

## Childhood Leukemia and 50 Hz Magnetic Fields: Findings from the Italian SETIL Case-Control Study

**Table S1.** Descriptive characteristics of cases and controls included in the unconditional logistic regression models analyses.

	Cases				Controls			
	ULR-1		ULR-2		ULR-1		ULR-2	
	N°	%	N°	%	N°	%	N°	%
<b>Sex</b>								
Male	281	53.8	290	53.7	426	54.0	447	53.9
Female	241	46.2	250	46.3	363	46.0	383	46.1
<b>Age at diagnosis years</b>								
[0, 2)	71	13.6	73	13.5	121	15.3	131	15.8
[2, 4)	189	36.2	196	36.3	263	33.3	272	32.8
[4, 6)	115	22.0	119	22.0	170	21.6	180	21.7
[6, 10]	147	28.2	152	28.2	235	29.8	247	29.8
<b>Father's education</b>								
Primary school (8 years)	255	48.8	269	49.8	332	42.1	359	43.3
High school (12-13 years)	212	40.6	216	40.0	331	42.0	341	41.1
University ( $\geq 15$ years)	52	10.0	52	9.6	121	15.3	125	15.1
Missing	3	0.57	3	0.56	5	0.63	5	0.60
<b>Mother's education</b>								
Primary school (8 years)	238	45.6	252	46.7	291	36.9	311	37.5
High school (12-13 years)	226	43.3	230	42.6	386	48.9	405	48.8
University ( $\geq 15$ years)	58	11.1	58	10.7	112	14.2	114	13.7
Missing	0	-	0	-	0	-	0	-
<b>Children in the family</b>								
1	144	27.6	149	27.6	209	26.5	228	27.5
2	279	53.4	288	53.3	436	55.3	453	54.6
3+	99	19.0	103	19.1	144	18.2	149	17.9
<b>Mother's smoking (during pregnancy)</b>								
Yes	58	11.1	59	10.9	87	11.0	90	10.8
No	464	88.9	481	89.1	701	88.9	738	88.9
Missing	0	-	0	-	1	0.13	2	0.24
<b>Child's exposure to second-hand smoke (at diagnosis)</b>								
Yes	160	30.6	168	31.1	237	30.0	253	30.5
No	360	69.0	370	68.5	547	69.3	571	68.8
Missing	2	0.38	2	0.37	5	0.63	6	0.72

Table S1. Cont.

	Cases				Controls			
	ULR-1		ULR-2		ULR-1		ULR-2	
	N°	%	N°	%	N°	%	N°	%
<b>Type of home (at interview and measurements)</b>								
Detached house	127	24.3	134	24.8	208	26.4	225	27.1
Apartment building	388	74.3	399	73.9	573	72.6	597	71.9
Missing	7	1.3	7	1.3	8	1.0	8	0.96

ULR-1 = first series of unconditional logistic regression analyses including matched and unmatched cases and controls from sets originally strictly matched on age; ULR-2 = second series of unconditional logistic regression analyses including matched and unmatched cases and controls, independent of compliance with the strict age-matching criterion.

**Table S2.** ELF-MF level ( $\mu\text{T}$ ) in the child's bedroom of cases and controls with valid measurements, according to different exposure metrics and methods of non-detect correction.

Metric	Correction	Cases (# 540)				Controls (# 830)			
		Mean	SD	Min	Max	Mean	SD	Min	Max
AM	None	0.0401	0.0865	0	1.609	0.0449	0.1208	0	2.524
	0.005	0.0412	0.0861	0.005	1.609	0.0459	0.1205	0.005	2.524
	0.007	0.0416	0.0860	0.007	1.609	0.0463	0.1204	0.007	2.524
GM	0.0001	0.0333	0.0789	0.0001	1.485	0.0375	0.1108	0.0001	2.499
	0.005	0.0356	0.0782	0.005	1.485	0.0395	0.1102	0.005	2.499
	0.007	0.0362	0.0780	0.007	1.485	0.0400	0.1101	0.007	2.499
P90	None	0.0621	0.1329	0	2.380	0.0694	0.1564	0	2.730
	0.0001	0.0622	0.1329	0.0001	2.380	0.0695	0.1564	0.0001	2.730
	0.005	0.0625	0.1327	0.005	2.380	0.0698	0.1563	0.005	2.730
	0.007	0.0627	0.1326	0.007	2.380	0.0699	0.1562	0.007	2.730
P95	None	0.0737	0.1585	0	2.910	0.0788	0.1651	0	2.810
	0.0001	0.0738	0.1585	0.0001	2.910	0.0789	0.1651	0.0001	2.810
	0.005	0.0740	0.1584	0.005	2.910	0.0790	0.1650	0.005	2.810
	0.007	0.0741	0.1583	0.007	2.910	0.0791	0.1650	0.007	2.810
P99	None	0.1186	0.3445	0	6.360	0.1099	0.2080	0	2.880
	0.0001	0.1187	0.3445	0.0001	6.360	0.1100	0.2080	0.0001	2.880
	0.005	0.1187	0.3444	0.005	6.360	0.1100	0.2079	0.005	2.880
	0.007	0.1187	0.3444	0.007	6.360	0.1100	0.2079	0.007	2.880

Valid measurements = made in homes inhabited one year before reference date & duration  $\geq 24$  h; Correction = value assigned to instantaneous measurements below the detection limit (0.01  $\mu\text{T}$ ); AM = arithmetic mean of instantaneous values from 24 to 48 h bedroom measurements; GM = geometric mean of instantaneous values from 24 to 48 h bedroom measurements; P90, P95, P99 = 90th, 95th and 99th percentiles of instantaneous values from 24 to 48 h bedroom measurements.

**Table S3.** Sensitivity analyses: ORs for acute lymphocytic leukemia (ALL) according to ELF-MF exposure (unconditional logistic regression models, adjusted for age, sex, region, and parents' educational level).

Exposure Metric	Level ( $\mu\text{T}$ )	ULR-1				ULR-2			
		Cases	Controls	OR	95% CI	Cases	Controls	OR	95% CI
AM continuous	per 1 $\mu\text{T}$ increase	453	680	0.98	0.23 4.15	470	719	0.79	0.19 3.22
AM categorical	$\leq 0.1$	410	626	1.00		423	656	1.00	
	(0.1–0.2]	30	32	1.50	0.89 2.51	34	37	1.49	0.91 2.43
	>0.2	13	22	0.93	0.46 1.90	13	26	0.81	0.41 1.60
GM categorical	$\leq 0.1$	419	635	1.00		434	666	1.00	
	(0.1–0.2]	27	29	1.48	0.86 2.56	29	34	1.38	0.82 2.32
	>0.2	7	16	0.68	0.27 1.68	7	19	0.59	0.24 1.42
P95 (3 levels)	$\leq 0.1$	373	547	1.00		385	572	1.00	
	(0.1–0.2]	42	86	0.72	0.48 1.07	43	92	0.69	0.47 1.03
	>0.2	38	47	1.25	0.79 1.96	42	55	1.19	0.78 1.83

ULR-1 = first series of unconditional logistic regression analyses including matched and unmatched cases and controls from sets originally strictly matched on age; ULR-2 = second series of unconditional logistic regression analyses including matched and unmatched cases and controls, independent of compliance with the strict age-matching criterion; AM = arithmetic mean of instantaneous values from individual 24 to 48 h measurements; GM = geometric mean of instantaneous values from individual 24 to 48 h measurements; P95 = 95th percentile of the distribution of values from individual 24 to 48 h measurements.

**Table S4.** Sensitivity analyses: ORs for childhood leukemia (all types), according to nighttime \* ELF-MF exposure (unconditional logistic regression models, adjusted for age, sex, region, and parents' educational level).

Exposure Metric	Level ( $\mu\text{T}$ )	ULR-1				ULR-2					
		Cases	Controls	OR	95% CI	Cases	Controls	OR	95% CI		
AM continuous	per 1 $\mu\text{T}$ increase	518	784	0.60	0.19	1.82	536	825	0.54	0.17	1.68
AM categorical	$\leq 0.1$	475	727	1.00			492	760	1.00		
	(0.1–0.2]	31	35	1.41	0.85	2.33	32	40	1.28	0.79	2.08
	>0.2	12	22	0.82	0.40	1.68	12	25	0.73	0.36	1.49
GM categorical	$\leq 0.1$	478	732	1.00			495	766	1.00		
	(0.1–0.2]	33	31	1.65	0.99	2.75	34	35	1.52	0.93	2.49
	>0.2	7	21	0.50	0.21	1.20	7	24	0.45	0.19	1.07
P95 (3 levels)	$\leq 0.1$	448	673	1.00			461	703	1.00		
	(0.1–0.2]	45	66	1.07	0.72	1.61	50	71	1.11	0.75	1.64
	>0.2	25	45	0.82	0.49	1.37	25	51	0.74	0.45	1.23
P95 (4 levels)	$\leq 0.1$	448	673	1.00			461	703	1.00		
	(0.1–0.2]	45	66	1.07	0.72	1.61	50	71	1.11	0.75	1.64
	(0.2–0.3]	16	19	1.27	0.64	2.51	16	21	1.18	0.60	2.30
	>0.3	9	26	0.51	0.23	1.10	9	30	0.45	0.21	0.96

Nighttime = 10 pm–5:59 am; ULR-1 = first series of unconditional logistic regression analyses including matched and unmatched cases and controls from sets originally strictly matched on age; ULR-2 = second series of unconditional logistic regression analyses including matched and unmatched cases and controls, independent of compliance with the strict age-matching criterion; AM = arithmetic mean of instantaneous values from individual 24 to 48 h measurements; GM = geometric mean of instantaneous values from individual 24 to 48 h measurements; P95 = 95th percentile of the distribution of values from individual 24 to 48 h measurements.

**Table S5.** Sensitivity analyses: ORs for childhood acute lymphocytic leukemia (ALL) according to nighttime \* ELF-MF exposure (unconditional logistic regression models, adjusted for age, sex, region, and parents' educational level).

Exposure metric	Level ( $\mu\text{T}$ )	ULR-1				ULR-2					
		Cases	Controls	OR	95% CI	Cases	Controls	OR	95% CI		
AM continuous	per 1 $\mu\text{T}$ increase	452	680	0.68	0.18	2.57	469	719	0.59	0.16	2.20
AM categorical	$\leq 0.1$	415	630	1.00			431	661	1.00		
	(0.1–0.2]	26	30	1.37	0.79	2.37	27	35	1.24	0.73	2.09
	>0.2	11	20	0.82	0.39	1.75	11	23	0.73	0.35	1.53
GM categorical	$\leq 0.1$	416	634	1.00			432	666	1.00		
	(0.1–0.2]	29	27	1.66	0.96	2.86	30	31	1.51	0.90	2.55
	>0.2	7	19	0.56	0.23	1.35	7	22	0.50	0.21	1.18
P95 (3 levels)	$\leq 0.1$	393	582	1.00			405	610	1.00		
	(0.1–0.2]	37	61	0.93	0.60	1.44	42	66	0.99	0.65	1.49
	>0.2	22	37	0.88	0.51	1.53	22	43	0.78	0.46	1.34

Nighttime = 10 pm–5:59 am; ULR-1 = first series of unconditional logistic regression analyses including matched and unmatched cases and controls from sets originally strictly matched on age; ULR-2 = second series of unconditional logistic regression analyses including matched and unmatched cases and controls, independent of compliance with the strict age-matching criterion; AM = arithmetic mean of instantaneous values from individual 24 to 48 h measurements; GM = geometric mean of instantaneous values from individual 24 to 48 h measurements; P95 = 95th percentile of the distribution of values from individual 24 to 48 h measurements.

**Table S6.** Sensitivity analyses—method of non-detect correction: ORs for childhood leukemia (all types), according to ELF-MF exposure (unconditional logistic regression models, adjusted for age, sex, region, and parents' educational level).

Exposure Metric	Correction	Level ( $\mu\text{T}$ )	Cases	Controls	OR	95% CI	
AM	None	$\leq 0.1$	482	753	1.00		
		(0.1–0.2]	41	43	1.55	0.99	2.44
		>0.2	14	29	0.77	0.40	1.48
AM	0.005	$\leq 0.1$	482	753	1.00		
		(0.1–0.2]	41	43	1.55	0.99	2.44
		>0.2	14	29	0.77	0.40	1.48
GM	0.0001	$\leq 0.1$	494	765	1.00		
		(0.1–0.2]	35	39	1.46	0.91	2.36
		>0.2	8	21	0.60	0.26	2.36
GM	0.005	$\leq 0.1$	493	765	1.00		
		(0.1–0.2]	36	39	1.51	0.94	2.42
		>0.2	8	21	0.60	0.26	1.37
P95	None	$\leq 0.1$	435	659	1.00		
		(0.1–0.2]	54	101	0.81	0.57	1.16
		>0.2	48	65	1.15	0.77	1.72
P95	0.0001	$\leq 0.1$	426	643	1.00		
		(0.1–0.2]	58	111	0.78	0.55	1.10
		>0.2	53	71	1.16	0.79	1.70
P95	0.005	$\leq 0.1$	435	659	1.00		
		(0.1–0.2]	54	101	0.81	0.57	1.16
		>0.2	48	65	1.15	0.77	1.72

Correction = value assigned to instantaneous measurements below the detection limit (0.01  $\mu\text{T}$ ); AM = arithmetic mean of instantaneous values from individual 24 to 48 h measurements; GM = geometric mean of instantaneous values from individual 24 to 48 h measurements; P95 = 95th percentile of the distribution of values from individual 24 to 48 h measurements.

**Table S7.** Sensitivity analyses—exclusion of six cases with Down syndrome: ORs for childhood leukemia (all types) according to ELF-MF exposure (unconditional logistic regression models, adjusted for age, sex, region, and parents' educational level).

Exposure Metric	Level ( $\mu\text{T}$ )	Cases	Controls	OR	95% CI	
AM continuous	per 1 $\mu\text{T}$ increase	534	830	0.68	0.22	2.11
AM categorical	$\leq 0.1$	477	753	1	-	-
	(0.1–0.2]	40	43	1.53	0.97	2.41
	>0.2	14	29	0.78	0.41	1.51
GM categorical	$\leq 0.1$	489	756	1	-	-
	(0.1–0.2]	34	39	1.44	0.89	2.33
	>0.2	8	21	0.60	0.26	1.39

**Table S7.** *Cont.*

Exposure Metric	Level ( $\mu\text{T}$ )	Cases	Controls	OR	95% CI	
P95 (3 levels)	$\leq 0.1$	431	659	1	-	-
	(0.1–0.2]	54	101	0.82	0.58	1.176
	>0.2	46	65	1.11	0.74	1.67
P95 (4 levels)	$\leq 0.1$	431	659	1	-	-
	(0.1–0.2]	54	101	0.83	0.58	1.18
	(0.2–0.3]	27	25	1.77	1.00	3.12
	>0.3	19	40	0.73	0.41	1.28

AM = arithmetic mean of instantaneous values from individual 24 to 48 h measurements; GM = geometric mean of instantaneous values from individual 24 to 48 h measurements; P95 = 95th percentile of the distribution of values from individual 24 to 48 h measurements.

**Table S8.** Sensitivity analyses—further restriction to measurements lasting  $\geq 48$  h: ORs for childhood leukemia (all types) according to ELF-MF exposure (unconditional logistic regression models, adjusted for age, sex, region, and parents' educational level).

Exposure Metric	Level ( $\mu\text{T}$ )	Cases	Controls	OR	95% CI	
AM continuous	per 1 $\mu\text{T}$ increase	431	652	0.63	0.19	2.13
AM categorical	$\leq 0.1$	394	603	1.00		
	(0.1–0.2]	29	30	1.56	0.91	2.66
	>0.2	8	19	0.64	0.27	1.49
GM categorical	$\leq 0.1$	403	608	1.00		
	(0.1–0.2]	24	30	1.26	0.72	2.21
	>0.2	4	14	0.43	0.14	1.34
P95 (3 levels)	$\leq 0.1$	355	531	1.00		
	(0.1–0.2]	43	74	0.90	0.60	1.34
	>0.2	33	47	1.07	0.67	1.72
P95 (4 levels)	$\leq 0.1$	355	531	1.00		
	(0.1–0.2]	43	74	0.90	0.60	1.35
	(0.2–0.3]	18	19	1.52	0.78	2.96
	>0.3	15	28	0.78	0.41	1.50

AM = arithmetic mean of instantaneous values from individual 24–48 h measurements; GM = geometric mean of instantaneous values from individual 24 to 48 h measurements; P95 = 95th percentile of the distribution of values from individual 24 to 48 h measurements.

**Table S9.** Sensitivity analyses—further restriction to measurements with sampling interval of 30 s: ORs for childhood leukemia (all types) according to ELF-MF exposure (unconditional logistic regression models, adjusted for age, sex, region, and parents' educational level).

Exposure Metric	Level ( $\mu\text{T}$ )	Cases	Controls	OR	95% CI	
AM continuous	per 1 $\mu\text{T}$ increase	531	822	0.66	0.21	2.05
AM categorical	$\leq 0.1$	477	750	1.00		
	(0.1–0.2]	41	43	1.56	0.99	2.45
	>0.2	13	29	0.72	0.37	1.41
GM categorical	$\leq 0.1$	489	762	1.00		
	(0.1–0.2]	34	39	1.43	0.88	2.31
	>0.2	8	21	0.60	0.26	1.37
P95 (3 levels)	$\leq 0.1$	430	656	1.00		
	(0.1–0.2]	53	101	0.80	0.56	1.15
	>0.2	48	65	1.16	0.78	1.72
P95 (4 levels)	$\leq 0.1$	430	656	1.00		
	(0.1–0.2]	53	101	0.81	0.56	1.15
	(0.2–0.3]	28	25	1.82	1.03	3.19
	>0.3	20	40	0.76	0.44	1.33

AM = arithmetic mean of instantaneous values from individual 24 to 48 h measurements; GM = geometric mean of instantaneous values from individual 24 to 48 h measurements; P95 = 95th percentile of the distribution of values from individual 24 to 48 h measurements.

**Table S10.** Sensitivity analyses—further restriction to measurements made during the week-end: ORs for childhood leukemia (all types) according to ELF-MF exposure (unconditional logistic regression models, adjusted for age, sex, region, and parents' educational level).

Exposure Metric	Level ( $\mu\text{T}$ )	Cases	Controls	OR	95% CI	
AM continuous	per 1 $\mu\text{T}$ increase	309	450	0.94	0.27	3.27
AM categorical	$\leq 0.1$	279	415	1.00		
	(0.1–0.2]	21	23	1.42	0.76	2.66
	>0.2	9	12	1.14	0.47	2.78
GM categorical	$\leq 0.1$	280	418	1.00		
	(0.1–0.2]	25	22	1.78	0.97	3.26
	>0.2	4	10	0.64	0.19	2.09
P95 (3 levels)	$\leq 0.1$	259	367	1.00		
	(0.1–0.2]	25	45	0.78	0.46	1.32
	>0.2	25	38	0.95	0.55	1.64



Table S10. Cont.

Exposure Metric	Level ( $\mu\text{T}$ )	Cases	Controls	OR	95% CI	
P95 (4 levels)	$\leq 0.1$	259	367	1.00		
	(0.1–0.2]	25	45	0.79	0.47	1.33
	(0.2–0.3]	16	15	1.61	0.76	3.39
	$> 0.3$	9	23	0.56	0.25	1.23

AM = arithmetic mean of instantaneous values from individual 24 to 48 h measurements; GM = geometric mean of instantaneous values from individual 24 to 48 h measurements; P95 = 95th percentile of the distribution of values from individual 24 to 48 h measurements.

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