

Epidemiological analysis of the incidence of testicular cancer in children and adolescents stratified by country and continent

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Introduction

Testicular cancer is the most common malignant neoplasm among young men; however, its occurrence in children and adolescents is rare. Germ cell tumors are the predominant subtype in this age group and are often associated with genetic syndromes, cryptorchidism, and gonadal development disorders. This study aims to assess the incidence of testicular cancer in children and adolescents (<20 years) worldwide, stratified by geographic region, Human Development Index (HDI), and income level.

Scientific Methodology

Data on the incidence of testicular cancer in boys aged 0 to 19 years in 2022 were obtained from the Cancer Today platform (GLOBOCAN/IARC). The age-standardized rate (ASR) was used for comparisons between countries and continents. Analyses were stratified by continent, geographic region, HDI, and economic classification according to the World Bank.

Results

Globally, 6,569 cases were identified, with an ASR of 0.48 per 100,000 inhabitants. The highest incidence was observed in Latin America and the Caribbean (ASR = 1.8), followed by North America (ASR = 1.5), Europe (ASR = 1.2), and Oceania (ASR = 1.0), while the lowest rates were recorded in Africa (ASR = 0.13) and Asia (ASR = 0.30). Central America had the highest ASR among regions (2.1). Among countries, the highest ASR values were observed in Slovenia (ASR = 6.2), Bosnia and Herzegovina (ASR = 4.1), Argentina (ASR = 3.8), and Paraguay (ASR = 3.5). In Brazil, the ASR was 1.7, above the global average but below the South American average (1.9). When stratified by HDI, the highest ASR was observed in very high HDI countries (1.3), while medium and low HDI countries had rates of 0.21 and 0.14, respectively. In terms of economic classification, high-income countries had an ASR of 1.4, whereas low-income countries recorded the lowest rate (ASR = 0.10).

Top 3 countries with the highest incidence (ASR) of testis cancer in children and adolescents (0-19) (2022)		
Population	Number of cases	ASR
1st) Slovenia	14	6.20
2nd) Bosnia Herzegovina	15	4.10
3rd) Argentina	303	3.80
22th) Brazil	566	1.70
World	6 569	0.48

Incidence (ASR) of testis cancer in children and adolescents (0-19) by continent (2022)		
Population	Number of cases	ASR
1st) Latin America	2 086	1.80
2nd) Northern America	754	1.50
3rd) Europe	1 022	1.20
4th) Oceania	74	1.00
World	6 569	0.48
5th) Asia	2 172	0.30
6th) Africa	461	0.13

Top 3 UN regions with the highest incidence (ASR) of testis cancer in children and adolescents (0-19) (2022)		
Population	Number of cases	ASR
1st) Central America	731	2.10
2nd) Southern Europe	344	2.00
3rd) South America	1 343	1.90
World	6 569	0.48

Incidence (ASR) of testis cancer in children and adolescents (0-19) by HDI (2022)		
Population	Number of cases	ASR
1st) Very high HDI countries	2 741	1.30
2nd) High HDI countries	2 487	0.62
World	6 569	0.48
3rd) Medium HDI countries	912	0.21
4th) Low HDI countries	431	0.14

Incidence (ASR) of testis cancer in children and adolescents (0-19) by World Bank Classification (2022)		
Population	Number of cases	ASR
1st) High income countries	2 000	1.40
2nd) Upper middle income countries	2 658	0.73
World	6 569	0.48
3rd) Lower middle income countries	1 676	0.25
4th) Low income countries	184	0.10

Conclusion

Testicular cancer in children and adolescents shows marked geographic disparities, with higher prevalence in Latin America and the Caribbean - particularly in Central America - and in high-income countries. Its association with high HDI and greater income suggests the influence of genetic and environmental factors, as well as differences in access to early diagnosis. Additional studies are needed to investigate etiological factors and potential hereditary predispositions, particularly in populations of Indigenous origin or ancestry.

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