Utilisation of Healthcare in Children Born to Lymphoma Survivors

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Background

- Advances in lymphoma treatments lead to a rising population of young adult lymphoma survivors.
- Previous studies found an increased risk of non-severe birth complications in children born to lymphoma survivors.
- No studies investigated impacts of lymphoma and its treatments on paediatric outcomes in children born to lymphoma survivors.

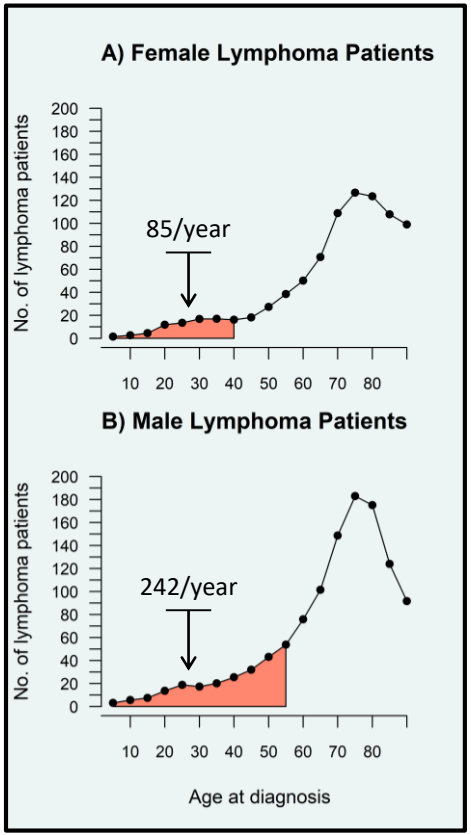

Figure 1 *Average annual number of newly diagnosed lymphoma patients in Sweden between 2012 and 2021. Source: NORDCAN*

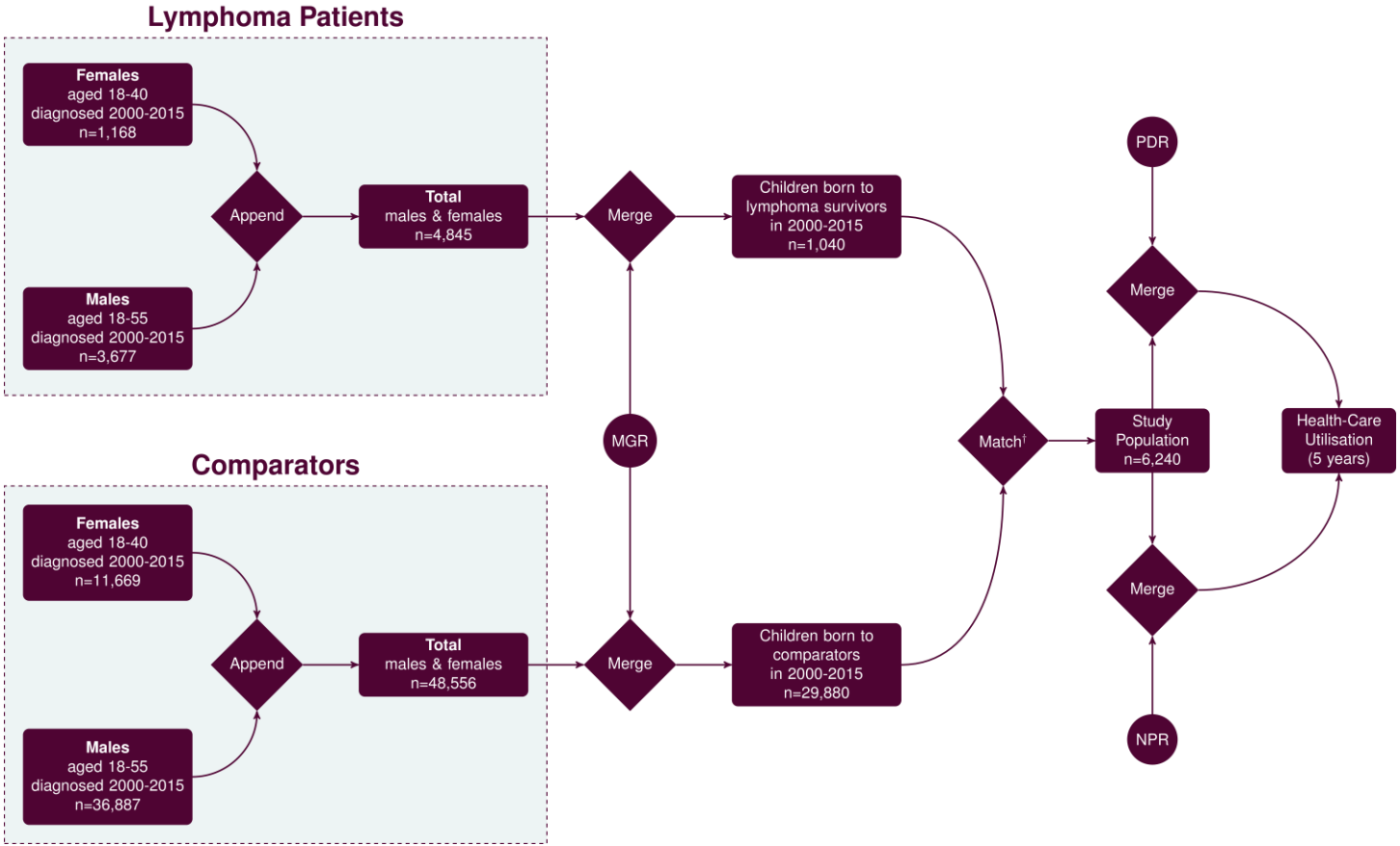

Figure 2 *Flow chart of the study population of children born to lymphoma survivors and matched comparators. †: Weighted matching on maternal age. MGR: Multi-generation register; PDR: Prescribed drug register; NPR: National in- and outpatient registers.*

Methods

- Estimated rates of in-/outpatient visits, and drug dispensations

- Explored patterns of healthcare utilisation using tree based scan statistics
  - → Method for comparing observed and expected proportion of exposed individuals in each disease class.

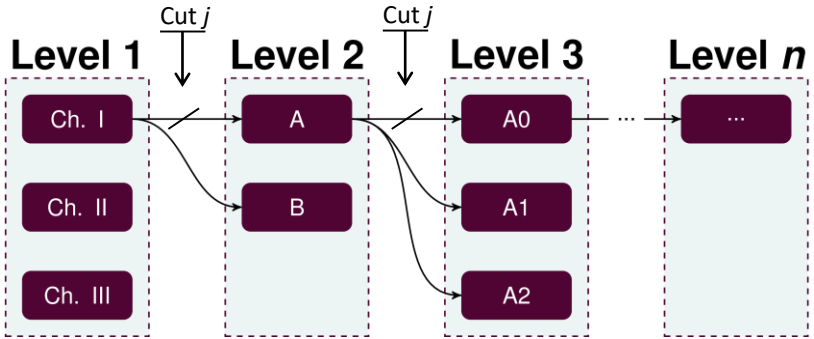

Figure 3 *Visualisation of the cuts on the ICD-10 tree. Ch: ICD Chapter*

Observed no. of exposed and unexposed in cut *j*

$$\mathrm{LLR}(j) = \ln\left[\frac{(q_{1j})^{n_{1j}}(q_{0j})^{n_{0j}}}{(p)^{n_{1j}}(1-p)^{n_{0j}}}\right] \times \mathrm{I}(q_{1j} > p)$$

Expected no. of exposed and unexposed in cut j

Results

	Children born to lymphoma survivors		Children born to comparators	
	No.	(%)	No.	(%)
Total	1040	(16.67)	5200	(83.33)
Females	496	(47.70)	2560	(49.20)
Mother's age at birth				
18-30	417	(42.20)	2128	(43.10)
30-40	570	(57.80)	2809	(56.90)
Parent with lymphoma				
Mother	491	(47.10)	-	-
Father	549	(52.70)	-	-

Table 1 *Baseline characteristics of the study population*

Results cont'd

	No. visits	Inc. rate (95%)	Rate ratio (95%)
Children born to lymphoma survivors	788	0.42 (0.39-0.44)	1.13 (1.04-1.22)
Children born to lymphoma-free parents	3842	0.37 (0.36-0.38)	Ref.

Table 2 *Rates of in-and outpatient visits in children born to lymphoma survivors and children born to lymphoma-free parents.*

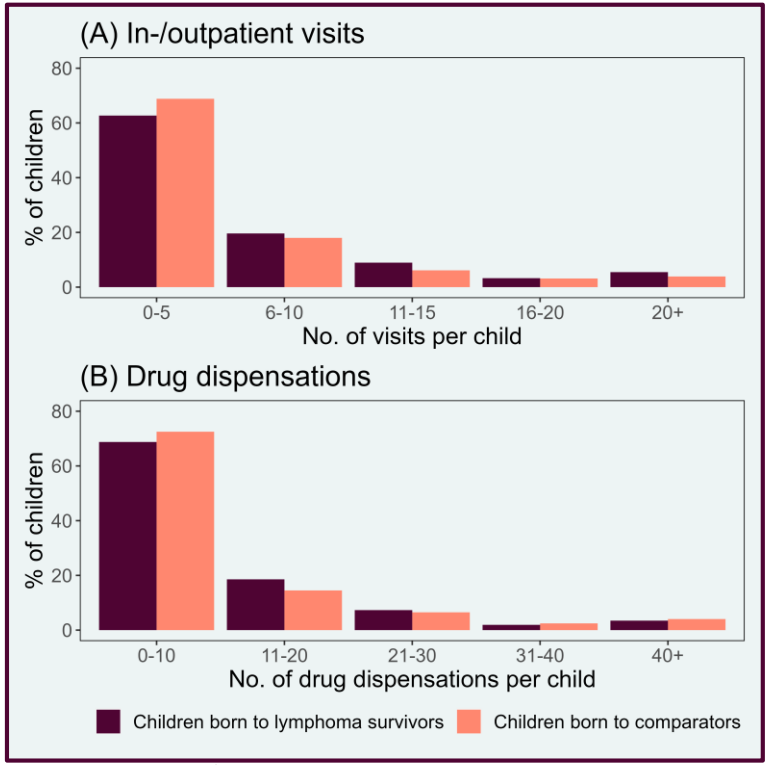

Figure 4 *No. of in-/outpatient visits and drug dispensations per child in children born to lymphoma survivors and children born to lymphoma-free parents.*

Results cont'd

	Children born to lymphoma survivors		Children born to comparators		Risk Ratio	Risk Difference	P-value[a]
	Events	5-year risk	Events	5-year risk			
Cuts (ICD-10 codes)							
D37-D48 - Neoplasms of uncertain or unknown behavior	7	0.67%	7	0.13%	5.00	0.54	0.571
P701 - Syndrome of infant of a diabetic mother	8	0.77%	11	0.21%	3.64	0.56	0.849
B25 - Cytomegaloviral disease	3	0.29%	1	0.02%	15.00	0.27	0.861
D569 - Thalassaemia, unspecified	3	0.29%	1	0.02%	15.00	0.27	0.861
Ch. VIII - Diseases of the ear and mastoid process	212	20.38%	870	16.73%	1.22	3.65	0.957
R70-R79 - Abnormal findings on examination of blood, without diagnosis	6	0.58%	7	0.13%	4.29	0.44	0.965
G00-G09 - Inflammatory diseases of the central nervous system	6	0.58%	7	0.13%	4.29	0.44	0.965
P211 - Mild and moderate birth asphyxia	13	1.25%	27	0.52%	2.41	0.73	0.968
G50-G59 - Nerve, nerve root and plexus disorders	5	0.48%	5	0.10%	5.00	0.38	0.974
P13 - Birth injury to skeleton	4	0.38%	3	0.06%	6.67	0.33	0.979

Table 3 *Table 1 The 10 most likely clusters of excess health-care utilisation on the ICD-10 tree obtained from the tree-based scan statistic ranked by their log-likelihood ratio. [a]P-values are obtained from Monte-Carlo simulations and are adjusted for multiple-testing. Abbreviations: Ch, ICD-10 chapter.*

Discussion

Strength

- Explorative approach
- Direct adjustment for multiple-testing

Limitations

- Statistical power

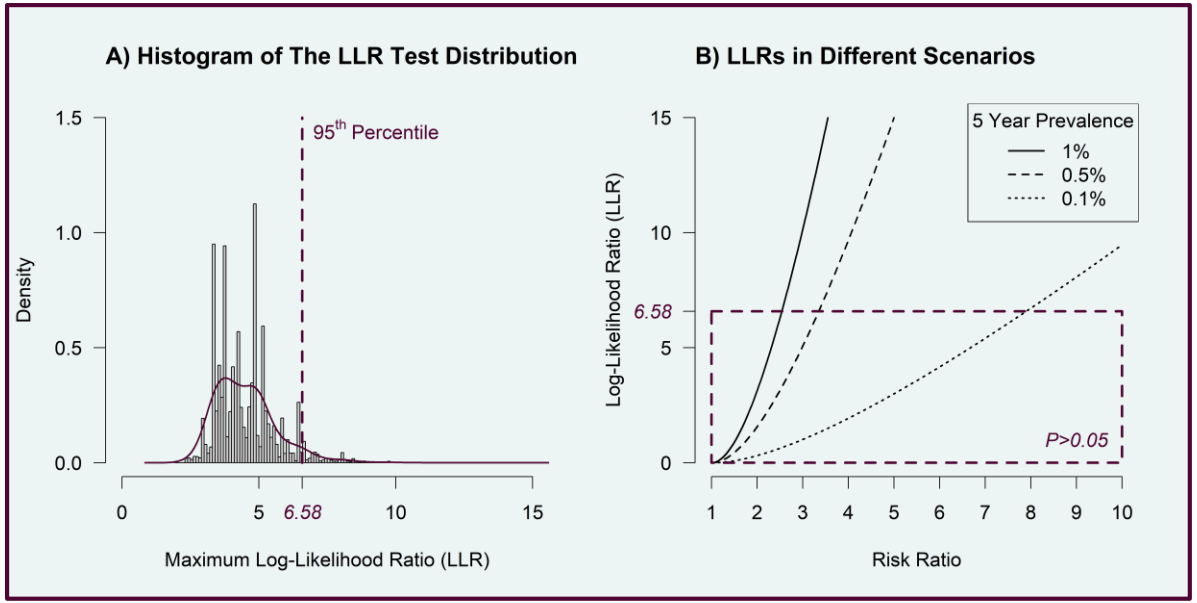

Figure 5 *A) LLR test distribution of the maximum LLRs in each Monte-Carlo Simulation highlighting the P<0.05 cut of at 6.58 (dashed line). B) LLRs across different scenarios assuming a study population of 1 020 exposed and 5 100 unexposed individuals.*

Conclusion

Children born to lymphoma survivors have an overall increased health care utilisation which is distributed across a panorama of different diseases.

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