

Section I

B. Cancers in Childhood

Section 1 B: Cancers in Childhood

Childhood cancers rank ninth as a leading cause of childhood diseases at the global level, accounting for 11.5 million (10.6–12.3 95% CI) of the Disability Adjusted Life Years (DALYs') [5]. In India, according to a recent report of the National Cancer Registry Programme, the proportion of childhood cancers (0-19 years) relative to cancers in all age groups was found to range from 1% to 4.9% [1]. Delhi PBCR reported the highest Age-Adjusted Incidence Rate (AAR) of 203.1 per million in boys and 125.4 per million in girls. Leukaemia accounted for nearly half of all the childhood cancers in both genders in the 0-14 years age group (46.4% in boys and 44.3% in girls). The other common childhood cancer in boys was lymphoma (16.4%), while in girls, it was a malignant bone tumour (8.9%). Childhood cancers are presented for two age groups: 0-14 years and 0-19 years to enable national and international comparison. Childhood cancers have been classified according to the International Classification of Childhood Cancer [6].

B1.1 Number (n) and relative proportion (%) of childhood cancers

Table B1.1.1: Number (n) and relative proportion (%) of childhood cancers (0-14 years) relative to all cancers

Sex	Childhood Cancers	
	n	%
Boys	15549	4.9
Girls	8719	3.0
Total	24268	7.9

Table B1.1.2: Number (n) and relative proportion (%) of childhood cancers (0-19 years) relative to all cancers

Sex	Childhood Cancers	
	n	%
Boys	21845	6.8
Girls	12013	4.1
Total	33858	10.9

B1.2 Distribution of childhood cancers according to five-year age groups

Table B1.2: Number (n) and proportion (%) of childhood cancers according to five-year age groups

Age Group	Boys		Girls	
	n	%	n	%
00-04	5262	24.1	3240	27.0
05-09	5212	23.9	2646	22.0
10-14	5075	23.2	2833	23.6
15-19	6296	28.8	3294	27.4
Total	21845	100.0	12013	100.0

B1.3 Distribution of childhood cancers according to type

Table B1.3.1: Number (n) and proportion (%) of specific types of cancers in childhood (0-14 years)

Specific types of cancers in childhood	Boys		Girls	
	n	%	n	%
LEUKAEMIAS	7369	47.4	3932	45.1
Lymphoid leukaemia	5607	36.1	2961	34.0
Acute non-lymphocytic leukaemia	1141	7.3	642	7.4
Chronic myeloid leukaemia	180	1.2	114	1.3
Other specified leukaemia	59	0.4	33	0.3
Unspecified leukaemia	382	2.4	182	2.1
MALIGNANT BONE TUMOURS	1104	7.1	827	9.5
Osteosarcoma	565	3.6	407	4.7
Chondrosarcoma	16	0.1	7	0.1
Ewings sarcoma	470	3.0	361	4.1
Other specified malignant bone tumours	26	0.2	30	0.3
Unspecified malignant bone tumours	27	0.2	22	0.3
LYMPHOMAS & RETICULOENDOTHELIAL NEOP.	2581	16.6	679	7.8
Hodgkin's disease	1246	8.0	286	3.3
Non-Hodgkin's disease	895	5.8	279	3.2
Burkitt's lymphoma	300	1.9	54	0.6
Miscellaneous lymphoreticular neoplasm	66	0.4	40	0.5
Unspecified lymphomas	74	0.5	20	0.2

C.N.S. & MISC. INTRACRANIAL & INTRASPINAL NEOP.	963	6.2	638	7.3
Ependymoma	141	0.9	81	0.9
Astrocytoma	188	1.2	130	1.5
Primitive neuroectodermal tumours	373	2.4	198	2.3
Other gliomas	182	1.2	155	1.8
Other specified intracranial and intraspinal neoplasms	38	0.2	29	0.3
Unspecified intracranial and intraspinal neoplasms	41	0.3	45	0.5
SOFT-TISSUE(S-T) SARCOMAS(S)	923	5.9	607	6.9
Rhabdomyosarcoma and embryonal sarcoma	418	2.7	262	3.0
Fibrosarcoma, neurofibrosarcoma and other fibromatous neoplasms	31	0.2	37	0.4
Kaposi's sarcoma	1	<0.1	2	<0.1
Other specified soft tissue sarcoma	361	2.3	234	2.7
Unspecified soft tissue sarcoma	112	0.7	72	0.8
RENAL TUMOURS	571	3.7	410	4.7
Wilms tumour, rhabdoid and clear cell sarcoma	552	3.6	388	4.5
Renal carcinoma	19	0.1	22	0.2
GERM-CELL TROPHOBLASTIC & OTH. GONADAL NEOP.	208	1.3	350	4.0
Intracranial and intraspinal germ cell tumours	25	0.2	22	0.2
Other and unspecified non-gonadal germ cell tumours	67	0.4	83	0.9
Gonadal germ cell tumours	109	0.7	232	2.7
Gonadal carcinomas	4	<0.1	8	0.1
Other and unspecified gonadal tumours	3	<0.1	5	0.1
SYMPATHETIC NERVOUS SYSTEM TUMOURS	524	3.4	337	3.9
Neuroblastoma and ganglioneuroblastoma	510	3.3	336	3.9
Other sympathetic nervous system tumours	14	0.1	1	<0.1
RETINOBLASTOMA	458	3.0	342	3.9
CARCINOMA & OTHER MALIGNANT EPITHELIAL NEOP.	418	2.7	332	3.8
Adrenocortical carcinoma	10	0.1	7	0.1
Thyroid carcinoma	9	0.1	14	0.2
Nasopharyngeal carcinoma	116	0.7	23	0.3
Malignant melanoma	7	<0.1	4	<0.1
Skin carcinoma	19	0.1	9	0.1
Other and unspecified carcinoma	257	1.7	275	3.1
HEPATIC TUMOURS	226	1.5	138	1.6
Hepatoblastoma	196	1.3	119	1.4
hepatic carcinoma	27	0.2	12	0.1
Unspecified malignant hepatic tumours	3	<0.1	7	0.1
OTHER & UNSPECIFIED MALIGNANT NEOPLASMS	191	1.2	122	1.4
Other specified malignant tumours	16	0.1	11	0.1
Other unspecified malignant tumours	175	1.1	111	1.3
Others (not classified)	13	0.1	5	0.1
TOTAL	15549	100.0	8719	100.0

Table B1.3.2: Number (n) and proportion (%) of specific types of cancers in childhood (0-19 years)

Specific types of cancers in childhood	Boys		Girls	
	n	%	n	%
LEUKAEMIAS	9603	44.0	4763	39.7
Lymphoid leukaemia	6976	31.9	3346	27.8
Acute non-lymphocytic leukaemia	1603	7.3	901	7.5
Chronic myeloid leukaemia	414	2.0	238	2.0
Other specified leukaemia	79	0.4	43	0.4
Unspecified leukaemia	531	2.4	235	2.0
MALIGNANT BONE TUMOURS	2389	10.9	1382	11.5
Osteosarcoma	1452	6.6	744	6.2
Chondrosarcoma	39	0.2	21	0.2
Ewings sarcoma	783	3.6	518	4.3
Other specified malignant bone tumours	66	0.3	61	0.5
Unspecified malignant bone tumours	49	0.2	38	0.3
LYMPHOMAS & RETICULOENDOTHELIAL NEOP.	3665	16.8	1120	9.3
Hodgkin's disease	1795	8.2	524	4.3
Non-hodgkin's disease	1363	6.2	454	3.8
Burkitt's lymphoma	329	1.5	63	0.5
Miscellaneous lymphoreticular neoplasms	78	0.4	45	0.4
Unspecified lymphomas	100	0.5	34	0.3
CARCINOMA & OTH. MALIGNANT EPITHELIAL NEOP.	1042	4.9	991	8.2
Adrenocortical carcinoma	12	0.1	9	0.1
Thyroid carcinoma	22	0.1	52	0.4
Nasopharyngeal carcinoma	279	1.3	76	0.6
Malignant melanoma	12	0.1	7	<0.1
Skin carcinoma	37	0.2	22	0.2
Other and unspecified carcinoma	680	3.1	825	6.9
SOFT-TISSUE(S-T) SARCOMAS(S)	1344	6.1	892	7.4
Rhabdomyosarcoma and embryonal sarcoma	487	2.2	315	2.6
Fibrosarcoma, neurofibrosarcoma and other fibromatous neoplasms	63	0.3	67	0.6
Kaposi's sarcoma	1	<0.1	2	<0.1
other specified soft tissue sarcoma	597	2.7	385	3.2
Unspecified soft tissue sarcoma	196	0.9	123	1.0

C.N.S. & MISC. INTRACRANIAL & INTRASPINAL NEOP.	1259	5.7	780	6.5
Ependymoma	161	0.7	101	0.8
Astrocytoma	286	1.3	182	1.5
Primitive neuroectodermal tumours	453	2.1	235	2.0
Other gliomas	253	1.2	177	1.5
Other specified intracranial and intraspinal neoplasms	53	0.2	37	0.3
Unspecified intracranial and intraspinal neoplasms	53	0.2	48	0.4
GERM-CELL TROPHOBLASTIC & OTH. GONADAL NEOP.	416	1.9	636	5.3
Intracranial and intraspinal germ cell tumours	46	0.2	30	0.2
Other and unspecified non-gonadal germ cell tumours	113	0.5	107	0.9
Gonadal germ cell tumours	236	1.1	451	3.8
Gonadal carcinomas	12	0.1	33	0.3
Other and unspecified gonadal tumours	9	<0.1	15	0.1
RENAL TUMOURS	587	2.7	428	3.6
Wilms tumour, rhabdoid and clear cell sarcoma	556	2.6	392	3.3
Renal carcinoma	31	0.1	36	0.3
SYMPATHETIC NERVOUS SYSTEM TUMOURS	546	2.5	351	2.9
Neuroblastoma and Ganglioneuroblastoma	524	2.4	344	2.8
Other sympathetic nervous system tumours	22	0.1	7	0.1
RETINOBLASTOMA	458	2.1	342	2.8
OTHER & UNSP. MALIGNANT NEOPLASMS	267	1.2	164	1.4
Other specified malignant tumours	21	0.1	25	0.2
Other unspecified malignant tumours	246	1.1	139	1.2
HEPATIC TUMOURS	249	1.1	151	1.3
Hepatoblastoma	196	0.9	119	1.0
Hepatic carcinoma	49	0.2	23	0.2
Unspecified malignant hepatic tumours	4	<0.1	9	0.1
OTHERS (NOT CLASSIFIED)	20	0.1	13	0.1
TOTAL	21845	100.0	12013	100.0

II. Renal tumours

B2.1 Distribution according to age groups

Table B2.1: Number (n) and proportion (%) of renal tumours according to five-year age groups

Age group	Boys			Girls			Total		
	n	Col %	Row %	n	Col %	Row %	n	Col %	Row %
00 - 04	442	70.8	60.7	286	63.3	39.3	728	67.7	100.0
05 - 09	123	19.7	52.6	111	24.6	47.4	234	21.7	100.0
10 - 14	36	5.8	54.5	30	6.6	45.5	66	6.1	100.0
15 - 19	23	3.7	47.9	25	5.5	52.1	48	4.5	100.0
Total	624	100.0	58.0	452	100.0	42.0	1076	100.0	100.0

B2.2 Major histological types

Table B2.2: Number (n) and proportion (%) of renal tumours according to broad histological classification (0-19 years)

Broad histological classification	Boys		Girls		Total	
	n	%	n	%	n	%
Nephroblastoma	525	87.4	367	83.8	892	85.9
Renal Cell Carcinoma (RCC), NOS	26	4.3	33	7.5	59	5.7
Clear Cell Sarcoma of Kidney	18	3.0	7	1.6	25	2.4
Neuroendocrine Tumours	5	0.8	8	1.8	13	1.3
Mesenchymal Tumours	12	2.0	6	1.4	18	1.7
Rhabdoid Tumour	3	0.5	4	0.9	7	0.7
Germ Cell Tumour	5	0.8	2	0.5	7	0.7
Papillary Renal Cell Carcinoma	2	0.3	3	0.7	5	0.5
Carcinoma, NOS	1	0.2	2	0.5	3	0.3
Sarcomatoid RCC	1	0.2	1	0.2	2	0.2
Clear Cell RCC	1	0.2	1	0.2	2	0.2
Renal Cell Carcinoma, Chromophobe Type	0	0.0	1	0.2	1	0.1
Others	2	0.3	3	0.7	5	0.5
Total*	601	100.0	438	100.0	1039	100.0

* Excludes data with 'unknown values'

B2.3 Clinical Extent of Disease

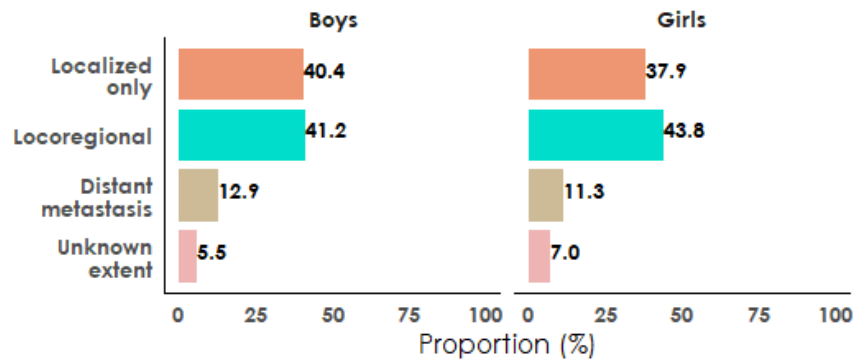
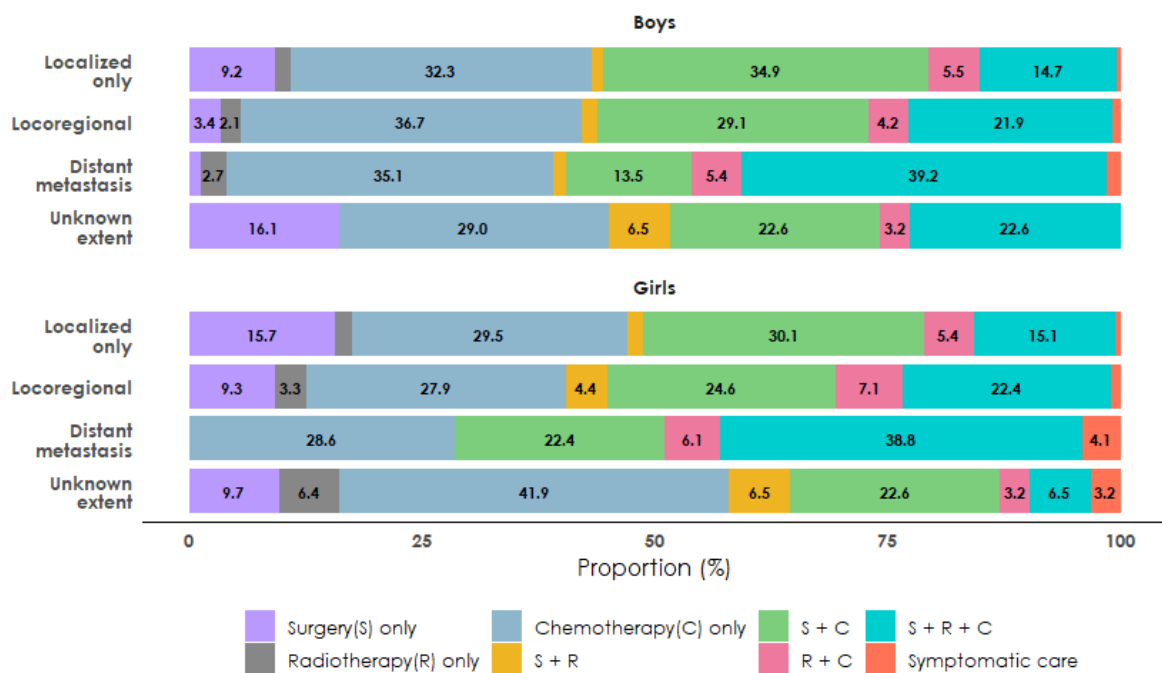


Figure B2.3: Clinical extent of disease of of renal tumours (%) (0-19 years)

B2.4 Treatment modalities according to clinical extent of disease



< 2.0% values are not shown in the chart

Figure B2.4: Treatment modalities according to the clinical extent of disease (%) - renal tumours (%) (0-19 years)

III. CNS and miscellaneous intracranial and intraspinal neoplasms

B3.1 Distribution according to five-year age groups

Table B3.1: Number (n) and proportion (%) of CNS and miscellaneous intracranial and intraspinal neoplasms according to five-year age groups (0-19 years)

Age group	Boys			Girls			Total		
	n	Col %	Row %	n	Col %	Row %	n	Col %	Row %
00 - 04	269	20.8	61.6	168	21.1	38.4	437	20.9	100.0
05 - 09	421	32.5	59.1	291	36.5	40.9	712	34.0	100.0
10 - 14	324	25.0	62.8	192	24.1	37.2	516	24.7	100.0
15 - 19	280	21.6	65.6	147	18.4	34.4	427	20.4	100.0
Total	1294	100.0	61.9	798	100.0	38.1	2092	100.0	100.0

B3.2 Major histological types

Table B3.2: Number (n) and relative proportion (%) CNS and miscellaneous intracranial and intraspinal neoplasms according to broad histological classification (0-19 years)

Broad histological classification	Boys		Girls		Total	
	n	%	n	%	n	%
Medulloblastoma	377	32.4	188	27.0	565	30.4
Astrocytoma	198	17.0	109	15.6	307	16.5
All Other Gliomas	161	13.9	111	15.9	272	14.6
Ependymal tumours	148	12.7	93	13.3	241	13.0
Neuroepithelioma	104	9.0	56	8.0	160	8.6
Glioblastoma	81	7.0	69	9.9	150	8.1
Germ cell tumour	28	2.4	26	3.7	54	2.9
Oligodendroglial tumours	19	1.6	14	2.0	33	1.8
Carcinoma, NOS	18	1.5	7	1.0	25	1.3
Choroid Plexus Papilloma, Malignant	10	0.9	5	0.7	15	0.8
Meningioma, malignant	6	0.5	6	0.9	12	0.6
Neoplasm, malignant	5	0.4	0	0.0	5	0.3
Peripheral Neuroectodermal Tumour	3	0.3	5	0.7	8	0.4
Neuronal & Mixed neuronal - glial tumours	3	0.3	4	0.6	7	0.4
Pineoblastoma	1	0.1	3	0.4	4	0.2
Others	0	0.0	1	0.1	1	0.1
Total*	1162	100.0	697	100.0	1859	100.0

*Excludes data with 'unknown values'

B3.3 Clinical Extent of Disease

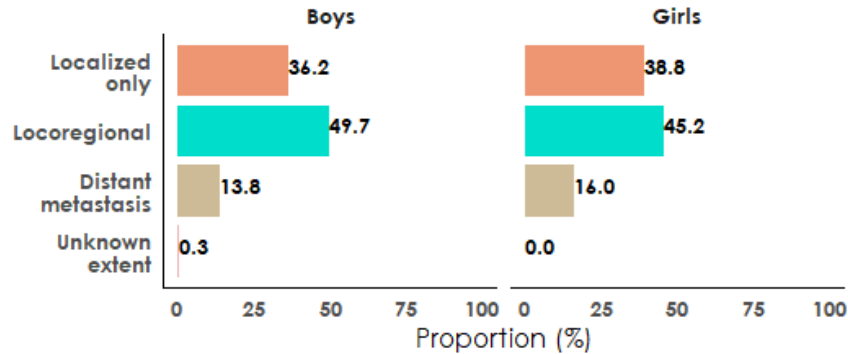


Figure B3.1: Clinical extent of disease (%) - CNS and miscellaneous intracranial and intraspinal neoplasms (0-19 years)

B3.4 Treatment modalities according to clinical extent of disease

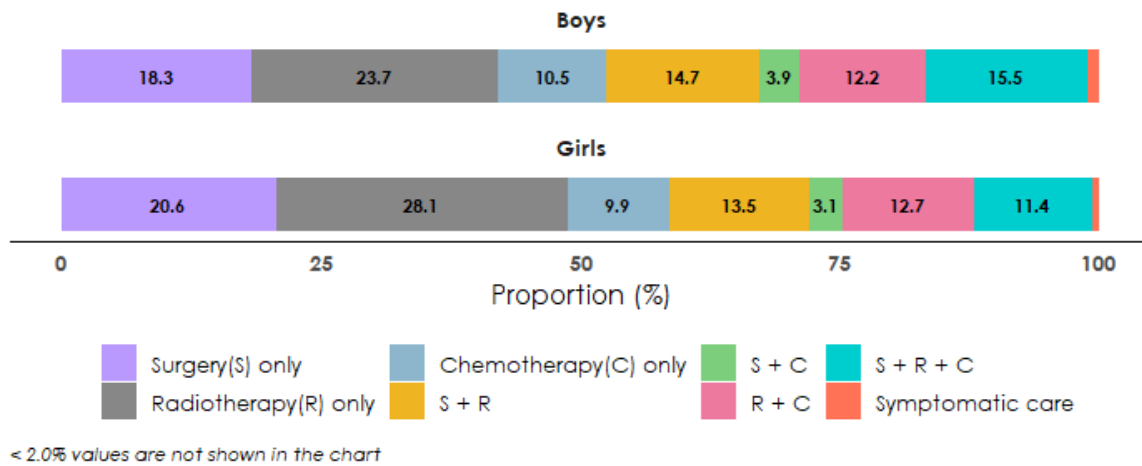


Figure B3.2: Type of treatment according to the clinical extent of disease - CNS and miscellaneous intracranial and intraspinal neoplasms (0-19 years)

IV: Other solid tumours: Clinical extent of disease and treatment

B4.1 Retinoblastoma

B4.1.1 Clinical extent of disease

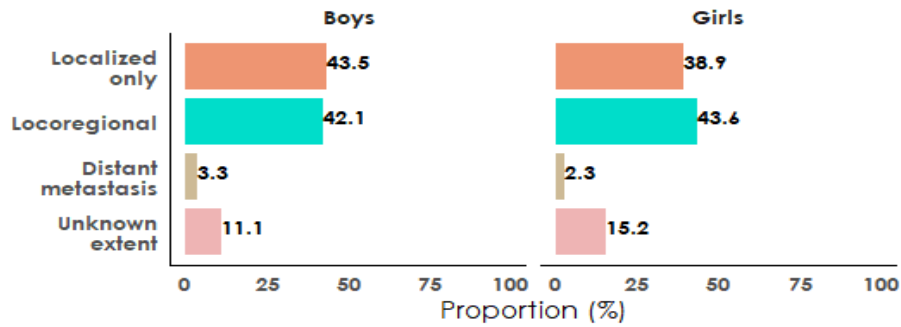


Figure B4.1.1: Clinical extent of disease (%) – Retinoblastoma (0-19 years)

B4.1.2 Treatment according to clinical extent of disease

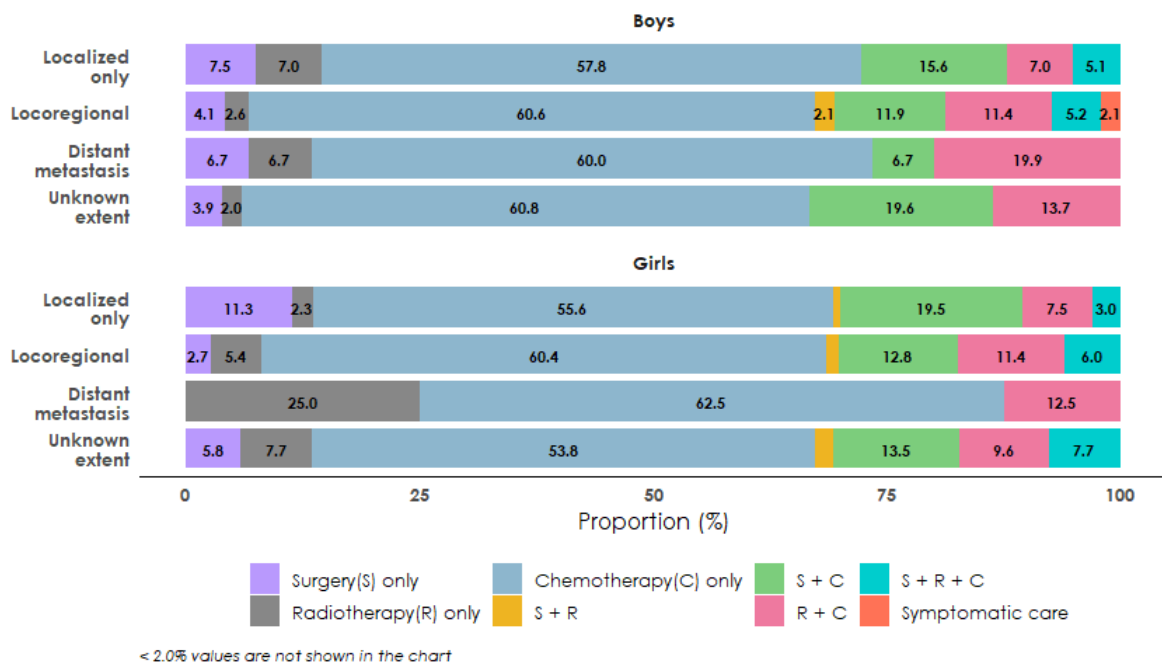


Figure B4.1.2: Type of treatment according to the clinical extent of disease (%) –Retinoblastoma (0-19 years)

B4.2 Hepatic Tumours

B4.2.1 Clinical Extent of Disease

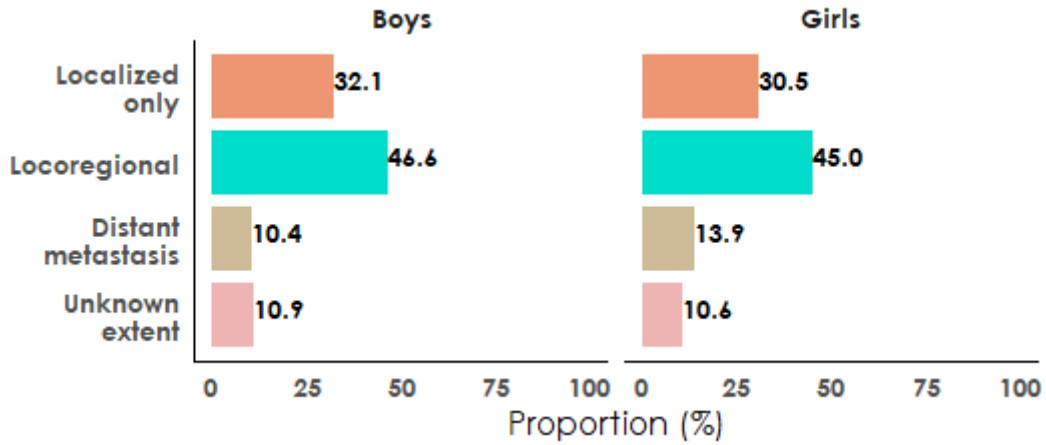


Figure B4.2.1: Clinical extent of disease (%) – Hepatic tumours (0-19 years)

B4.2.2 Treatment according to clinical extent of disease

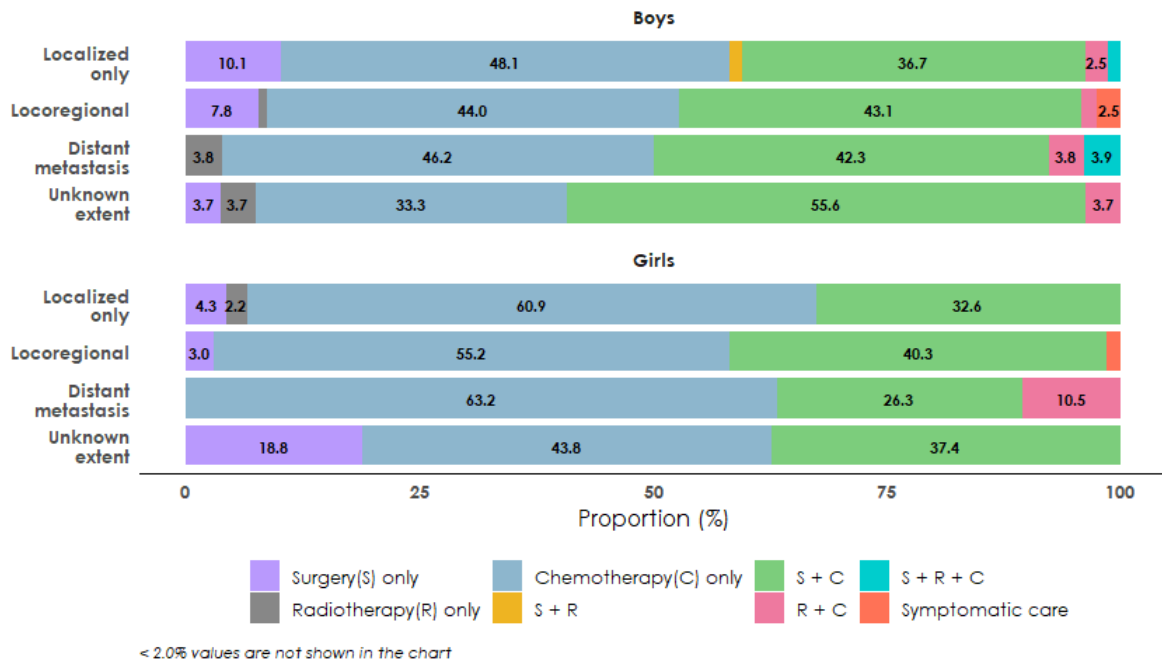


Figure B4.2.2: Type of treatment according to the clinical extent of disease (%) – Hepatic Tumours (0-19 years)

B4.3 Malignant Bone Tumours

B4.3.1 Clinical Extent of Disease

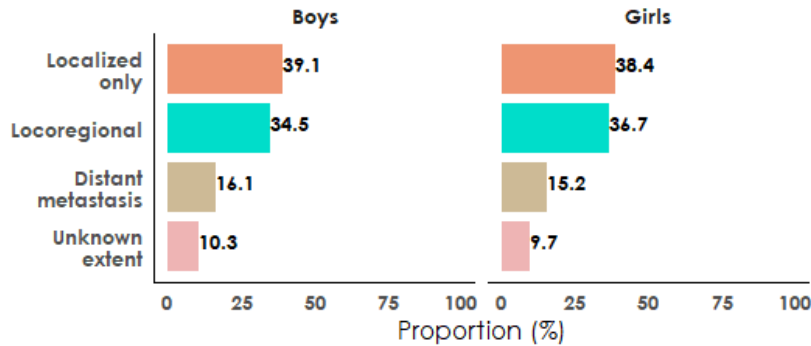


Figure B4.3.1: Clinical extent of disease (%) – Malignant bone tumours (0-19 years)

B4.3.2 Treatment according to clinical extent of disease

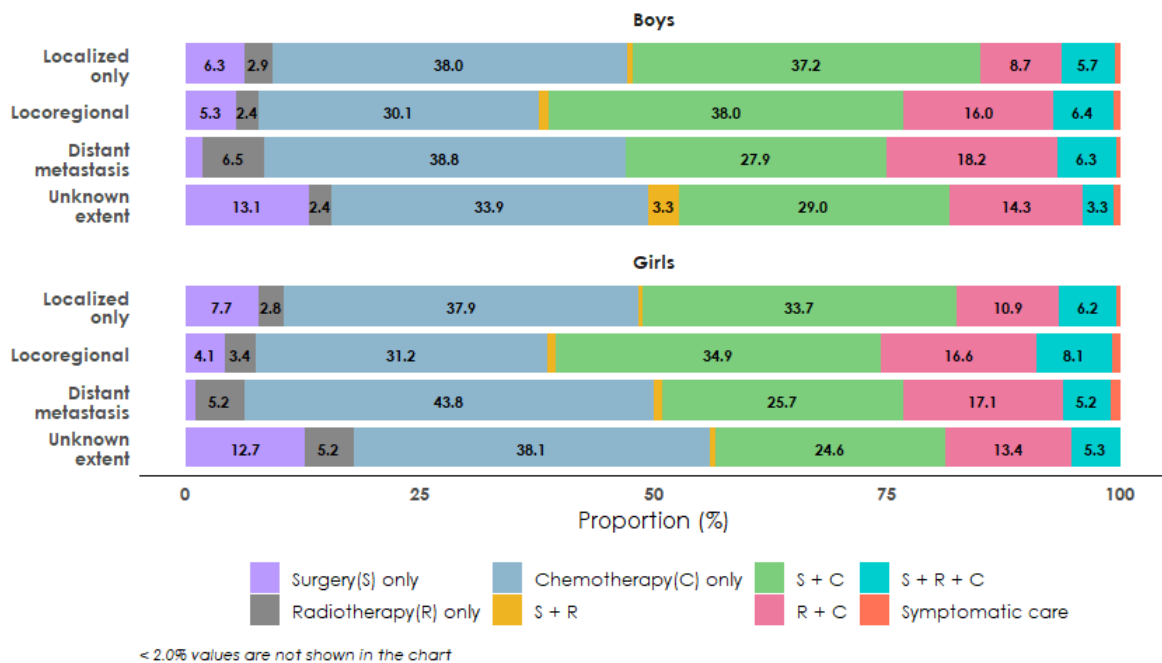


Figure B4.3.2: Type of treatment according to the clinical extent of disease (%) – Malignant bone tumours (0-19 years)

B4.4 Soft Tissue Sarcomas

B4.4.1 Clinical Extent of Disease

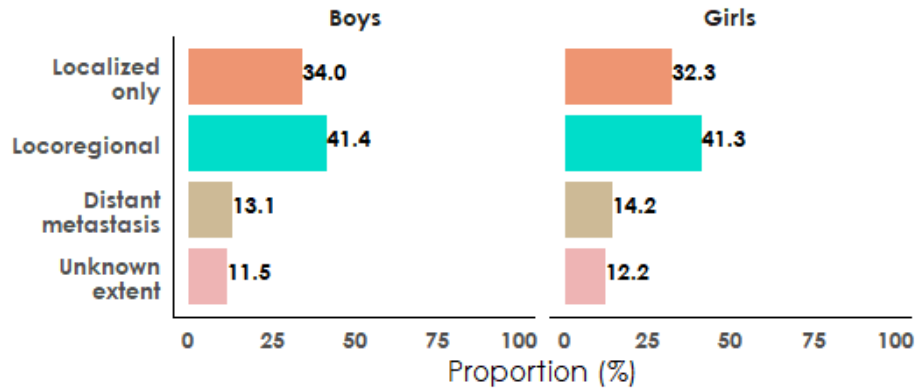


Figure B4.4.1: Clinical extent of disease (%) – Soft Tissue Sarcomas (0-19 years)

B4.4.2 Treatment according to clinical extent of disease

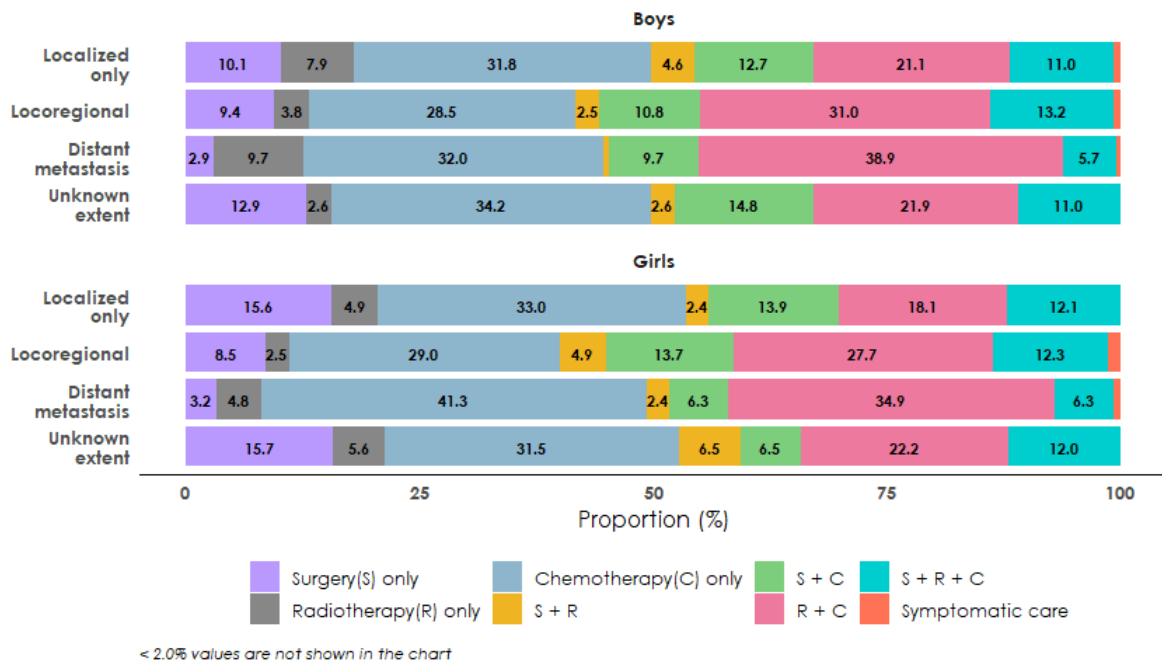


Figure B4.4.2: Type of treatment according to the clinical extent of disease (%) – Soft Tissue Sarcomas (0-19 years)

B4.5 Germ-cell trophoblastic & other gonadal neoplasms

B4.5.1 Clinical extent of disease

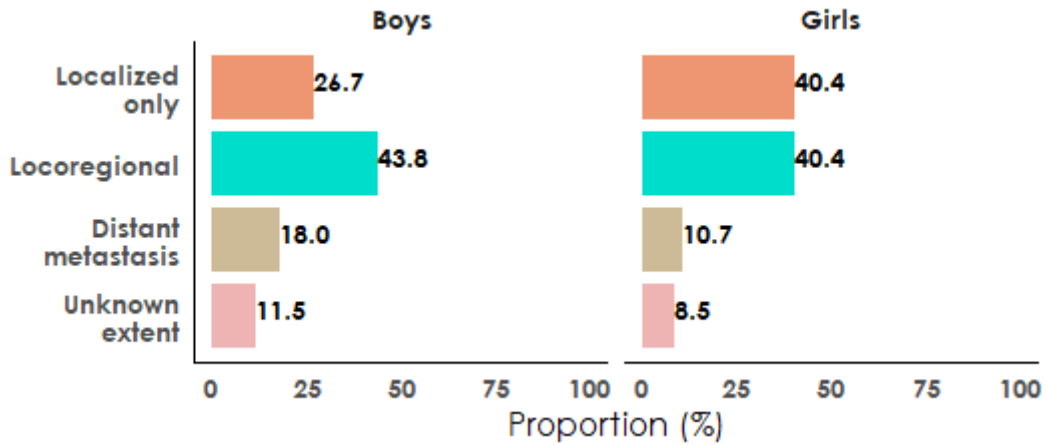


Figure B4.5.1: Clinical extent of disease (%) – Germ-cell trophoblastic & other gonadal neoplasms (0-19 years)

B4.5.2 Treatment according to clinical extent of disease

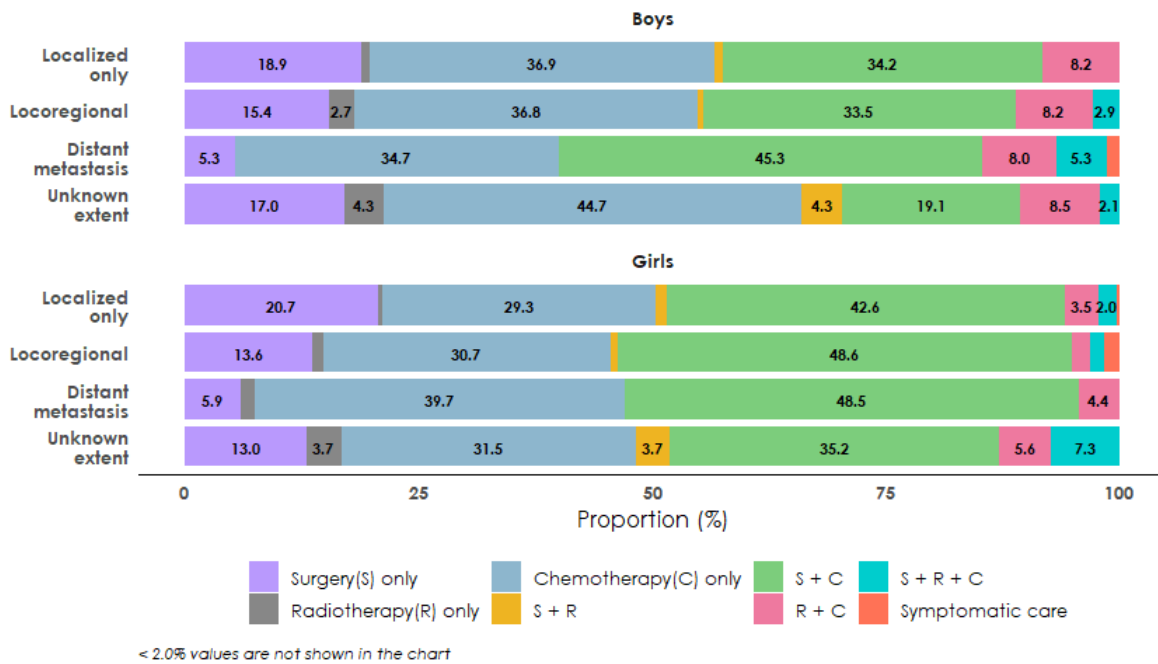


Figure B4.5.2: Type of treatment according to the clinical extent of disease (%) – Germ-cell trophoblastic & other gonadal neoplasms (0-19 years)

Key Findings

- Childhood cancers accounted for 7.9% of the total cancers.
- The proportion of reported childhood cancer cases is higher among boys compared to girls.
- Leukaemia was the predominant form of childhood cancer in both boys and girls in both age groups (0-14 and 0-19 years), of which lymphoid leukaemia was the predominant type.
- Close to 70% of the childhood kidney cancer cases were reported in the age group of 0-4 years. Nephroblastoma (Wilm's tumour) accounted for most kidney cancer cases (males 87.4%, females 83.8%).
- Over one-third of cancers of the brain and nervous system (32.5% in males and 36.5% in females) were recorded in the age group of 5-9 years. The most common type reported was Medulloblastoma.
- Among the solid tumours, the highest proportion of presentation with distant metastasis was observed for germ cell trophoblastic and gonadal neoplasms, followed by malignant bone tumours.
- More than half of the patients with retinoblastoma and hepatic tumours were treated with chemotherapy.
- Most of the patients with renal tumours, hepatic tumours, malignant bone tumours, and germ cell trophoblastic tumours were treated by a combination of surgery and chemotherapy or chemotherapy only.