



An Alarming Emergence of Measles in Europe: Gaps and Future Directions

Şiran Keske^{1,2}, Yasemin Özsürekci³, Önder Ergönül^{1,2}

¹Department of Infectious Diseases and Clinical Microbiology, Koç University School of Medicine, İstanbul, Türkiye

²Koç University İşbank Center for Infectious Diseases (KUIISCID), İstanbul, Türkiye

³Department of Pediatric Infectious Diseases, Hacettepe University Faculty of Medicine, Ankara, Türkiye

Measles remains a significant public health problem in Europe, including Türkiye, with an alarming increase in the number of reported cases in recent years. We reviewed the current epidemiological landscape of measles in Europe, explored the reasons for increase in the cases such as challenges in vaccination coverage, and present the future directions.

Measles can cause severe complications, including pneumonia, encephalitis, and death, and is associated with a high transmission rate. The World Health Organization (WHO) has set a target vaccination coverage of at least 95% for the measles, mumps, and rubella (MMR) vaccine to achieve herd immunity. However, several European countries are struggling to meet this target, resulting in numerous outbreaks. Based on the latest WHO report, from April 2023 to March 2024, 114,563 measles cases have been reported from the European Region, and 98% of these cases have originated from just ten countries, including Kazakhstan, Azerbaijan, the Russian Federation, Kyrgyzstan, and Turkey.¹ Although the targeted coverage rate in Türkiye has almost reached 94%, the high incidence of measles needs to be investigated.² Countries such as Germany, Greece, and France have also reported significant increases in the number of measles cases. In Germany, 333 confirmed and suspected cases of measles were reported between January and June of 2024. The WHO report also highlights that 55% of the reported cases were imported, emphasizing the importance of maintaining high vaccination coverage to prevent the spread of measles across borders. The highest number of cases were reported among children aged 1-9 years, followed by those aged 10-19 years and patients aged 25-34 years. This highlights the need for targeted vaccination campaigns in these age groups.³

Ensuring accurate data flow is an essential step in the epidemiology of measles. In the latest pandemic, some countries accused others

of not informing about the emergence of cases early. Therefore, the most important factor for Türkiye and for reaching global goals is the identification of patients, recording data, and the rapid sharing of the created data sets. This also constitutes the first step in the fight against such contagious diseases that threaten public health. Furthermore, accessible and correctly interpreted data will form the basis for solving the measles crisis by understanding the true nature and field of action of the disease.

The COVID-19 pandemic has significantly worsened the measles situation in Europe. In 2023, the WHO reported over 61,000 measles cases across 41 countries in the European Region, which resulted in thousands of hospitalizations and 13 measles-related deaths.⁴ This alarming rise in measles cases across Europe highlights the impact of the COVID-19 pandemic on vaccination rates. Approximately 27 million children worldwide missed the first dose of the measles vaccine during the initial years of the pandemic. Moreover, estimated vaccine coverage and relative coverage reduction for measles vaccine were 78.9% and 7.9%, respectively.⁵ Furthermore, the vaccination coverage for the first dose of the MMR vaccine dropped from 96% in 2019 to 93% in 2022, while that for the second dose dropped from 92% to 91% during the same period. This decline has caused a spike in outbreaks, with Europe experiencing a 45-fold increase in measles cases when compared with the incidence in the previous year.⁶ The high proportion of measles among children aged < 5 years, which accounts for almost half of the cases in 2023, reflects the accumulation of susceptible children who missed their routine vaccinations due to the pandemic.⁷ With the efforts of the NHS, the UK Health Security Agency, a fourfold increase in measles vaccination was achieved among 5-25-years-olds in the first three months of 2024 in the UK.⁸

Corresponding author: Şiran Keske, Department of Infectious Diseases and Clinical Microbiology, Koç University School of Medicine; Koç University İşbank Center for Infectious Diseases (KUIISCID), İstanbul, Türkiye

e-mail: sirankeske@yahoo.com

Received: xxxxxx **Accepted:** xxxxxx **Available Online Date:** xxxxxx • **DOI:** 10.4274/balkanmedj.galenos.2024.2024-060824

Available at www.balkanmedicaljournal.org

ORCID iDs of the authors: Ş.K. 0000-0003-3823-4454; Y.Ö. 0000-0001-8662-6909; Ö.E. 0000-0003-1935-9235.

Cite this article as: Keske Ş, Özsürekci Y, Ergönül Ö. An Alarming Emergence of Measles in Europe: Gaps and Future Directions. *Balkan Med J*;

Copyright@Author(s) - Available online at <http://balkanmedicaljournal.org/>

The risk of importation and ongoing transmission of measles remains high, posing a threat to the health of millions of children in the region. Despite the catch-up immunizations, there is a high probability that there are several children who are unvaccinated, particularly in resource-limited areas. Furthermore, immunization coverage of the COVID-affected children is reportedly lower than that of the children who were not affected during the pandemic.⁹ These findings indicate that we will continue to observe the impact of the pandemic on our fight against vaccine-preventable diseases for several years to come.

The ongoing conflicts in Ukraine, Syria, and Palestine have further complicated the public health landscape in terms of measles. Some system-based factors that influence access to immunization services, such as resourcing, resettlement policies, and missed opportunities, may lead to system inefficiencies in periods of great mass movements.¹⁰

Given its geographical location, Türkiye has commonly faced these actions, making it essential to discuss the critical problems in the solution process. Among the hospitalized patients with measles in Türkiye, 47% were refugees, highlighting the vulnerability of displaced populations to vaccine-preventable diseases.¹¹ This situation is compounded by the fact that refugees often face barriers to accessing healthcare, including language barriers, lack of information, and financial constraints. Moreover, the health systems in host countries such as Türkiye are strained due to the high number of refugees. This strain can lead to decreased immunization efforts, making it more challenging to maintain adequate vaccination coverage. In Ukraine, the vaccination rate was 69% in 2022 due to the anti-vaccination movement and the chaos caused by the war. This directly contributed to the increase in the number of reported measles cases in 2023.¹²

Strategies to overcome identified barriers, including both culturally and linguistically appropriate resources, might aid in improving the system efficiencies. Furthermore, in addition to the consolidated efforts on childhood immunization among immigrants, an adult vaccination program that prioritizes certain vaccines, including measles, should be considered.

Decline in vaccination rates can be attributed to several factors, with increasing vaccine hesitancy being a major concern. Vaccine hesitancy has been mainly influenced by misinformation propagated through social media, anti-vaccination movements, and public mistrust in health authorities. Recent studies indicate that the number of families refusing vaccinations has escalated dramatically, increasing from 183 cases in 2011 to over 23,000 by 2018.¹³ A survey conducted by UCL in >5,000 individuals revealed that Turkish participants had the lowest trust in COVID-19 vaccines, which highlights the severity of vaccine hesitancy in the country.¹⁴

To combat vaccine hesitancy, targeted outreach programs are essential.¹⁵ Initiatives should focus on enhancing public trust and combating misinformation. The WHO established the “Vaccine Hesitancy Working Group” in 2012 to address growing concerns surrounding vaccine hesitancy, which continues to pose a significant public health challenge globally.¹⁶

The resurgence of measles in Europe, emphasizes the urgent need for novel efforts to obtain accurate epidemiological data regarding the disease and design comprehensive vaccination campaigns. Achieving and maintaining high vaccination coverage is essential for preventing outbreaks and protecting vulnerable populations including young children and older people. Furthermore, considering the late complications of measles, it is important to be prepared for the long-term effects of the pandemic and the shortcomings of the vaccination.

Strategies to tackle vaccine hesitancy such as identifying ways to combat misinformation and effectively disseminating scientific knowledge are required. In recent years, when wars and migrations have increased significantly, all actions to be taken must be planned on a global scale. Continuous monitoring of measles seroprevalence is required to determine whether the implemented actions have been successful.

In conclusion, the current epidemiological landscape of measles in Europe reveals an emerging public health issue that requires immediate attention. The effects of wars and refugee movements, coupled with the challenges posed by the COVID-19 pandemic and vaccine hesitancy, necessitate the development of a comprehensive approach to enhance vaccination coverage. By addressing these multifaceted challenges, a future in which measles is no longer poses a public health concern can be anticipated.

Acknowledgments: This manuscript was prepared within the scope of the “Türkiye Infectious Diseases Report” by the Koç University İşBank Infectious Diseases Center (KUISCID), İstanbul, Türkiye. We express our deepest gratitude to KUISCID for their dedication to advancing the understanding and management of infectious diseases and motivating experts in the country.

Authorship Contributions: Concept- Ş.K., Y.Ö., Ö.E.; Design- Ş.K., Y.Ö., Ö.E.; Data Collection or Processing- Ş.K., Y.Ö., Ö.E.; Analysis or Interpretation- Ş.K., Y.Ö., Ö.E.; Literature Search- Ş.K., Y.Ö., Ö.E.; Writing- Ş.K., Y.Ö., Ö.E.

Conflict of Interest: No conflict of interest was declared by the authors.

REFERENCES

1. WHO. Measles and rubella monthly update—WHO European Region 2024 [cited 2024 31 July 2024]. [\[CrossRef\]](#)
2. WHO. Türkiye Reported cases of vaccine-preventable diseases (VPDs) 2024 [31 July 2024]. [\[CrossRef\]](#)
3. ECDC. Communicable Disease Threats Reports 2024 [cited 3 August 2024]. [\[CrossRef\]](#)
4. UNICEF. Measles cases across Europe continue to surge, putting millions of children at risk. 2024. [\[CrossRef\]](#)
5. Causey K, Fullman N, Sorensen RJD, et al. Estimating global and regional disruptions to routine childhood vaccine coverage during the COVID-19 pandemic in 2020: a modelling study. *Lancet*. 2021;398:522-534. [\[CrossRef\]](#)
6. WHO. A 30-fold rise of measles cases in 2023 in the WHO European Region warrants urgent action 2023 [updated 14 December 2023]. [\[CrossRef\]](#)
7. WHO. Rapid measles outbreak response critical to protect millions of vulnerable children 2024 [updated 22 February 2024]. [\[CrossRef\]](#)
8. Kmietowicz Z. MMR uptake in England quadruples in 2024. *BMJ*. 2024;385:q972. [\[CrossRef\]](#)
9. Summan A, Nandi A, Shet A, Laxminarayan R. The effect of the COVID-19 pandemic on routine childhood immunization coverage and timeliness in India: retrospective analysis of the National Family Health Survey of 2019-2021 data. *Lancet Reg Health Southeast Asia*. 2023;8:100099. [\[CrossRef\]](#)

10. Cavit L, Charania NA. Exploring factors that influence vaccination uptake for children with refugee backgrounds: An interpretive description study of primary healthcare providers' perspectives. *Vaccine*. 2023;41:6690-6699. [\[CrossRef\]](#)
11. Celiloğlu C, Tolunay O, Çelik Ü. Evaluation of Pediatric Measles Cases Hospitalized in 2019. *Turk Arch Pediatr*. 2021;56:328-331. [\[CrossRef\]](#)
12. Holt E. War in Ukraine impacts immunisation. *Lancet Microbe*. 2024;5:e108. [\[CrossRef\]](#)
13. Gür E. Vaccine hesitancy - vaccine refusal. *Turk Pediatri Ars*. 2019;54:1-2. [\[CrossRef\]](#)
14. Salali GD, Uysal MS. COVID-19 vaccine hesitancy is associated with beliefs on the origin of the novel coronavirus in the UK and Turkey. *Psychol Med*. 2020;1-3. [\[CrossRef\]](#)
15. Madran B, Kayı İ, Beşer A, Ergönül Ö. The COVID-19 Vaccine Hesitancy Among Healthcare Workers: An Exploration of Hesitancy Reasons and Suggestions to Improve Vaccination Rates. *Infect Dis Clin Microbiol*. 2024;6:83-92. [\[CrossRef\]](#)
16. WHO. SAGE working group dealing with vaccine hesitancy (March 2012 to November 2014) [3 August 2024]. [\[CrossRef\]](#)