

## Childhood acute lymphoblastic leukemia: survival in Campania region

C. Calì<sup>1</sup>, A. De Matteo<sup>2</sup>, P. Piga<sup>1</sup>, F. Savoia<sup>1</sup>, M. Sessa<sup>1</sup>, R. Parasole<sup>2,3</sup>, F. Vetrano<sup>1</sup>

<sup>1</sup>Childhood Cancer Registry of Campania, Santobono-Pausilipon Children's Hospital, Naples, Italy

<sup>2</sup>Department of Hemato-Oncology, Santobono-Pausilipon Children's Hospital, Naples, Italy

<sup>3</sup>Clinical and Translational Unit, Santobono-Pausilipon Children's Hospital, Naples, Italy

### Background

The acute lymphoblastic leukemia (ALL) is the most common childhood malignancy, accounting for 25% of all childhood cancers. This study aims to provide survival estimates in children and adolescents in Campania region for ALL and assess the effect of some of the most important prognostic factors.

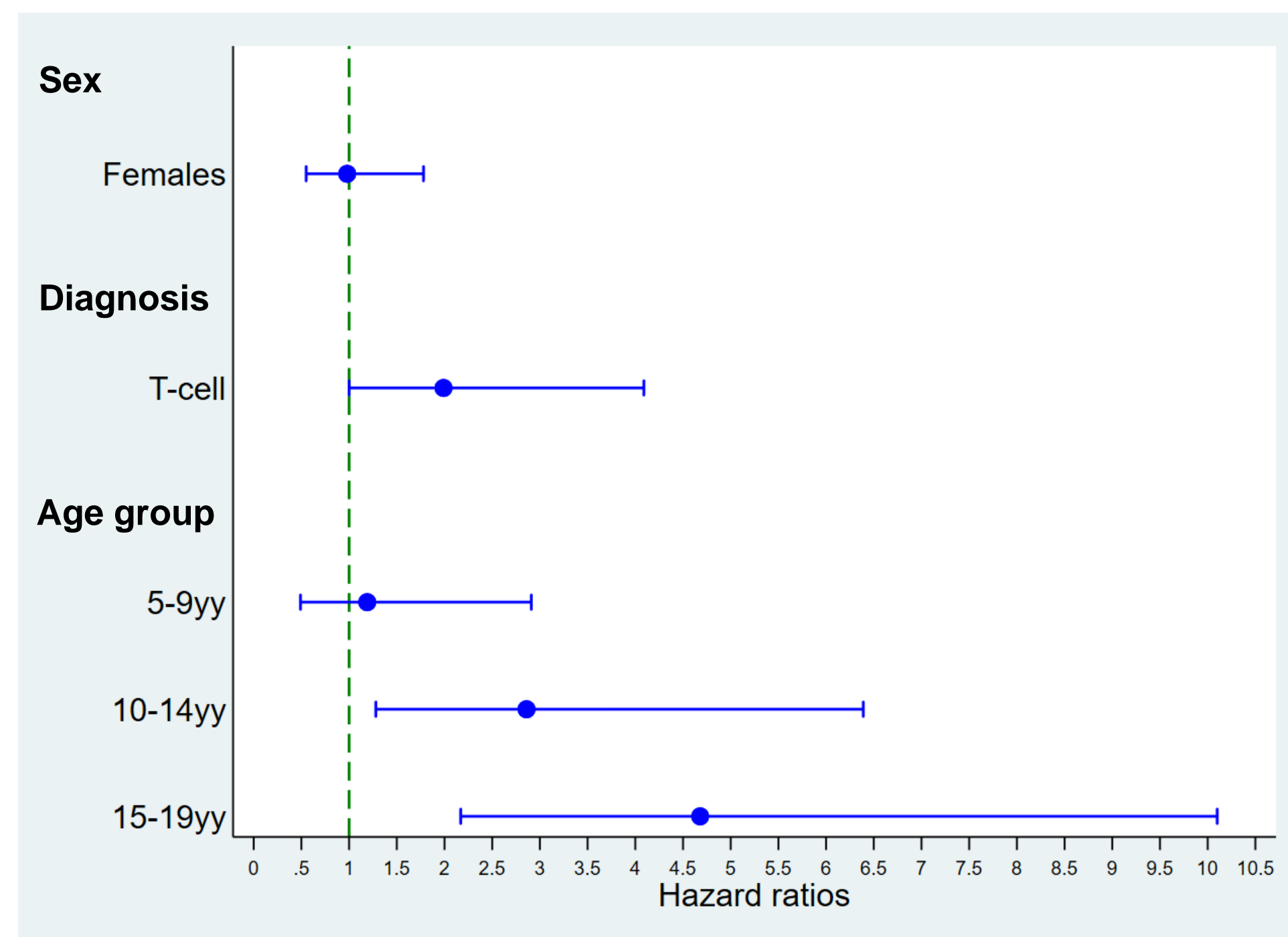
### Method

#### DATA

This population-based study included incident cases of ALL registered by Childhood Campania Cancer Registry in the period 2008-17 among children (0-14 years) and adolescents (15-19 years). The cases were selected through ICD-O-3 morphology codes. Vital status at the closing data (december 31, 2022) was obtained by active follow up.

#### STATISTICAL ANALISYS

Five-years observed survival (OS) with 95% confidence interval (IC) were calculated by Kaplan-Meier method by the cohort approach and the differences between groups were tested by log-rank test of equality. Multivariable Cox proportional hazards model (hazard ratio: HR) was performed to assess the prognostic factors for ALL.



**Fig. 2:** Multivariable Cox analysis for overall survival.

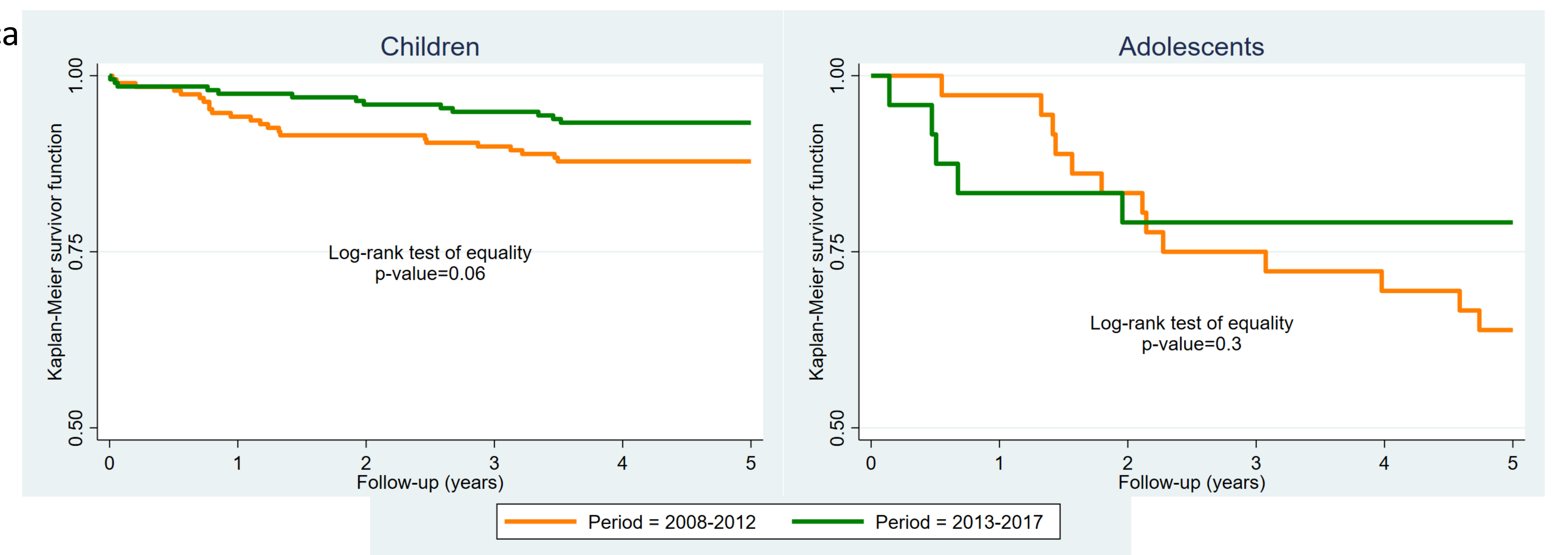
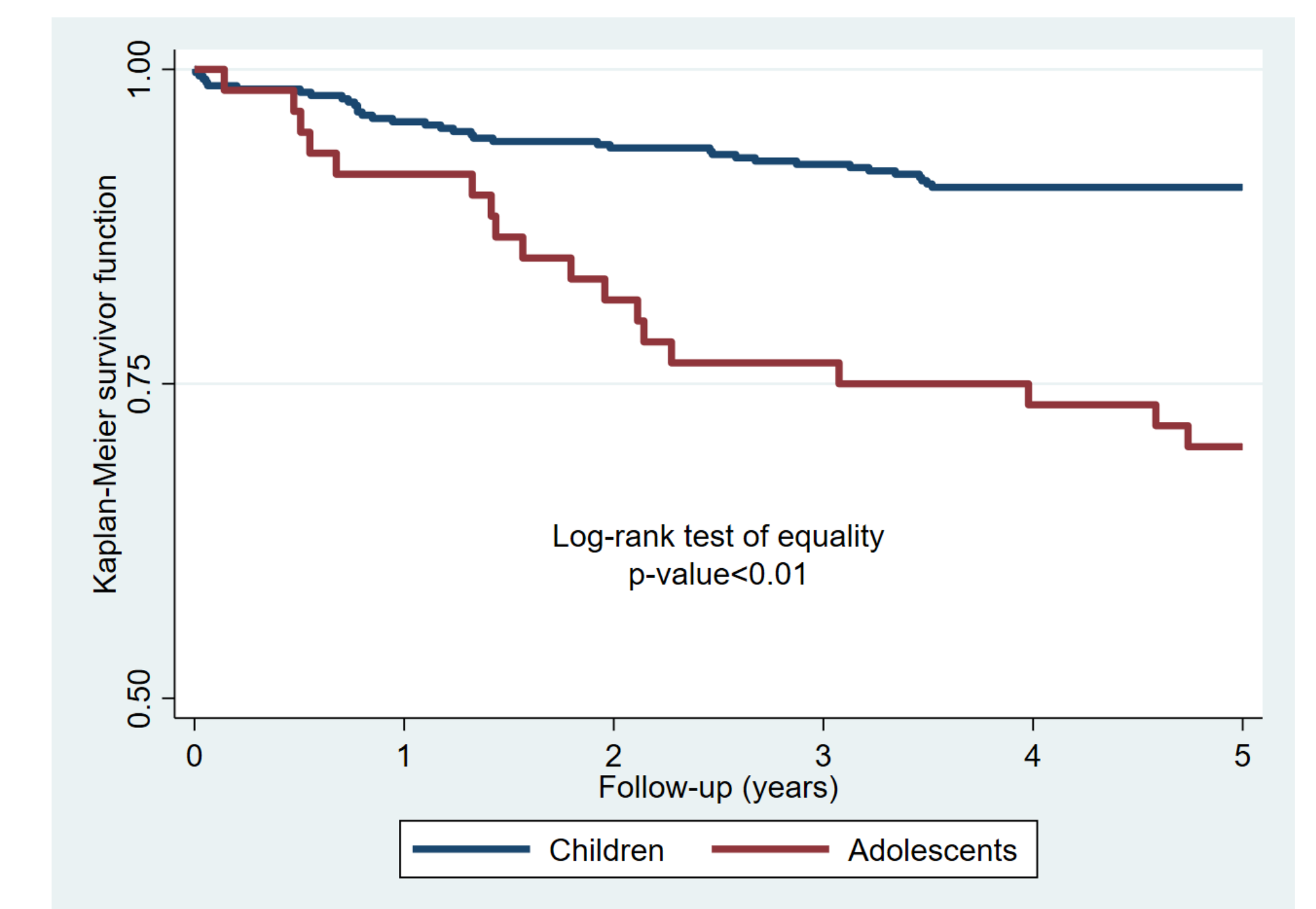
### Results

We registered 445 (M/F ratio 1.5) ALL cases (80% B-cell; 12% T-cell; 8% NOS), accounting for 69% of all leukemias. The 1-year and 3-years OS is 95% (95%CI: 93%-97%) and 90% (95%CI: 87%-93%), respectively. Overall 5-years OS was 88% (CI: 84%-91%), higher in children (91%; CI: 87% - 93%) than in adolescents (70%; CI: 57%-80%) with a statistical significance (p-value<0.01) (**Fig.1**).

After controlling for sex, diagnosis of T-cell ALL (HR: 1.99; CI: 1.00-4.09) and onset in the 10-14 (HR: 2.86; CI: 1.28-6.39) and 15-19 (HR: 4.68; CI: 2.17-10.10) age groups are negative survival predictors (**Fig. 2**)

The OS improves significantly when periods 2008-12 and 2013-17 were compared (p-value: 0.01). This difference is wider in adolescents (from 64% to 79%) than in children (from 87% to 93%), although without a statistical significance

**Fig. 1:** K-M survivor function for age at diagnosis, 2008-2017



**Fig. 3:** K-M survivor function for period at diagnosis for children (right) and adolescent (left)

### Conclusions

The study provides population-based survival estimates for children and adolescents with ALL in Campania, the most populous region of Southern Italy. The time trend shows an improvement in survival, most sustained by adolescents. This finding could be due to the more frequent use of paediatric protocols in this age group. Innovative and less toxic treatments, such as immunotherapy, might be explored in further studies as factors associated with the improvement of outcomes and, thus, consolidating this trend.