Prevalence of Acute Myeloid Leukemia: A Cross-Sectional Study Using the SEER Database

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Introduction

- Acute Myeloid Leukemia (AML) is a malignant neoplasm of the bone marrow that results in the rapid proliferation of abnormal myeloid cells.
- Despite AML being the most common type of acute leukemia in adults with the highest mortality rate, its epidemiology remains poorly understood and more research is needed to accurately estimate its prevalence.
- Using the Surveillance, Epidemiology, and End Results (SEER) program, we aim to estimate the prevalence of AML in the United States.
- Our findings will provide important insights into the burden of AML in the U.S. population and contribute to the development of effective prevention and treatment strategies.

Methods

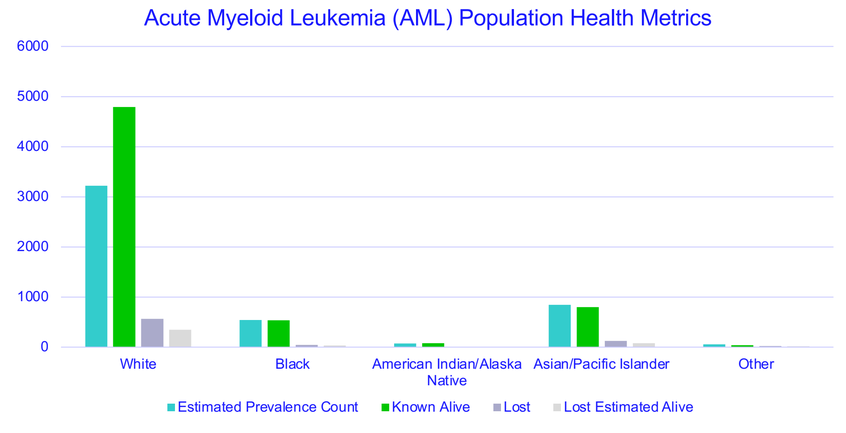
- We performed a cross-sectional analysis of the SEER database by identifying patients with a diagnosis of AML using ICD-9-CM code696.3 and ICD-10-CM code L42.
- Electronic medical records of each patient with AML were then analyzed to collect data on age, sex, and self-identified race.
- We utilized the Wald method with 95% confidence intervals (CI) to calculate the overall prevalence of AML.

Results

- SEER database has enrolled 43,926,824 and we identified 9,572.8 with AML, representing an overall prevalence of 0.04%.
- The prevalence was highest in the 55-59 age group, increasing with age.

Group	Estimated Prevalence Percent	Estimated Prevalence Count	Population at Prevalence Date	Known Alive	Lost	Lost Estimated Alive	Dead Prior to Prevalence Date
White	0.01%	3222.8	31240899	4792	563	348.8	19163
Black	0.01%	543.6	5224726	536	46	32.6	1871
American Indian/Alaska Native	0.01%	74	897021.5	79	2	1	150
Asian or Pacific Islander	0.01%	842.9	6564178.5	799	124	75.9	2509
Unknown		54.6	0	40	22	14.6	44
00 years at prev date	0.00%	3	522150	3	0	0	1
01-04 years at prev date	0.00%	79.2	2159900.5	86	5	2.2	23
05-09 years at prev date	0.00%	134.3	2732193.5	116	21	18.3	51
10-14 years at prev date	0.01%	191	2786556.5	160	35	31	74
15-19 years at prev date	0.01%	222.9	2781405	204	28	24.9	127
20-24 years at prev date	0.01%	322.5	2954646.5	301	24	21.5	189
25-29 years at prev date	0.01%	353.3	3391241	328	31	25.3	255
30-34 years at prev date	0.01%	355.6	3191280.5	321	42	34.6	286
35-39 years at prev date	0.01%	414.5	3049214.5	368	55	46.5	354
40-44 years at prev date	0.01%	460.8	2779268.5	398	75	62.8	393
45-49 years at prev date	0.01%	546.7	2889978.5	482	78	64.7	517
50-54 years at prev date	0.02%	601.9	2837532.5	551	65	50.9	607
55-59 years at prev date	0.02%	615.2	2873440	555	71	60.2	891
60-64 years at prev date	0.02%	142	2591284.5	642	64	10	1239
65-69 years at prev date	0.02%	113.9	2124581	613	33	5.9	1574
70-74 years at prev date	0.03%	107.5	1598623.5	516	33	6.5	1954
75-79 years at prev date	0.02%	70.6	1077416	300	33	6.6	2173
80-84 years at prev date	0.00%	0	736037	194	20	0	2467
85+ years at prev date	0.00%	3	850075.5	108	44	1	10562

Table 1: Prevalence and Mortality of Acute Myeloid Leukemia (AML)



Discussion

- This study highlights the importance of population-based cancer registries like SEER in monitoring cancer trends and identifying disparities in cancer incidence and mortality.
- The high prevalence of AML in older age groups underscores the need for increased screening and early detection efforts for this disease in older adults.
- Most educational materials available on AML typically depict skin manifestations in lighter skin tones, which can result in a lack of awareness and delayed diagnosis among individuals with darker skin tones.
- We acknowledge that the review may have limitations such as a small sample size and a short-term follow-up period which may not be sufficient to evaluate the malignant course of AML.

Conclusion

- Given similar prevalence among all ethnicities we might expect educational materials to depict AML in all skin types.
- Inclusionary methods that take into account a diverse spectrum of patients are necessary to avoid misdiagnosis, mistreatment, and increased mortality rates in patients with AML.
- Further research is needed to evaluate tangible methods that can increase equity in AML diagnosis including social media, clinical research, and adaptations to existing medical literature.
- Increased emphasis should be placed on educating older adults on their increased risk for AML and screening measures to prevent advanced disease.

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