

# Leading Article

## Childhood Cancer: A Situation Analysis and Challenges, Bangladesh Perspective

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### Introduction:

Childhood cancer is increasing day by day. It is neglected in developing countries, even though approximately 84 % of the cancer cases under 15 years occur in the low-income and middle-income countries (LMICs).<sup>1</sup> Incidence of childhood cancer worldwide is nearly 300,000 new cases per year.<sup>2</sup>

Because of decreased infant mortality rates in developing countries resulting from better management of infectious diseases and current population growth, the number of childhood cancer is expected to increase by 30 % by 2020.<sup>3</sup>

In Bangladesh, the overall cancer burden including adolescent and childhood cancer is largely unknown due to the nonexistence of (population-based) cancer registries.<sup>4,5</sup> The proportion of childhood cancers is expected to be high in Bangladesh because of the young population structure- about 47 % of the population is under 15 years old.<sup>6</sup>

Bangladesh has no authentic cancer statistics but nearby country scenario is available. In Pakistan incidence is 100 per million in <15 years of age and in India it is 64 per Million.<sup>7,8</sup> In 2012, the population was estimated to be 164 million with 47% under 15 years. There is no national population based cancer registry but using worldwide incidence rates of between 180/million children. We would expect 13000 new cases/year<sup>1</sup> in Bangladesh. Only about 25% of those numbers are actually currently diagnosed. Under-5 mortality is now 46/1000 live births and infant Mortality 38/1000 live birth.<sup>10</sup>

Poverty is a major issue but the national economy is showing positive growth. Children present late with cancer as a result of poor public and local health worker awareness of the meaning of signs and symptoms of cancer. Consequently, only about 80% of children reaching secondary/tertiary hospitals can be offered

potentially curative therapy, and of those many families cannot afford to pay for full treatment.<sup>10</sup>

Over time, the childhood and adolescent cancer incidence has increased which is most likely due to improved awareness among clinicians, diagnostic facility and registration. The incidence rates are still low compared to India where the total childhood cancer rates varied between 38 and 124 per million person-years compared to 8 per million person-years in Bangladesh.<sup>11</sup>

Total 80000 death /year in < 19 years of age due to cancer and in < 19 years of age 5-year survival in low income countries as low as 10% while that in developed countries like USA and UK as high as 80%.

### Type of Paediatric Cancer<sup>12</sup>

Age-Adjusted and age-specific Cancer incidence rate for patients aged 0-14 years (SEER 2009-2012).

1.	Leukemia	-	31%
2.	CNS	-	26%
3.	Lymphoma	-	10%
4.	Soft tissue	-	07%
5.	Neuroblastoma	-	06%
6.	Renal	-	05%
7.	Bone	-	04%
8.	Epithelial	-	04%
9.	Germ cell	-	03%
10.	Retinoblastoma	-	02%
11.	Liver	-	02%
12.	Other	-	00%

### Risk Factors<sup>13</sup>

- (a) Identified familial and genetic factor (5-15%)
  - Familial disease- Fanconi Anemia, Skin Cancer.
  - Genetically Determined Factor- Down Syndrome

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- (b) Known environmental exposure (< 5-10%)
  - Dietary Constituents (Coloring agents),
  - Ionizing Radiation, Virus, Tobacco, Pesticides, Asbestos, Aflatoxin, Arsenic, Drugs and medications.
- (c) Unknown Factor (75-90%).

**Clinical Presentations of Childhood cancer**

Remember Mnemonic CHILDCANCER for clinical features

- C**ontinued weight loss
- H**eadaches, vomiting
- I**ncreased swelling & pain in bones
- L**ump or mass in abdomen, neck
- D**evelopment of excessive bleeding
- C**onstant infections
- A** whitish color of Eye
- N**ausea
- C**onstant paleness
- E**ye or vision change
- R**ecurrent or persistent fever
  - *Joint swelling*
  - *Bleeding gum and Nose*
  - *Swollen eyeball*

**Diagnosis**

Several investigations are needed to diagnose childhood cancer according to its presentations like Blood Count, Ultrasonogram, Chest X-ray, CT Scan, MRI, PET-CT scan, Bone marrow examination, Biopsy, Biochemical Marker such as alfa-feto-protein, LDH and Cancer Marker.

**Management**

Pediatric Cancer Treatment cost is high. Approximate treatment cost per child in UK-£100,000 and in Malawi-£500

Treatment options are Chemotherapy, Targeted therapy, Surgery, Radiotherapy and Bone-marrow transplantation. Cure Rate depends on Type of Cancer, Stage of cancer, Early Diagnosis and Treatment. Overall survival increases 80% from 10% over last 40 years.

Overall cure rates increased due to a) Development of active chemotherapeutic agents b) Improvement in our understanding of proper dosing schedules, combination of drugs and c) Significant improvement in supportive agents

**Bangladesh Perspective**

First pediatric Oncology Center in BSMMU was created in the early 1990's.

In December 2008 government of Bangladesh established Pediatric Hematology and Oncology Department in 8 (eight) Medical College hospitals. Pediatric Onco-surgery department was established in Dhaka medical College hospital & Chittagong Medical College hospital in 2017. In National Institute of Cancer Research and Hospital (NICRH) was started only solid tumor treatment from 2005. First Government functioning pediatric hematology and oncology center is Dhaka Medical College hospital (DMCH) and that started its journey in 2010. Dhaka Shishu (Children) Hospital started protocol-based treatment from 2014 (Though Centre established earlier). Chittagong Medical College Hospital (CMCH), Sir Salimullah Medical College Hospital (SSMCH) and Sylhet MAG Osmani Medical College Hospital (SOMCH) are treating pediatric cancer patients (from 2014). In private sector Ahsania Misson Cancer Hospital, Square Hospital, Delta Medical College Hospital and United Hospital are treating paediatric cancer patients but most of this hospital are driven by adult oncologist or radiation oncologists or adult hematologists.

Dhaka Medical College experience upto March 2017

Total Patients	: 737	
• Death	: 157	
• Refuse	: 87	
• Abandonment	: 261	
• Treatment Complete	: 94	
• Alive	: 297	
Disease	Total	Death
• ALL	351	34
• AML	79	38
• NHL	72	32
• Hodgkin's	37	04
• Wilms' Tumor	44	08
• GCT	23	04
• NB	36	14
• RMS	24	06
• OS	09	04
• Ewing Sarcoma	09	02
• RB	12	02
• CNS	14	06
• Histiocytosis	10	04
• Hepatoblastoma	07	02
• Others	12	01
• Total	737	157

### Challenges of Paediatric Cancer management.

Following awareness created by the campaign of media and workshop

- Increased number of patient referral to the Pediatric Oncology Centers
- Work load increasing but skilled manpower and facilities are not adequate
- Late diagnosis, advanced disease and early toxic death
- Refusal to treat / stop treatment prematurely (47%)
- Economical constraint and lack of helping manpower
- Most drugs are imported from abroad and costly, inconsistent supply and sudden raise of price
- Shortage of bed in hospital, unavailability of Blood and Blood products
- Lack of
  - Reliable and modern diagnostic facilities
  - Patient transportation system
  - Functioning cancer support group
  - Shelter Home
- Unavailability of pediatric Onco-surgeon for Solid tumor management
- Lack of support group

### Proposals

- a) Creation of effective Support Group
- b) Establishment of functioning Cancer Home
- c) Awareness through Electronic and Print Media
- d) Development of non-governmental treatment facilities

### Conclusion

Childhood cancer is increasing burden for our country but these are curable with simple effort. Establishment of childhood cancer institute, creating posts of pediatric oncologists as well as onco-surgeons, support group, supply of drugs with subsidies and pediatric cancer home may help to reach the goal of success in childhood cancer.

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