

Incidence and Pattern of Childhood Cancers in India: Findings from Population-based Cancer Registries

Abstract

Childhood cancers have different characteristics than those occurring among adults and described as cancers occurring below 15 years of age. In developed countries, its incidence is relatively rare but it's a leading cause of death. More than 80% of the childhood cancers are occurring in low and middle income countries. Based on data from population based cancer registries under National Cancer Registry Programme, in this commentary, we described the incidence and pattern of Childhood cancers in India and its implications.

Keywords: Age adjusted incidence rates, childhood cancers, population based cancer registries, National Cancer Registry Programme

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Worldwide, approximately, 215,000 cancers are diagnosed per year in those younger than 15 years with an estimated 80,000 cancer-related deaths in these annually. These estimates are based on data collected by more than 100 population-based cancer registries (PBCRs) in 68 countries around the world in 2001–2010.^[1] In developed countries, childhood cancer is relatively rare, comprising about 1% of the total cancer cases.^[2] Survival rates of childhood rates are high and around 80% in high-income countries,^[3] However, they are second leading cause of death in children in developed countries like United States surpassed only by accidents.^[4]

More than 80% of all childhood cancer cases are occurring in low- and middle-income countries.^[5] It is estimated that about 148,000 cancers occurred during 2008 in children aged 0–14 years in less-developed regions.^[6] In India, cancer is the 9th common cause for the deaths among children between 5 and 14 years of age.^[7] Population data on incidence and pattern of childhood cancers in India come mainly from PBCRs.^[8] The Indian Council of Medical Research started National Cancer Registry Programme with a network of cancer registries across India in December 1981. Currently, there are 29 PBCRs in India under National Cancer Registry Programme (NCRP).^[9] NCRP

have been reporting the incidence and mortality data on cancer from the PBCRs in their annual, two-, and three-yearly reports. The childhood cancer cases in the age-group of 0–14 years are reported separately in these reports as they form a distinct category.

The latest three-year report of PBCRs published in the series has reported the cancer incidence and mortality of 27 PBCRs for the year 2012–2014. The proportion of childhood cancers relative to cancers in all age groups varied between 0.7% and 4.4% for this period.^[9] This is slightly lower than previous reported proportion of 0.5%–5.8% of childhood cancers for the year 2006–2011.^[10] Delhi PBCR has reported the highest relative proportion of cancers among boys (5.4%) whereas a new PBCR Naharlagun, covering eight districts of western zone of Arunachal Pradesh has reported the highest relative proportion among girls (3.5%).^[9]

Cancer incidence rates for childhood cancers are generally expressed per million children.^[11] The age-adjusted incidence rates (AARs) per million of 235.3 for boys and 152.3 for girls at PBCR Delhi, were highest in the country followed by PBCR Chennai (156.7 for boys and 85.6 for girls) and Aizawl district (136.1 for boys and 88.7 for girls) during the period, 2012–14.^[10] The unusual high incidence

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of childhood cancers at PBCR Delhi, may be due to the presence of environmental risk factors such as the presence of carcinogenic pollutants or ionizing radiations in the atmosphere or due to underascertainment of childhood cancer cases in other registries. Among types of childhood cancers, leukemia has the highest incidence rates in all the PBCRs both among boys and girls followed by lymphoma.

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Conflicts of interest

There are no conflicts of interest.

References

1. World Health Organization. International childhood cancer day: Much remains to be done to fight childhood cancer. WHO Press Release No. 241. Lyon, France: World Health Organization; 2016.
2. Steliarova-Foucher E, Stiller C, Kaatsch P, Berrino F, Coebergh JW, Lacour B, *et al.* Geographical patterns and time trends of cancer incidence and survival among children and adolescents in Europe since the 1970s (the ACCIS project): An epidemiological study. *Lancet* 2004;364:2097-105.
3. Ward E, DeSantis C, Robbins A, Kohler B, Jemal A. Childhood and adolescent cancer statistics, 2014. *CA Cancer J Clin* 2014;64:83-103.
4. US Mortality Data, 2006. National Center for Health Statistics. Centers for Disease Control and Prevention; 2009.
5. Barr R, Riberio R, Agarwal B, Masera G, Hesseling P, Magrath I. Pediatric oncology in countries with limited resources. In: Pizzo PA, Poplack DG, editors. *Principles and Practice of Pediatric Oncology*. 5th ed. Philadelphia: Lippincott Williams and Wilkins; 2006. p. 1605-17.
6. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. *Globocan 2008 v2.0-Cancer Incidence and Mortality Worldwide: IARC Cancer Base No. 10*. Lyon: International Agency for Research on Cancer; 2010. Available from: <http://www.globocan.iarc.fr>. [Last accessed on 2013 Sep 21].
7. Summary-Report on Causes of Death: 2001-2003 in India. Available from: http://www.censusindia.gov.in/Vital_Statistics/Summary_Report_Death_01_03.pdf. [Last accessed on 2013 Sep 24].
8. Satyanarayana L, Asthana S, Labani S P. Childhood cancer incidence in India: A review of population-based cancer registries. *Indian Pediatr* 2014;51:218-20.
9. Three Year Report of the Population Based Cancer Registries 2012-2014: Report of 27 PBCRs; National Cancer Registry Programme, Indian Council Medical Research, Bangalore; 2016. Available from: http://www.ncrpindia.org/Reports/PBCR_2012_2014.aspx. [Last accessed on 2016 Jul 24].
10. Three Year Report of the Population Based Cancer Registries 2009-2011: Report of 25 PBCRs; National Cancer Registry Programme, Indian Council Medical Research, Bangalore; 2013. Available from: http://www.ncrpindia.org/Reports/PBCR_2009_2011.aspx. [Last accessed on 2013 Sep 24].
11. Bray F, Parkin DM. Evaluation of data quality in the cancer registry: Principles and methods. Part I: Comparability, validity and timeliness. *Eur J Cancer* 2009;45:747-55.