

**PAEDIATRIC ONCOLOGY SCENARIO IN LESSER DEVELOPED NATIONS: THE CHALLENGES****Suhag V.\*<sup>1</sup>, Sunita B. S.<sup>2</sup>, Vats P.<sup>3</sup>, Pandya T.<sup>4</sup>, Lohia N.<sup>5</sup>, Singh V. K.<sup>6</sup> and Tiwari M.<sup>7</sup>**<sup>1</sup>MD DNB Radiation Oncology, Prof & Head Radiation Oncology, Command Hospital (SC), Pune, India.<sup>2</sup>MD DNB Pathology, Professor Pathology, Armed Forces Medical College, Pune-411040, India.<sup>3,6,7</sup>MBBS, DNB Radiation Oncology (Resident), Army Hospital (R&R), Delhi Cantt, Delhi-110010, India.<sup>4</sup>DNB Radiation Oncology (Gd Specialist), Command Hospital (EC), Kolkata, India.<sup>5</sup>DNB Radiation Oncology (Gd Specialist), Command Hospital (CC), Lucknow, India.**\*Corresponding Author: Suhag V.**

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**ABSTRACT**

Cancer is relatively rare in childhood, but it contributes considerably to childhood mortality, years of life lost per person and late effects in survivors. Childhood cancers are life-threatening diseases that are universally distressing and potentially traumatic for children and their families at diagnosis, during treatment, and beyond. These 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 where paediatric oncology facilities continue to face several challenges. There is an urgent need to overcome these barriers to improve the quality of life of childhood cancer patients and their care givers. These patients should be managed multimodally by pediatric oncologists, surgeons, radiation oncologists, nurses, psychologists, social workers, nutritionists, and occupational therapists.

**KEYWORDS:** Cancer, paediatric patients, under-developed and developing nations, challenges.

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. In developed countries, childhood cancer is relatively rare, comprising about 1% of the total cancer cases. Survival rates of childhood rates are high and around 80% in high-income countries, however, they are second leading cause of death in children in developed countries surpassed only by accidents. Because of major treatment advances in recent decades, more than 80% of children with cancer now survive 5 years or more.<sup>[1]</sup> However, the 5-year survival rates may be as low as 10% in some low-income countries owing to poor diagnostic and treatment facilities and due to lack of access to care. In India, the 5 years survival for all childhood cancers combined was 37%–40% only. Early detection, prompt treatment, and regular follow-up of childhood cancers are necessary to improve its survival.<sup>[2]</sup>

Cancers rarely occur before age 20 years, and when they do, they raise a range of medical, psychological, ethical, and societal concerns. These distinct types of neoplasms require specific treatment paths. Furthermore, the extent of the cancer burden in this young population is unknown in many low-income and middle-income

countries, where data on cancer incidence are not collected. Even in the presence of population-based cancer registries, collection of information about childhood cancers is often neglected because they represent a small proportion of all cancers, additional data sources might be required, and the resulting statistics must be subjected to meticulous quality control because they are more sensitive to imprecision or missing information.<sup>[3]</sup>

The care of children with malignant solid tumors in underdeveloped nations is compromised by resource deficiencies that range from inadequate healthcare budgets and a paucity of appropriately trained personnel, to scarce laboratory facilities and inconsistent drug supplies. Patients face difficulties accessing healthcare, affording investigational and treatment protocols, and attending follow-up. Children routinely present with advanced local and metastatic disease and many children cannot be offered any effective treatment. Moreover, multiple comorbidities, including malaria, tuberculosis, and HIV when added to chronic malnutrition, compound treatment-related toxicities. Survival rates are poor. Pediatric surgical oncology is not yet regarded as a health care priority by governments struggling to achieve

their millennium goals. The overall incidence of pediatric solid malignant tumor is difficult to estimate in these poor nations because of lack of vital hospital statistics and national cancer registries in some of these countries.<sup>[4]</sup> Cancer registries ensure cancer surveillance, thus providing the basis for research as well as policy decisions.<sup>[5]</sup>

The management of childhood tumors faces several challenges in countries with limited resources. Delayed presentation, insufficient number of specialists (pediatric neurosurgeons, pediatric oncologists, and radiation oncologists), and shortage of radiological diagnostic tools like MRI, of neurosurgical equipment, or of radiation machines are significant obstacles. In addition, abandonment of treatment and loss of follow-up are common, mostly for social or economic reasons. Pediatric neuro-oncology is relatively a new subspecialty and requires close multidisciplinary teamwork. This is attempted but not efficiently executed in many developing countries. Some of these difficulties can be managed by enriching the resources through international collaborations; others may need shared experience with more advanced countries through twinning programs.<sup>[6]</sup> Treatment abandonment is a primary cause of therapy failure in children with cancer in low-/middle-income countries, and one of the main reasons include absence of social support network. There is an unmet need for understanding of social ties and support surrounding children's families for planning strategies to prevent treatment abandonment.<sup>[7]</sup>

One crucial aspect that needs urgent solution is the fact that pediatric oncology programs often fail to deliver adequate palliation to children with cancer in resource-constrained countries. Parents of children who die on a pediatric oncology service often feel that despite treatment at the end of life, their children's suffering was not adequately relieved and that parents were more likely than caregivers to recognize their children's suffering. There are several challenges in efficiently practicing palliative care in pediatric oncology. First, death in children from cancer is a rare event. Second, few prospective trials in the field of pediatric palliative care describe and quantify symptoms during cure-directed care or at the end of life. Third, pediatric oncologists and those charged with developing pediatric palliative care programs must deal with the different physiologic and developmental stages encountered while caring for infants, children, and adolescents. Fourth, education is needed for pediatric oncology caregivers in many areas of palliative care. Finally, reimbursement issues surround the palliative care field and are a major hindrance in developing effective integrated palliative care teams.<sup>[8]</sup>

Another area that merits attention is lack of pediatric psychologists worldwide to help these patients deal with the trauma. There is a need for pediatric psychologists to collaborate with pediatric oncology teams to make many contributions to our understanding of the impact of

cancer and its treatment on children and families. It will help us understand treatment-related late effects and in improving quality of life. Almost 70% of pediatric cancer survivors develop "late effects" that can be chronic or even life threatening (e.g., infertility, cardiovascular/ lung disease, renal dysfunction, severe musculoskeletal problems, endocrinopathies, second cancers, cognitive impairments), often emerging in early adulthood. The morbidity and mortality associated with many late effects can be mitigated through targeted surveillance, adoption of health-promoting behaviors, and early management/treatment. Unfortunately, about two thirds of young adult survivors of childhood cancer do not follow through with recommended health monitoring or health promoting behaviors.<sup>[9,10]</sup>

In conclusion, more than 85% pediatric cancer cases occur in developing countries that use less than 5% of world resources. Rapid increase in population, poverty, poor hygiene, lack of education, and multitude health problems impede the development of pediatric oncology and success of the management of childhood cancer in developing countries.<sup>[11]</sup> Its high time when the world joins hand to improve the scenario of pediatric oncology in developing countries. Following steps are recommended: establishment of a pediatric cancer unit where needy children get access to optimum treatment; coordination of oncology registry, research and training programs; better collaboration of pediatric cancer care specialists of all cadres including nurses, clinicians, pathologists, radiologists, surgeons and other support staffs; development of standardized treatment protocols for all the major pediatric cancers; establishment of supportive care guidelines; and availability of economical drugs.<sup>[12]</sup> National registration of childhood cancer should be practiced as far as possible, so that accurate regional, nation-wide and international statistics can provide solid baselines for research, clinical practice and public health policy.

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