Iron intakes and dietary sources in two year olds from the Cork BASELINE Birth Cohort Study

E. K. McCarthy[1], C. Ní Chaoimh[1], D. M. Murray[2,3], L. C. Kenny[3], J. O'B. Hourihane[2] and M. Kiely[1,3]

[1]*Maternal and Infant Nutrition Research Group, School of Food and Nutritional Sciences, University College Cork,* [2]*Department of Paediatrics and Child Health, University College Cork and* [3]*The Irish Centre for Fetal and Neonatal Translational Research, Department of Obstetrics and Gynaecology, University College Cork*

Decreased iron intakes can impact on childhood growth and development and cause iron deficiency anaemia, with the highest prevalence of anaemia among preschool-age children[1]. The aim of the current analysis was to quantify iron intakes and dietary sources in the diets of two year olds in Ireland.

Food consumption data was collected in the form of a two day weighed food diary at the 24-month assessment of participants in the Cork BASELINE Birth Cohort Study. Data for 468 participants (median [IQR] age of 2·1 [2·1, 2·2] years) was analysed using the nutritional analysis software WISP© (Tinuviel Software), which includes UK and Irish food composition data (EuroFIR)[2].

Of the 468 participants, 51% were male and the majority of their mothers were Caucasian (99%) and had a third level education (89%). The mean daily intake (MDI) of iron in the total population was 6·8 mg and 30% of children had intakes below the EAR of 5·3 mg[3]. The main sources of iron were breakfast cereals, breads, infant formula/growing-up milks (GUM) and meats, see table. Intakes from the base diet (no fortification) were low as non-consumers of any iron-fortified products, mainly infant formula/GUM and fortified breakfast cereals, had mean iron intakes ∼2·0 mg lower than consumers of iron-fortified products (4·9 vs. 6·9 mg). Consumers of iron-fortified products also had a lower prevalence of inadequate iron intakes (<EAR) compared to non-consumers (27 vs. 65%). Intakes at the 97·5th centile were 12·5 mg/day.

From a population perspective, no significant differences in demographic and maternal characteristics were detected between those with adequate iron intakes and those with inadequate intakes. Those with adequate iron intakes had higher energy, protein, carbohydrate and total fat intakes, with increased intakes (g/day) of breads, breakfast cereals, and meats also, compared to those with inadequate iron intakes (all $P < 0.001$). Of those with adequate iron intakes, 95% were consumers of iron-fortified products compared to 79% of those with inadequate iron intakes ($P < 0.001$).

	Total Population n 468		Formula/GUM Consumers n 96		Formula/GUM Non Consumers n 372		Iron-Fortified Product Consumers n 422		Iron-Fortified Product No-Consumers n 46	
	%	mg/day	%	mg/day	%	mg/day	%	mg/day	%	mg/day
Break fast Cereals	31	2·10	18	1·61	36	2·22	32	2·24	16	0·81
Breads and Grains	14	0·92	10	0·96	15	0·91	13	0·93	18	0·88
Formula/Growing Up Milks	11	0·74	40	3·63	0	0·00	12	0·83	0	0·00
Meat and Meat Products	10	0·67	6	0·56	11	0·70	9	0·66	17	0·78
Biscuits and Cakes	7	0·46	6	0·57	7	0·43	7	0·48	6	0·32
Fruit	6	0·40	4	0·38	7	0·40	6	0·40	7	0·35
Vegetables	5	0·37	4	0·36	7	0·38	5	0·37	9	0·43
Milk, Yoghurts, Chesses	4	0·25	2	0·23	4	0·26	4	0·25	5	0·25
Pulse incl. Baked Beans	4	0·30	2	0·22	5	0·32	4	0·29	8	0·40
Nutritional Supplements	1	0·06	1	0·05	1	0·06	1	0·04	5	0·26
Other	7	0·48	7	0·56	7	0·45	7	0·47	9	0·51
Mean Daily Iron Intake (mg)	**6·8**		**9·2**		**6·2**		**6·9**		**4·9**	

Inadequate intakes of iron were present in nearly a third of two year olds. Iron-fortified products such as breakfast cereals and infant formula/GUM were important sources of iron. As these are predominately non-heme iron sources, the study of the implications of this on iron status are planned in this population group.

1. World Health Organisation (2008)
2. www.eurofir.eu
3. Department of Health, UK (1991)

Proceedings of the Nutrition Society