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Lyazzat T. Yeraliyeva[1,2*], Assiya M. Issayeva[2,3]

[1]"National Scientific Center of Phthisiopulmonology of the Republic of Kazakhstan" of the Ministry of Health of the Republic of Kazakhstan, Almaty, Kazakhstan
[2]National Medical University named after S.D. Asfendiyarov, Almaty, Kazakhstan
[3]Al-Farabi Kazakh National University, Almaty, Kazakhstan
*e-mail: l.eralieva@mail.ru

CHANGES IN ROUTINE VACCINATION COVERAGE IN THE REPUBLIC OF KAZAKHSTAN DUE TO THE COVID-19 PANDEMIC

Lack of access to primary health care and a distraction from routine health care leading to increased morbidity and mortality. As COVID-19 has caused a breakdown in immunization systems, the future of the relentless fight to prevent vaccine-preventable deaths is at stake. The aim was to study the change in the level of routine vaccination coverage in the Republic of Kazakhstan in connection with the COVID-19 pandemic. An analytical study of the official data of the scientific and practical Center for Sanitary and Epidemiological Expertise and Monitoring for 2020 and 2021 was carried out. Compared to 2020, the level of routine vaccination coverage in Kazakhstan in 2021 has increased. Immunization coverage rates for children under 1 year of age in the Republic of Kazakhstan dropped significantly during the initial period of the COVID-19 pandemic and only partially began to recover during the remaining months of 2020. Compared to 2021, the difference was already significant.

Key words: COVID-19, routine immunization, coverage, Republic of Kazakhstan, incidence.

Introduction

The emergence of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has brought the world into a crisis of unprecedented scale and scope [1]. As governments around the world tried to regulate the outbreak by imposing quarantines on the entire population, closing borders and halting mass gatherings, experts have begun to worry about indirect health consequences. These disruptions are likely to jeopardize the course of various programs, including immunization campaigns, which have proven to date to be valuable and effective in terms of public health costs [2–5]. In an attempt to mitigate the devastating impact of the COVID-19 pandemic, the World Health Organization (WHO) has issued guidance calling for a temporary suspension of operations of mass immunization programs around the world [5,6].

According to data compiled by WHO, the United Nations Children's Fund (UNICEF), the Global Alliance for Vaccines and Immunization (GAVI) and the Sabin Vaccine Institute, the suspension of vaccination services in more than 68 countries has resulted in at least 80 million deaths (children under one year in the risk group) [7]. In low- and middle-income countries (LMICs), where health systems are under strain, even temporary disruptions can leave a devastating impact on health, opening the door to the possible re-emergence of other diseases [8–12]. An analysis by GAVI has shown that an additional 24 million people who have been protected by vaccination so far are now at risk as some 90 mass vaccination campaigns have been postponed [5,13-16]. With continued declines in vaccination coverage, cases of intensified outbreaks of measles, diphtheria, whooping cough and other vaccine-preventable diseases (PVDs) are making headlines [17], and multiple cases of poliomyelitis and diphtheria have been reported in Pakistan and Afghanistan [18]. Measles is on the rise around the world [19,20], dengue is flaring up in regions of Latin America [21] and the Amazon [22], and countries in Africa are under enormous pressure as they contend with measles and Ebola outbreaks [15]. These outbreaks are a stark reminder that even during a pandemic, public health concerns are just as important, if not more so. Based on historical and epidemiological analyzes, as well as data from recent modeling experiments, the importance of maintaining essential health services, including immunization, is emphasized [18]. WHO predicted an increase in malaria mortality in endemic regions [21]. Similarly, historical evidence of past global disease outbreaks (e.g., diphtheria in the former Soviet Union in 1990-1996), wars, and infectious threats have shown that lack of access to primary health care and a distraction from conventional health services lead to increased morbidity and mortality [22]. As COVID-19 has caused a similar disruption in immunization systems, the future of the hard fight to prevent vaccine-preventable deaths is at stake.

Aim.To study the change in the level of routine vaccination coverage in the Republic of Kazakhstan in connection with the COVID-19 pandemic.

Materials and Methods

An analytical study of the official data of the scientific and practical Center for Sanitary and Epidemiological Expertise and Monitoring for 2020 and 2021 was carried out.

Results and Discussion

During the first 5 months of 2020, BCG vaccination coverage (the baby is vaccinated 3-4 days after birth in the hospital) remained between 90-95%, while coverage with combination vaccines was reduced. In January 2020, coverage with the combined vaccine TDap, Hib, IPV-3 was 7.4%, in February 15.4%, in March 5.7%, and during the lockdown in the Republic of Kazakhstan, which was in April, the indicator was 0 ,4%. In May it increased to 6.8%. Scheduled immunization with the combined vaccine DTap, Hib, IPV and HBV-4, MMR-1 and against pneumococcal infection have similar indicators with the prophylactic combined vaccine TDap, Hib, IPV-3. As shown in Figure 1, the coverage curves between vaccines (except for BCG) are identical.

Compared to 2020, the level of routine vaccination coverage in Kazakhstan in 2021 has increased. In the second month of life, the child is given two important vaccinations: the combined DTP + Hib + HBV + IPV (Figure 2) and a single vaccine against pneumococcal infection (Figure 3). The vaccination coverage rate of the combined DTP + Hib + HBV + IPV in 2020 was 94.5%, and in 2021 – 98.5%. Immunization coverage against pneumococcal disease increased from 93.6% (2020) to 97.6% (2021).

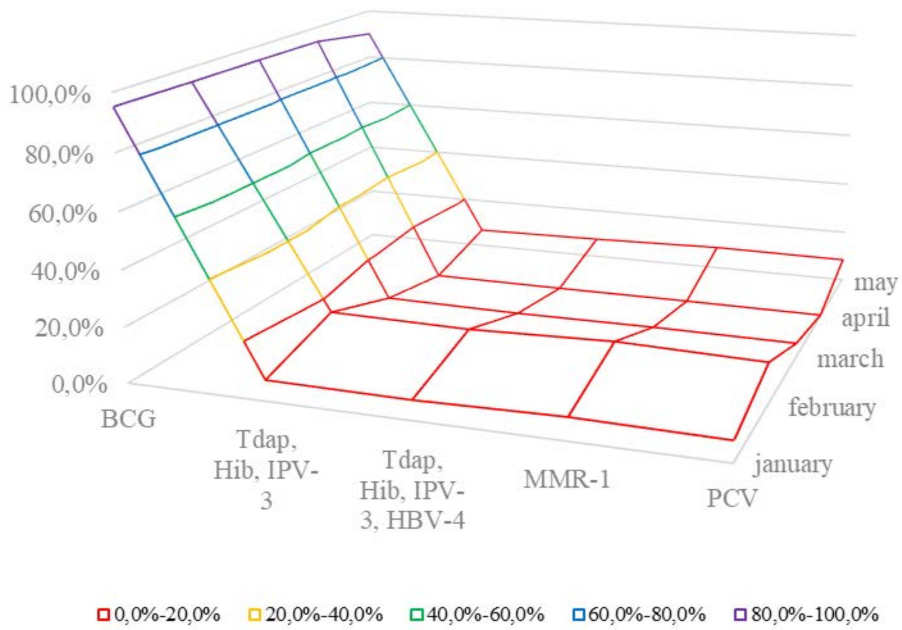

Figure 1 – Change in routine vaccination coverage in the Republic of Kazakhstan due to the COVID-19 pandemic in the first 5 months of 2020
Abbreviations: 1. BCG – vaccine against tuberculosis; 2. TDap, Hib, IPV-3 – combined pertussis vaccine with acellular pertussis component, diphtheria, tetanus + Haemophilus influenzae type b + inactivated polio vaccine;3. TDap, Hib, IPV, HBV-4 – combined pertussis vaccine with acellular pertussis component, diphtheria, tetanus + Haemophilus influenzae type b + viral hepatitis B + inactivated polio vaccine; 4. MMR-1 – vaccine against measles, rubella and mumps. 5. NVD – against pneumococcal infection;

A month later, they give one combined DTP + Hib + IPV vaccine – this time without hepatitis B vaccination and without pneumococcal injection. Coverage was 90.1% in 2020 and 92.3% in 2021. At 4 months, two repeated injections of DTP + Hib + HBV + IPV are given, which were made at the 2nd month of life. According to the scientific and practical Center for Sanitary and Epidemiological Expertise and Monitoring, the difference in coverage was 7.1% (2020 – 88.3%, 2021 – 95.4%). It is worth noting the only case of a negative difference with 2021. The volume of vaccinations in 2020 was 97.2%, but in 2021 it decreased and amounted to 92.9%.

At the age of 12-15 months, 3 vaccinations are given: a combined one against measles, rubella and mumps (MMR), as well as a vaccine against pneumococcal infection. In addition, they give an oral drug for polio in the form of drops on the tongue. The MMR vaccination coverage rate in 2020 showed 92.9%, and in 2021 – 97.4%. 88.7% were vaccinated with pneumococcal vaccine in 2020, and 92.6% in the following year, 2021.

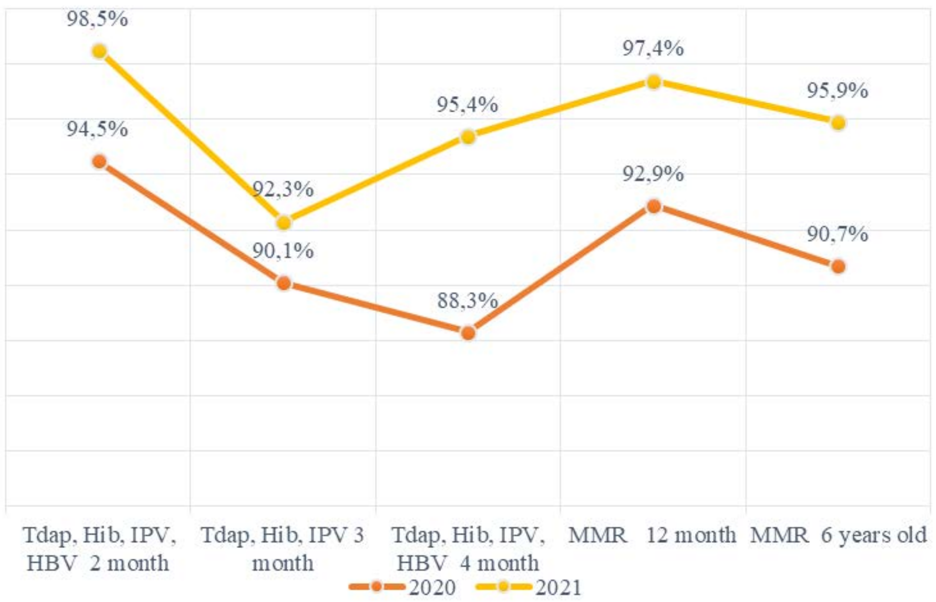

Figure 2 – Routine vaccination coverage in the Republic of Kazakhstan during the COVID-19 pandemic in 2020 and 2021

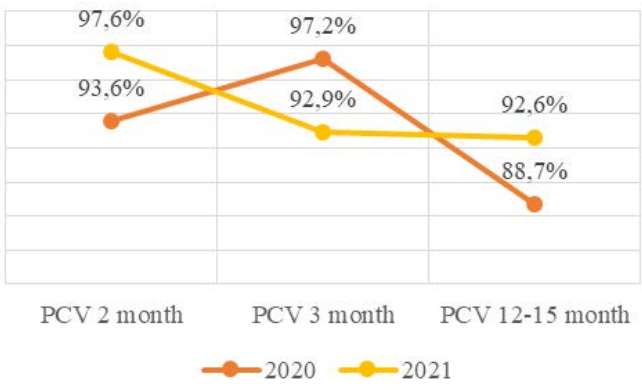

Figure 3 – Routine vaccination coverage in the Republic of Kazakhstan during the COVID-19 pandemic in 2020 and 2021 against pneumococcal infection

Conclusion

The main way to address the control of vaccine-preventable infections in the context of the COVID-19 pandemic is to carry out vaccination in children. Combination vaccines in the vaccination calendar will reduce the number of visits and increase the coverage of immunization of target groups against several diseases. In the context of the implementation of measures aimed at preventing the spread of COVID-19 infection, it is of particular importance to vaccinate vulnerable groups of the population with vaccines against pneumococcal infection and seasonal influenza.

Immunization coverage rates for children under 1 year of age in the Republic of Kazakhstan dropped significantly during the initial period of the COVID-19 pandemic and only partially began to recover during the remaining months of 2020. Compared to 2021, the difference was already significant.

Public health measures and educational activities for health professionals and parents are needed to ensure adequate population coverage. Detection of delayed or missed vaccinations to prevent potential outbreaks of vaccine-preventable diseases is an important part of the public health system.

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