



# Low Adherence to Dietary Recommendations in Adult Childhood Cancer Survivors

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## Aims

Poor diet may increase the risk that childhood cancer survivors (CCS) will suffer from chronic disease. We aimed to:

- I. compare dietary adherence between CCS, their siblings, and the Swiss population.
- II. identify predictors of adherence.
- III. assess the association between adherence and cardiovascular disease (CVD) risk profiles.

## Methods

**Study population:** the Swiss Childhood Cancer Survivor Study (1) consists of a questionnaire based survey among all 5-year CCS, diagnosed between 1976-2005, who were registered in the Swiss Childhood Cancer Registry, and were 16-45 years old at the time of the survey.

**Statistical analysis:** we used multivariable logistic regression adjusted for socio-demographic, lifestyle and clinical factors, to assess predictors of dietary adherence. Control groups were standardised according to CLS' socio-demographic characteristics. We sorted CCS into four groups based on type of treatment (anthracyclines, chest irradiation, a combination, or neither).

## Results

We compared dietary adherence between 1,864 CCS (response rate 70%), 698 siblings (response rate 57%) and 8,258 participants in the Swiss Health Survey 2007, a representative survey of the general population (response rate 66%) (Table 1).

**Table 1. Characteristics of study population**

	CCS n= 1,864	Siblings n= 698	General population n= 8,258
Female, n (%)	886 (48)	410 (47)	4,372 (47)
Mean age at survey, years (range)	26 (16-45)	28 (16-45)	33 (16-45)
Mean age at diagnosis, years (range)	8.8 (0-21)	n.a.	n.a.

**Table 2. Predictors for adherence among CCS**

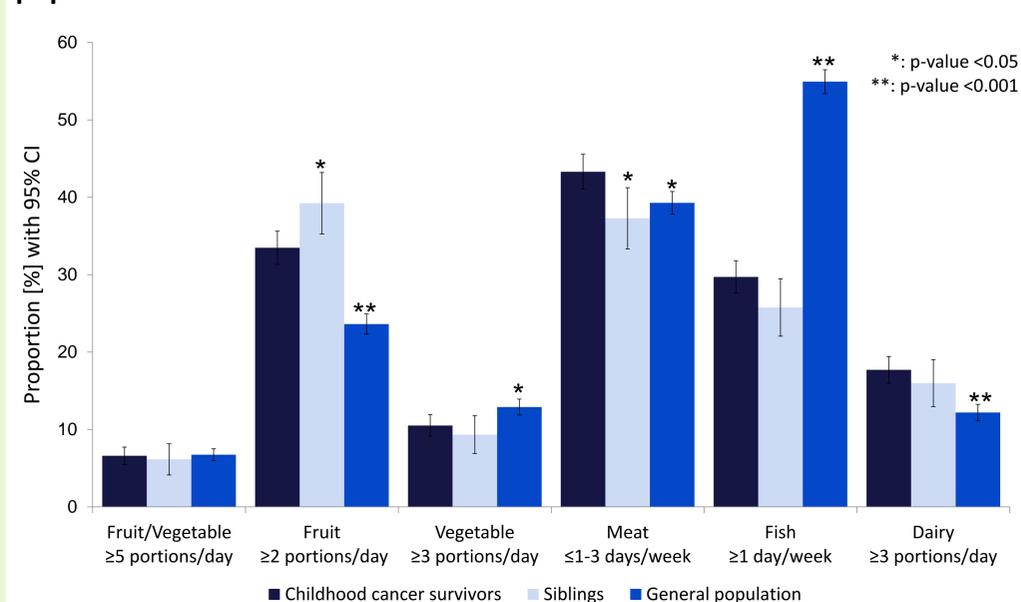
	Fruit ≥2 portions/day	Vegetable ≥3 portions/day	Meat ≤1-3 days/week	Fish ≥1 day/week	Dairy ≥3 portions/day
Female gender	2.18 (1.77; 2.69)	1.67 (1.21; 2.29)	3.09 (2.52; 3.79)	0.95 (0.76; 1.18)	0.63 (0.49; 0.82)
Migration background	1.31 (1.02; 1.68)	1.92 (1.36; 2.70)	1.49 (1.16; 1.90)	1.72 (1.34; 2.21)	0.70 (0.51; 0.97)
French region*	1.31 (1.04; 1.65)	1.13 (0.80; 1.59)	1.18 (0.94; 1.49)	1.98 (1.57; 2.49)	0.76 (0.57; 1.03)
Italian region*	0.75 (0.41; 1.37)	0.75 (0.29; 1.95)	2.08 (1.17; 3.69)	2.25 (1.30; 3.90)	0.80 (0.38; 1.68)
Sport	1.60 (1.30; 1.97)	1.18 (0.86; 1.61)	1.26 (1.03; 1.55)	1.33 (1.07; 1.65)	1.11 (0.86; 1.43)

\* Compared to the German speaking region of Switzerland

### I. Adherence to dietary recommendations in CCS and control groups

Dietary adherence was comparable in CCS and control groups and generally low: only 43% of the CCS met the recommended dietary intakes for meat, 34% for fruit, 30% for fish, 18% for dairy products, 11% for vegetables, and 7% for combined fruit and vegetables (Figure 1).

**Figure 1. Dietary adherence among CCS, their siblings and the general population**



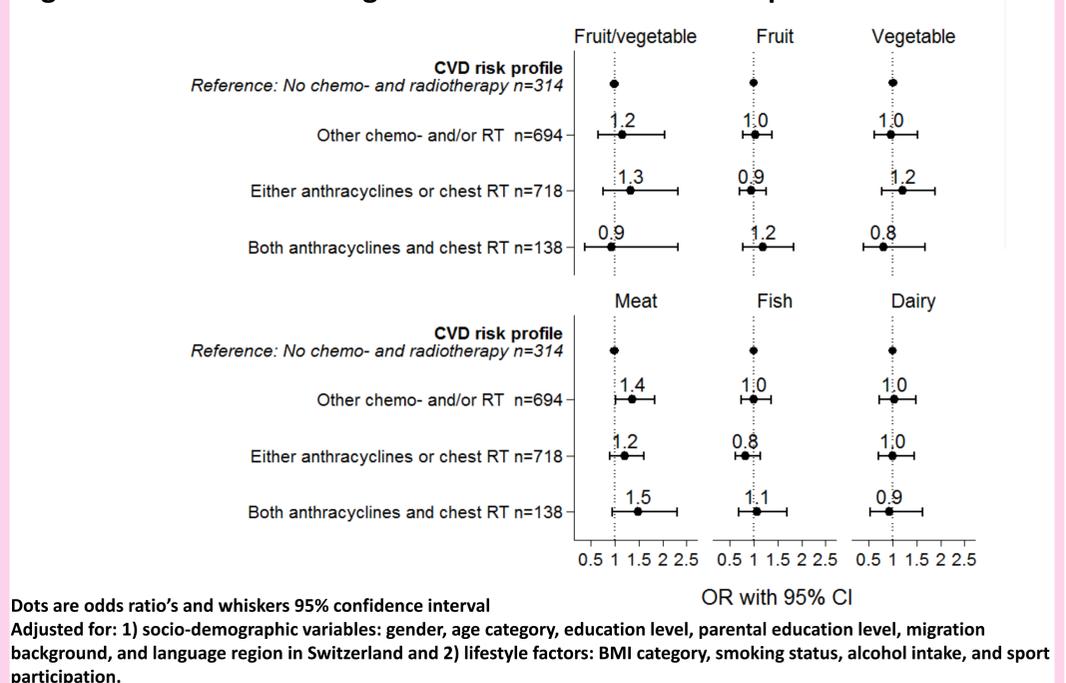
### II. Predictors of dietary adherence

Predictors of adherence were similar in CCS and both comparison groups: gender, parental education, migration background, language region in Switzerland, smoking, alcohol consumption, and sport participation (Table 2). Cancer related factors were not associated with adherence.

### III. Association between adherence and CVD risk profiles

Adherence did not vary between CCS with different CVD risk profiles (p-value>0.10): even CCS who were considered to have the highest CVD risk (both anthracyclines and chest irradiation) did not adhere better (Figure 2).

**Figure 2. Adherence among CCS over 4 different CVD risk profiles**



## Conclusions

**CCS adhere poorly to dietary recommendations and in similar proportions as their siblings and the general population. CCS may be more susceptible to health problems caused by poor nutrition, thus awareness of the importance of a healthy diet should be raised to prevent chronic diseases like CVD.**

<sup>1</sup> Kuehni, C. E., International Journal of Epidemiology, 2012; 41:1553-1564