

Prevalence of Acute Lymphoblastic Leukemia in the United States in 2017-2018: A SEER Study

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Abstract:

Acute lymphoblastic leukemia (ALL) is part of a family of genetically heterogeneous lymphoid neoplasms derived from B and T lymphoblasts. The prevalence of ALL is typically diagnosed in childhood and its current understanding is continuously expanding with time. With the event of precision medicine, there is an increasing need to understand socio-demographic patterns of disease development. In this letter, we investigate the prevalence of ALL in the American population in relation to age and race. Prevalence using the 2017-2018 SEER database found this malignancy is most prominent in White race and between 10 and 24 in age. This knowledge can be instrumental in expanding diagnoses and treatments that account for sociodemographic factors.

Keywords : Acute lymphoblastic leukemia, malignancy, SEER, cancer, sociodemographic determinants of health

Prevalence of Acute Lymphoblastic Leukemia in the United States using SEER

To the Editor: Acute Lymphoblastic Leukemia (ALL) is part of a family of genetically heterogeneous lymphoid neoplasms derived from B and T lymphoblasts [1]. The prevalence of ALL is reported to be between 0.003% to 0.004% in 0–14-year-old and 0.001% in those older than 15 years old [2]. We aimed to estimate the prevalence of ALL using the Surveillance, Epidemiology, and End Results (SEER) database, an initiative by the National Cancer Institute.

As a retrospective study, this project did not need IRB approval. A cross-sectional analysis using the SEER database was performed by identifying patients with a diagnosis of primary ALL which corresponds with the ICD10 code C91.0 and ICD9 code 204.00. The SEER database corresponding with 2017-2018 has 43,926,825 enrolled participants (Table 1).

The estimated prevalence count for ALL is 10,163.5, representing an overall prevalence of 0.02% of Americans (Table 1). Prevalence in specific racial groups included 0.02% in white, 0.01% in black, 0.01% in American Indian/Alaska native, and 0.01% in Asian or pacific islander patients. The prevalence was highest in the 10–24-year-old age group (0.04%), decreasing with age, which is in concordance to previous data [3].

In conclusion, this data shows that there is a higher prevalence of ALL among White Americans that are children, adolescents, and young adults. This analysis has limitations, namely among racial distribution. The SEER database has a racial distribution of 54% white, 12% Black, 26% Hispanic, and 9% Asian [4], while the USA Census indicated that the racial distribution of the country is 76% White, 14% Black, 19% Hispanic, and 6% Asian [5]. This discrepancy shows that there might be an underestimation of populations such as White and Black, and overestimation of other populations, such as Hispanic and Asian. Integrating this discrepancy shows that there should be an increase in prevalence of White Americans afflicted by ALL that the data does not account for.

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Table 1 (1).docx available at <https://authorea.com/users/591941/articles/627691-prevalence-of-acute-lymphoblastic-leukemia-in-the-united-states-in-2017-2018-a-seer-study>