Temporal Trends in Racial and Gender Disparities of Early Onset Colorectal Cancer in the United States: An Analysis of the CDC WONDER Database

Yusuf Nawras[1*], Nooraldin Merza[2], Halah Alfatlawi[2], Katie Beier[1], Aya Dakroub[1], Hasan Al-Obaidi[3], Ahmed Dheyaa Al-Obaidi[4], Hajera Amatul-Raheem[5], Eshak Bahbah[6], Tony Varughese[7], Jerome Hosny[8], Mona Hassan[9], Abdallah Kobeissy[10]

[1]College of Medicine and Life Sciences, 3000 Arlington Avenue, The University of Toledo, Toledo OH 43615

[2]Fellow, Division of Gastroenterology, Department of Medicine, 3000 Arlington Avenue, The University of Toledo, Toledo OH 43615

[3]Jamaica Hospital Medicine Center, Internal Medicine Department, Queens NY 11435

[4]University of Baghdad College of Medicine, Baghdad, Iraq

[5]Deccan College of Medical Sciences in Hyderabad, Telangana, India

[6]Department of Internal Medicine, Al Azhar University, Cairo, Egypt

[7]Department of Internal medicine, Hackensack University Medical Center, Hackensack, NJ 07601

[8]Department of Internal Medicine, The University of Balamand, Balamand, Lebanon

[9]Assistant Professor and Associate Program Director Gastroenterology Fellowship, Division of Gastroenterology, Department of Medicine, 3000 Arlington Avenue, The University of Toledo, Toledo OH 43615

[10]Associate Professor and Associate Program Director Gastroenterology Fellowship, Division of Gastroenterology, Department of Medicine, 3000 Arlington Avenue, The University of Toledo, Toledo OH 43615

Email: alyasiry1986@yahoo.com

Received: 2024-08-16

Accepted: 2024-09-16

Published: 2025-06-30

https://dx.doi.org/10.46570/utjms-2025-1398

Background: The mortality rates of early-onset colorectal cancer (EOCRC) have surged globally over the past two decades (1). While the underlying reasons remain largely unknown, understanding its epidemiology is crucial to address this escalating trend. This study aimed to identify disparities potentially influencing these rates, enhancing risk assessment tools, and highlighting areas necessitating further research. Methods: Using the CDC Wide-Ranging Online Data for Epidemiologic Research (WONDER) database, this study assessed EOCRC mortality data from 2012 to 2020. Individuals under 50 years who succumbed to EOCRC were identified through the International Classification of Diseases, Tenth Revision (ICD-10) codes (2,3). Data interpretation and representation were performed using R 4.2.2 software. Results: Between 2012 and 2020, EOCRC mortality rates fluctuated marginally between 1.7 and 1.8 per 100,000. Male mortality rates increased from 1.9 to 2.0 per 100,000, while female rates varied between 1.5 and 1.6 per 100,000. Significant variations were observed across age groups, with the 40-49 years category experiencing an increase from 6.34 (2012) to 6.94 (2020) per 100,000. Racial category-based data revealed the highest mortality rates among African Americans. Geographically, Mississippi and Alabama exhibited elevated mortality rates. Age-Adjusted Mortality Rate (AAMR) assessments indicated a marked decline for both genders from 2012 to 2020, with consistently higher rates for men. Conclusion: The findings highlight the evolving landscape of EOCRC mortality, revealing significant gender, age, and racial disparities. These results underscore the urgent need for tailored health strategies and intensified research efforts targeting these disparities.

Keywords: Early Onset Colorectal Cancer, CDC Wonder database, Racial disparities, Gender disparities, Mortality Rate, age-adjusted mortality rate

---

References

1. World Health Organization (WHO). *Colorectal cancer: Key facts*. 2023. Available from: https://www.who.int/news-room/fact-sheets/detail/colorectal-cancer#:~:text=Colon cancer is the second,and mortality rates were observed.

2. Friede A, Reid JA, Ory HW. CDC WONDER: a comprehensive on-line public health information system of the Centers for Disease Control and Prevention. Am J Public Health, 1993 Sep. **83**(9):1289–94.

3. Centers for Disease Control and Prevention. *CDC WONDER (Wide-Ranging Online Data for Epidemiologic Research) Database*. 2022. Available from: https://wonder.cdc.gov/

https://dx.doi.org/10.46570/utjms-2025-1398