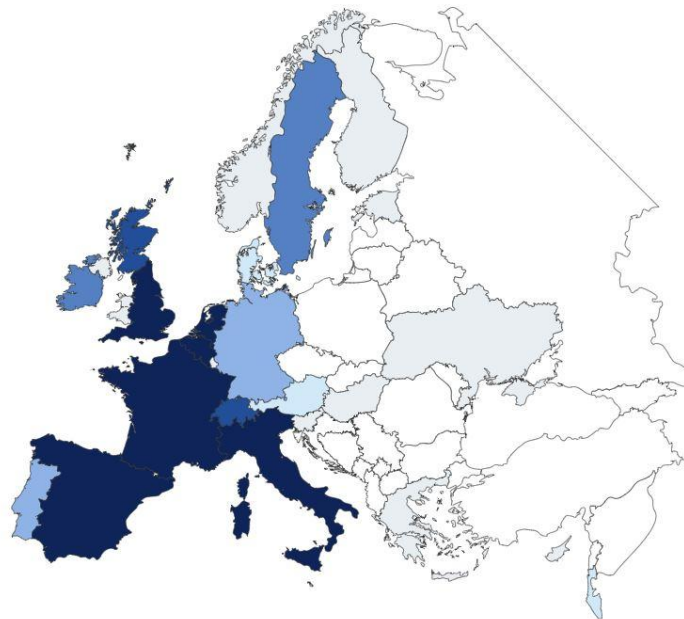
During the 2009/2010 influenza A (H1N1) pandemic, the EuroMOMO network demonstrated how a timely, standardized and coordinated approach to mortality monitoring increases the European capacity to assess the impact of events with a potential impact on public health [7].

There is no doubt about the seriousness and importance of EuroMOMO, from 2016 onwards, the EuroMOMO network has been supported by and worked closely with the European Center for Disease Prevention and Control (ECDC) and the World Health Organization (WHO) Regional Office for Europe [5]. To date, the EuroMOMO network consists of 30 partners in 27 countries or regions of countries. [6].

EuroMOMO's mission is to strengthen EU preparedness to respond to the potential risk of all hazards through a continuous operation of the EuroMOMO network which ensures standardized and controlled weekly monitoring of mortality [8].

The data presented in this study are therefore important data, which all researchers and scientists should discuss together, to try to understand, as soon as possible, which problems have caused an increase in excess mortality from 15 to 44 years of age. age.

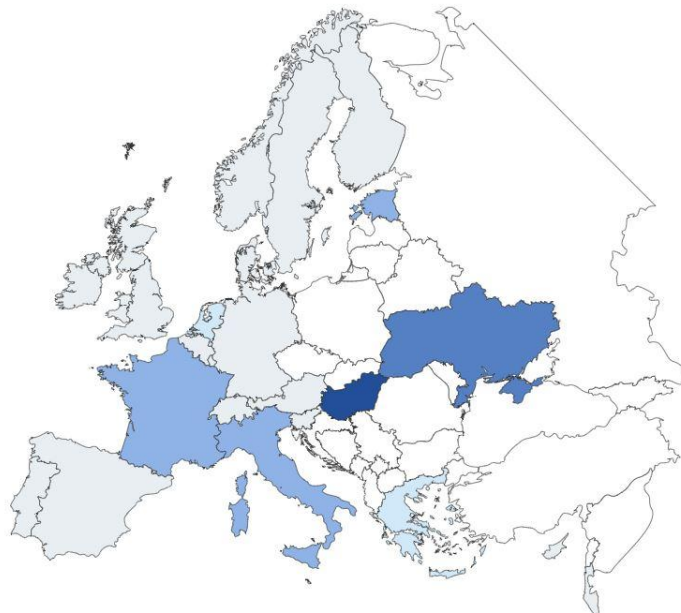
Week 14, 2020



Excess in z-scores

- Extraordinary high excess ($z > 15$)
- Very high excess ($10 < z \leq 15$)
- High excess ($7 < z \leq 10$)
- Moderate excess ($4 < z \leq 7$)
- Low excess ($2 < z \leq 4$)
- No excess ($z \leq 2$)
- No data

Week 14, 2021



Excess in z-scores

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- Low excess ($2 < z \leq 4$)
- No excess ($z \leq 2$)
- No data

Fig. 3 - Mortality trend for the European continent, zoonization of deaths in relation to the country. The time range related is that of the fourteenth week (first peak infection 2020) and for the fourteenth week of 2021. Credits: EuroMOMO - <https://www.euromomo.eu/>.

4.3 SOLUTIONS

The graphs showing the trend of deaths and the excess of deaths caused by any cause, within these data, there are also deaths caused by different types of pathologies, including cancerous, infectious, or surgical ones (emergency surgery), as well as non-postponable medical (emergency medicine). Therefore, it has been ascertained that these deaths were also determined by the restrictions due to the global pandemic crisis which has ended up worsening the health of entire populations of patients due to the closure of entire hospital wards, to provide assistance and support. vital of patients affected by COVID-19, what are the future strategies that must be implemented in the medical and health field to avoid once again an increase in the mortality of entire patient populations?

- Keep an adequate percentage of surgery, emergency medicine, oncology, cardio-surgery departments open.
- Keep at least essential services open on an outpatient basis for patients suffering from chronic respiratory failure, COPD, OSAS, ASTHMA.
- Allow the hospitalization of patients with chronic pathologies of the endocrinological system.
- Allow emergency hospitalization for non-postponable cases of patients suffering from surgical emergencies (kidney stones)
- Outpatient treatment for patients suffering from chronic diseases of the cardio-circulatory system (hypertension, heart failure).
- Allow outpatient treatment for patients with cancer, and not delay chemotherapy.
- To allow the operation of the interventional radiology departments.
- Allow the functioning of the bronchopneumology departments for patients suffering from acute pulmonary diseases (not COVID-19), also to perform diagnoses (thoracocentesis, blood gas tests, 6MWT, etc.).
- Allow rules that allow the performance of individual physical activity.

- Allow rules that allow the performance of group physical activity, for families or relatives living together.

Primary care and prevention for all citizens are a priority trend for the European Union [11]. In recent months we have observed in many European countries, the closure of almost all hospital clinics, the total closure of wards or their almost total resizing to deal with COVID-19, which has not allowed many patients to be hospitalized even alone. in order to obtain an early diagnosis, causing not only the aggravation of the clinical conditions of these patients, but also death. The health resilience [10] of health policy in recent years has not been up to the task [9]. Today we can organize the state hospital network in time, for each European country, also allowing patients suffering from chronic or acute non-COVID-19 diseases to be cured and therefore not have to die. Many European citizens have paid for the pandemic crisis with their lives, and their loved ones along with them [12].

This organization will have to be done at all health levels, employing more staff. This obviously implies only one solution: the strengthening of health personnel, in every sector, through recruitment. Investment in healthcare is a must and too important [9], this has made us understand precisely the Pandemic between 2020 and 2021, States no longer have to make the mistake made in recent years, namely cutting the personnel, the cut in investments in health care, as well as the closure of work and production activities with the emergence of disastrous economic problems for every European State [13]. In this regard, Europe has worked for a new Health programme, EU4Health On 28 May 2020, as part of the Next Generation EU recovery plan, the Commission adopted a proposal [12] for a €9.4 billion stand-alone EU4Health programme (2021-2027) [9].

The strength of a health system implies the presence of sufficient and trained personnel, with such experience to be able to face future pandemic problems (if there are any), and in any case in a normal regime, it will be possible to organize in time, and overcome the obstacles they have put instead “knocks out” the international health system and the European one also at the economic level. It is not necessary to close an entire country, the solution is to strengthen the health system of each country, for all citizens, this would allow to provide care and assistance to all, without

lock-down, the social cost of which, as we have seen it was disastrous [13].

- Investments will be needed to ensure continuity of care for all sick people.
- Short, medium and long-term investments will be needed to fully structure the entire European health system, without keeping behind any European country.
- It will be necessary to invest in healthcare personnel, to train them and to ensure that they can work in the best possible way, with the use of the most advanced technologies.
- It will also be necessary to work on personal culture, to encourage citizens to respect the minimum rules that can serve to not further spread the virus in the case of Pande-mia.
- It will also be necessary to work on the organization of reserves of Personal Protective Equipment (such as filter masks and not surgical masks), skin antiseptics and what the population may need to face the months of the pandemic.

- You will not only have to focus on vaccination prophylaxis, but on all possible treatments, drugs and anything else that may be useful in dealing with infection caused by respiratory viruses.

The responsibility will lie with politics, the experience lived in the terrible months of the pandemic have taught us that we cannot again disregard the commitments made with the world of health. If we want Europe to be a safe place, respectful and in step with the times, we must demand respect for human rights from European politics, also through the construction of a health system that is up to the challenges of the future.

DISCLAIMER: EuroMOMO assumes no responsibility for the conclusions of this study in relation to the use of the graphs, as these have been used and taken into consideration. Nor the European Partners (States) of EuroMOMO who provided the data on which these graphs were made.

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