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Short communication

Impact of the SARS-CoV-2 pandemic on routine immunization of the population in the Republic of North Macedonia

Zana Mustafa[1*], Shaban Memeti[1,2,3], Azis Pollozhani[4], Zorica Arsova-Sarafinovska[1,5], Katarina Stravrik[2], Aleksandra Grozdanova[6]

[1]*Institute of Public Health of Republic of North Macedonia, 50-ta Divizija 6, 1000 Skopje, North Macedonia*
[2]*Faculty of Medicine, Ss. Cyril and Methodius University, 50-ta Divizija 6, 1000 Skopje, North Macedonia*
[3]*University Clinic for Pediatric Surgery, 50-ta Divizija 6, 1000 Skopje, North Macedonia*
[4]*University Mother Teresa, Mirche Acev No.4, 1000 Skopje, North Macedonia*
[5]*Faculty of Medical Sciences, Goce Delchev University, Krste Misirkov No 10-A, 2000 Stip, North Macedonia*
[6]*Faculty of Pharmacy, Ss. Cyril and Methodius University in Skopje, str. Mother Tereza 47, 1000 Skopje, Republic of North Macedonia*

Introduction

Immunization is one of the most powerful and cost-effective public health interventions, preventing about 2 to 3 million deaths each year. The SARS-COV-2 pandemic has spread all over the world and as a direct result of the virus, millions of lives were lost. The indirect effects of the pandemic are equally important. Routine childhood immunization systems were heavily influenced globally and in May 2020 the WHO announced that at least 80 million children under the age of one were put at risk of missing the important and scheduled life-saving vaccines (WHO, 2020).

Problems related to pandemics have threatened previous gained results in immunization services, with major implications for eradicating and eliminating vaccine-preventable diseases. There are enormous challenges in obtaining accurate and systematic measurements of these global changes in immunization status.

Surveys and analyses of vaccination coverage in 2020 suggested that 23 million children missed out on the basic scheduled vaccines through routine immunization services, which is 3·7 million more than in 2019. Designed predictions of disruption in routine immunization of children in 2020 due to the COVID-19 pandemic suggest an even greater number of more than 8 million children who missed the third dose of the diphtheria-pertussis-tetanus vaccine (DTP3) as well as the first dose of the vaccine for measles (MCV1). Even though in 2020 the routine immunization programs were seriously affected, the full impact of the disruption and its consequences are not yet fully estimated, due to delays and completeness of reporting, as well as the limited data on improvement activities affecting routine coverage monitoring (Causey et al., 2021).

Materials and methods

Data in this paper are from the submitted annual reports on conducted and completed mandatory immunization against infectious diseases in the Republic of North Macedonia, delivered by the Centres for Public Health and their regional units and/or health institutions that implement immunization in the country, as well as the processing and analysis of data obtained from the Institute of Public Health in Skopje, North Macedonia.

Results and discussion

In terms of primary vaccination in 2021 in the Republic of North Macedonia, no coverage of over 95% has been established for any vaccine, at the national level. The registered coverage of the primary vaccination for all vaccines is below 90%. Regarding the revaccination, no coverage above the recommended 95% for any revaccination has been realized as well. The coverage with three doses of Hepatitis B vaccine in 2021 was 78.7% and decreases compared to the coverage in 2020 (83.6%), furthermore compared to the average coverage for the period 2016-2020 (90.3%) The coverage with three doses of vaccine against Haemophilus influenzae type B in 2021 was 80.9% and decreases compared to the coverage in

*zhaxhijaha@gmail.com

2020 (83.9%), as well as compared to the average period 2016-2020 (90,4%). The coverage with HiB revaccination in 2021 which is 72.8% exceeds the coverage from 2020 (66.0%), but it is still lower than the average coverage for the past five years (80.9%). The coverage with three DiTePer doses of vaccine with the primary vaccination in 2021, is 80.9%, which is a decrease compared to the coverage for 2020 (83.9%). Also, a decrease was registered compared to the average coverage for the period 2016-2020 (90.7%). Starting from 2015, DiTePer - I revaccination has been continuously declining, reaching the lowest coverage level of 66.0% in 2020. An increase in coverage (72.8%) is registered in 2021, compared to the previous year. The average coverage for the period 2016-2020 was 81.3%. In 2021 DiTePer revaccination at the age of 7, was implemented with a coverage of 74.7%, which is lower than the coverage in 2020 (87.3%), as well as the average coverage (82.5%) for the last 5 years. DiTe revaccination at the age of 14 has coverage of 85.9%, which is an increase compared to 2020 (80.3%), as well as a slight increase compared to the cumulative average for the past five years (85.4%). Te - IV revaccination in 2021 was implemented with a coverage of 84.0%, which is a higher coverage level compared to 2020 (72.5%), but lower than the average coverage for 2016-2020 (86.2%). The primary vaccination in 2021 with three doses of polio vaccine was implemented with a coverage of 80.9%, which is a decrease compared to the coverage in 2020 (83.9%). Likewise, there was a decrease compared to the average coverage registered in the past five years (90.7%). IPV - I revaccination, as well as DiTePer revaccination, has a continuous decline, so in 2020 there was an even lower coverage than 70% (66.0) %, while in 2021 there is an increase in coverage compared to the previous year and it is 72.8%. IPV - II revaccination as well as revaccination with DiTe at the age of 7, has 74.7% coverage which is a decrease compared to the coverage in 2020 (87.3%) and the average coverage for the period 2016-2020 (80.8%). The coverage of the third dose revaccination with polio vaccine in 2021 was 85.9%, which is higher than the coverage in 2020 (80.3%), and higher than the average coverage level for the period 2016-2020 (81.6%). In 2021, the coverage with MMR vaccination increased from 63.0% to 70.4%, compared to 2020, but it is still significantly below the recommended coverage of 95%. The recorded low coverage with the MMR vaccine in the last two years leads to a significant reduction of the average coverage for the five-year period (2016-2020) which is 79.1%. The coverage with MMR revaccination is 80.4% and it is an increase compared to 2020 (68.5%). Regarding the average coverage, there is a decrease (89.2%) for the period 2016-2020. The registered HPV vaccination coverage of 35.5% in 2021 is lower compared to the one in 2020 (42.5%), and lower than the average in 2020, (83,9%), and the coverage for the five-year period (2016-2020) which was 51.2%. The rotavirus vaccine was introduced in 2019. For the first time, three-dose coverage of 61.5% was implemented in 2020. In 2021, the coverage increased to 65.0%. The vaccine for pneumococcal infection was introduced in 2019. For the first time, two-dose coverage of 74.8% was implemented in 2020. The coverage increased in 2021 to 78.1%. In 2021 the coverage with a booster dose at the age of 12 months increased to (53.4%) compared to the one in 2020 (29.5%).

Conclusion

Decrease in coverage with all types of vaccinations and revaccinations was present in 2020 and 2021, mainly due to current COVID-19 pandemic. There is no doubt that the pandemic had also a huge impact on other health services which are not related to the control and prevention of COVID-19, including mandatory routine immunization. Although the vaccination process was continuous and uninterrupted, the pandemic restriction measures and limitations had a strong impact on reducing the coverage percentage. The impact of restrictive measures in 2020 that included frequent restrictions on population movement and delays in vaccination due to fears of COVID-19 infection played a major role in reducing the coverage, while in 2021 there was an additional factor such as engagement of vaccination teams in COVID-19 vaccination, which resulted in a further reduction of mandatory routine vaccination coverage (Shet et al., 2022). Campaigns for public health awareness and educational interventions for healthcare workers and parents are more than necessary to ensure adequate catch-up of delayed or missed immunizations to prevent potential outbreaks of vaccine-preventable diseases.

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