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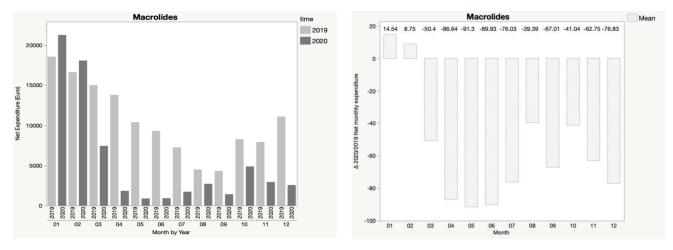


Figure 4. Trend in net expenditure (EUR) and delta 2020/2019 of net monthly expenditure of macrolides, from January through December of the years 2019 and 2020, in the study population of 35,787 children aged 0–14 years.

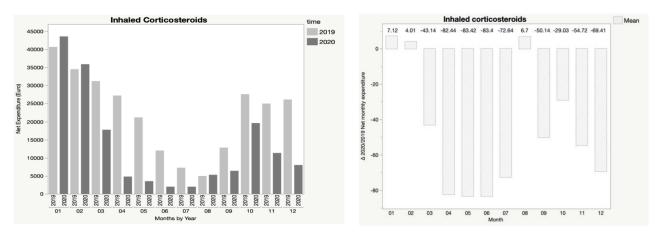


Figure 5. Trend in net expenditure (EUR) and delta 2020/2019 of net monthly expenditure of inhaled corticosteroids, from January through December of the years 2019 and 2020, in the study population of 35,787 children aged 0–14 years.

It is interesting to note how the trend in pharmaceutical expenditure varied in relation to the implementation of containment measures; in particular, it was higher in the first two months of 2020 compared to 2019, when the containment measures were not in place, and fell dramatically during the lockdown periods, with a slight increase in August, when restrictive measures were suspended, until a new reduction during the second lockdown.

4. Discussion

Our results show that the year 2020, dominated by COVID-19, was a year unlike any other, with significant changes in children's pediatric care.

Primarily, along with a non-severe spread of SARS-CoV-2 infection in children [23,24], we observed a drastic reduction in the incidence of the main pediatric diseases caused by atopy and common seasonal bacteria and viruses. Not surprisingly, in 2020 the typical increase in consultations and hospital admissions for respiratory syncytial virus (RSV) and influenza viruses did not occur during the winter season [13,25,26]. Furthermore, emergency consultations for air communicable diseases were less than that for other conditions, such as urinary infections, neurological and surgical problems or accidents [12,27–29].

Secondarily, in line with the reduction in pediatric infections and allergies during 2020, a significant reduction in the consumption of commonly prescribed pediatric medication was observed. In particular, we found a significant reduction in the prescription of all drug classes considered, such as bronchodilators and inhaled corticosteroids and antibiotics with

different spectra of action. The decrease in allergic diseases and asthma was previously suggested by other studies [30–33].

The main reasons for this new scenario seem to be related to the implementation or the mitigation of the measures taken to reduce the spread of SARS-CoV-2, which indirectly reduced the circulation and transmission of other bacteria and respiratory viruses. As proof of this, previous studies showed the effectiveness of these strategies in the control of epidemics [34–40].

Our study supports this hypothesis; in fact, the differences in the incidence of pediatric infections and allergies are particularly evident during the lockdown period.

In particular, our data reflect the epidemiologic change in common pediatric diseases that occurred during the study period: the peak of infants with bronchiolitis that is generally recorded 2–3 months after the beginning of the cold season was here missed, and the high incidence of laryngitis cases in the fall period did not occur; furthermore, we did not witness the asthma exacerbations triggered by respiratory viral infections and outdoors allergens typical of the winter and spring periods.

A strength of our study was that we collected data from two independent organizations of the ASL of Latina. We analyzed the data of the family pediatricians for the epidemiological analysis of six common childhood diseases, and at the same time, we evaluated the corresponding pharmaceutical expenditure from questioning the territorial and integrative pharmaceutical unit, drawing the same conclusions. Our results are the expression of the same phenomenon and allow us to depict some changes that occurred in the pediatric field in the COVID-19 era.

Therefore, while the COVID-19 pandemic has strained our health care system, it has indirectly opened up new perspectives on the importance of infection prevention through control measures that could impact the dynamics of various allergic and infectious diseases and that could positively influence the burden and spending of our health care system during epidemic seasons [41–45].

Each of the preventive measures adopted produced a positive effect: social distance, orders to stay home and travel restrictions prevented direct person-to-person contact; facial masking, creating a physical barrier in front of the nose and mouth, and continuous sanitization of contact surfaces contributed to the reduction in the spread of respiratory viruses and of the penetration of allergens and environmental pollutants that are important bronchial irritants [46–48]; and hand washing and the use of disinfectants acted on enveloped RNA viruses particularly sensitive to soaps and detergents [49], causing the reduction in the transmission of infective agents.

However, such rigid containment measures also led to negative psychological effects, especially in children; in fact, the closure of schools, parks and sporting activities and the orders to stay at home have disrupted children's usual lifestyle, promoting distress, confusion, anxiety and hostility, with possible relevant effects on their psychosocial well-being and cultural education in the long term [50–52]. In particular, many parents have questioned the use of face masks by their children, raising concerns about possible negative effects on respiratory function that are not supported by proven scientific evidence [45,53,54].

Therefore, we believe that it is necessary to achieve a balance in the adoption of nonpharmaceutical intervention measures during pandemics, not secondary to SARS-CoV-2 infection; in fact, the rational use of mitigation measures, such as an appropriate use of masks during periods of seasonal infectivity controlling the variolation phenomenon [55] or during the pollination period, could lead to a drastic reduction in the incidence of infectious and allergic diseases in children.

As demonstrated by the recent outbreak, these measures could therefore contribute to a reduction in pharmaceutical and hospital expenditure, with an indirect reduction in social expenditure related to the absenteeism from work of the parents of affected children. **Author Contributions:** S.B. and E.D.G. conceptualized and designed the study, drafted the initial manuscript and reviewed and revised the manuscript. A.M., V.M., S.I., D.I., A.D., E.D.L., M.S., S.M., F.V., C.M., G.C., G.R., A.L.G. and L.A. acquired the data, designed the data collection instruments, carried out the initial analyses and drafted the initial manuscript. R.L. conceptualized and designed the study, coordinated and supervised data collection and critically reviewed the manuscript for important intellectual content. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement: All data and materials support published claims and comply with field standards.

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