

Article title: Intakes of whole grain in an Italian sample of children, adolescents and adults

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**Table A** - Dietary reference values used for the PANDiet index

Items	Adequacy score		Moderation score	
	Reference value <sup>1</sup>	Variability <sup>2</sup>	Reference value <sup>1</sup>	Variability <sup>2</sup>
Total carbohydrate (% of energy <sup>3</sup> )	45	0%	60	0%
Total Fat (% of energy <sup>3</sup> )	20	0%	35	0%
SFA % (% of energy <sup>3</sup> )	-	-	10	15%
Cholesterol (mg)		-	300	15%
Sodium (mg)	-	-	2000	15%
Protein (g/kg body weight)	0.71	13.8%		
PUFA (% of energy <sup>3</sup> )	5	15%	Tolerable Upper Intake	
Dietary fibre (g)	25	10%		
Vitamin A (µg)	400 or 500	15%	3000	
Thiamine (mg)	0.9 or 1	15%		
Riboflavin (mg)	1.1 or 1.3	15%		
Niacin (mg)	14	15%	900	
Vitamin B <sub>6</sub> (mg)	1.1 or 1.4	15%	25	
Folate (µg)	1000	10%		
Vitamin B <sub>12</sub> (µg)	2	10%		
Vitamin C (mg)	60 or 75	15%		
Vitamin D (µg)	10	15%		
Vitamin E (mg)	12 or 13	15%	300	
Calcium (mg)	800 or 1000	15%	2500/2000	
Magnesium (mg)	170	10%	250	
Zinc (mg)	7 or 9	15%	25	
Phosphorous (mg)	580	15%		
Potassium (mg)	3900	15%		
Iron (mg)	Based on tables by IoM <sup>2</sup>			

<sup>1</sup>Source: Dietary reference Intake of nutrients and energy for the Italian population [43]<sup>2</sup> Source: Institute of Medicine Food and Nutrition Board 2001. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Washington, DC: National Academy Press.<sup>3</sup> as % of energy excluded alcohol

SFA = Saturated Fatty Acids

PUFA = Polyunsaturated Fatty Acids

**Table B** - PANDiet index for non-consumer of whole grain and across tertiles of mean daily whole grain intakes in adults/older adults

	Non-consumers		Consumers						p*
			0.1 to 5.7 g/d		5.8 to 14.9 g/d		≥15 g/d		
	n. 2189		n. 212		n. 217		n. 212		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
PANDiet	59.23 <sup>b</sup>	8.7	61.12 <sup>a</sup>	9.03	60.23	9.09	61.83 <sup>a</sup>	8.93	<.0001
Moderation	52.95	19.62	53.18	19.93	54.13	18.97	51.81	18.23	NS
Total Carbohydrates	0.98	0.11	1.00	0.03	0.96	0.14	0.98	0.12	NS
Total Fats	0.37	0.40	0.37	0.41	0.35	0.40	0.38	0.41	NS
SFA	0.34	0.37	0.33	0.37	0.31	0.37	0.31	0.36	NS
Cholesterol	0.60 <sup>b</sup>	0.40	0.62	0.40	0.70 <sup>a</sup>	0.38	0.68 <sup>a</sup>	0.38	0.0002
Sodium	0.62	0.35	0.65	0.34	0.67	0.32	0.66	0.33	NS
Adequacy	65.51 <sup>6</sup>	15.11	69.10 <sup>c</sup>	13.62	66.34 <sup>b</sup>	14.46	71.86	12.46	<.0001
Proteins	0.91 <sup>b</sup>	0.19	0.92 <sup>a</sup>	0.17	0.88	0.23	0.94	0.14	0.0092
Total Carbohydrates	0.62	0.41	0.64	0.40	0.60	0.41	0.62	0.41	NS
Total Fats	1.00	0.05	1.00	0.00	0.99	0.05	0.99	0.07	NS
PUFA	0.92	0.17	0.92	0.16	0.90	0.20	0.93	0.15	NS
Dietary fibre	0.19 <sup>b</sup>	0.26	0.22 <sup>b</sup>	0.27	0.21 <sup>b</sup>	0.27	0.33 <sup>a</sup>	0.32	<.0001
Vitamin A	0.74 <sup>b</sup>	0.29	0.79	0.25	0.78	0.27	0.81 <sup>a</sup>	0.27	0.0004
Thiamine	0.48 <sup>b</sup>	0.33	0.56 <sup>a</sup>	0.33	0.54	0.33	0.61 <sup>a</sup>	0.31	<.0001
Riboflavin	0.63 <sup>b</sup>	0.33	0.77 <sup>c</sup>	0.26	0.69 <sup>b</sup>	0.31	0.77 <sup>a</sup>	0.27	<.0001
Niacin	0.73	0.29	0.73	0.30	0.70	0.30	0.78	0.24	NS
Vitamin B <sub>6</sub>	0.86 <sup>b</sup>	0.22	0.90	0.19	0.87	0.23	0.92 <sup>a</sup>	0.16	0.0002
Folate	0.49 <sup>b</sup>	0.37	0.56	0.35	0.48 <sup>b</sup>	0.35	0.61 <sup>a</sup>	0.35	<.0001
Vitamin B <sub>12</sub>	0.89	0.18	0.91	0.14	0.88	0.20	0.90	0.17	NS
Vitamin C	0.70 <sup>b</sup>	0.33	0.78 <sup>a</sup>	0.27	0.77	0.28	0.80 <sup>a</sup>	0.28	<.0001
Vitamin D	0.03	0.11	0.04	0.12	0.03	0.11	0.03	0.09	NS
Vitamin E	0.46 <sup>b</sup>	0.33	0.52 <sup>a</sup>	0.33	0.46	0.33	0.51	0.33	0.0149
Calcium	0.37 <sup>b</sup>	0.34	0.44 <sup>c</sup>	0.34	0.41 <sup>b</sup>	0.34	0.53 <sup>a</sup>	0.36	<.0001
Magnesium	0.89 <sup>b</sup>	0.22	0.91	0.20	0.90 <sup>b</sup>	0.20	0.97 <sup>a</sup>	0.10	<.0001
Zinc	0.80 <sup>b</sup>	0.25	0.85 <sup>c</sup>	0.23	0.79 <sup>b</sup>	0.26	0.88 <sup>a</sup>	0.18	<.0001
Phosphorous	0.97 <sup>b</sup>	0.10	0.98	0.09	0.96 <sup>b</sup>	0.10	0.99 <sup>a</sup>	0.03	0.0005
Potassium	0.19 <sup>b</sup>	0.24	0.22	0.27	0.21	0.25	0.26 <sup>a</sup>	0.27	0.0002
Iron	0.88 <sup>a</sup>	0.21	0.86 <sup>b,d</sup>	0.22	0.87 <sup>b,d</sup>	0.20	0.92 <sup>a</sup>	0.14	0.0008

<sup>a,b,c,d</sup> Mean values with unlike superscript letters were significantly different according to Dunn's *post hoc* test for pairwise comparison, p <0.05

\* p values from the Kruskal-Wallis test, non-consumers vs tertiles of consumption

SD = Standard Deviation

NS = non significant

SFA = Saturated Fatty Acids

PUFA = Polyunsaturated Fatty Acids

**Table C** - Mean adequacy for non-consumer of whole grain and across tertiles of mean daily wholegrain intakes in children/adolescents.

	Non-consumers		Consumers						p*
			0.1 to 2.7 g/d		2.8 to 8.7 g/d		≥8.8 g/d		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
	n. 336		n. 35		n. 35		n. 34		
Fats	1.25	0.17	1.26	0.11	1.20	0.13	1.21	0.18	NS
SFA	1.16	0.22	1.19	0.21	1.18	0.17	1.21	0.30	NS
Total sugars	1.08	0.33	1.09	0.36	1.09	0.26	1.16	0.37	NS
Dietary fibre	0.88	0.22	0.91	0.19	0.93	0.21	1.02	0.38	NS
Riboflavin	1.79	0.74	2.07	0.69	1.88	0.49	1.92	0.74	0.0461
Thiamine	1.46	0.56	1.73	0.64	1.55	0.42	1.64	0.64	0.0397
Vitamin C	2.40	1.74	2.80	1.90	2.77	1.66	2.65	2.12	NS
Vitamin B <sub>12</sub>	4.11 <sup>a</sup>	3.22	5.68 <sup>b</sup>	5.19	4.11	2.24	4.28	2.55	0.0248
Vitamin A	2.09	2.57	1.96	0.90	2.09	1.46	2.41	3.01	NS
Calcium	0.81	0.31	0.93	0.36	0.89	0.24	0.89	0.31	NS
Iron	1.54 <sup>a</sup>	0.63	1.90 <sup>b</sup>	0.77	1.77	0.57	1.69	0.58	0.0037

<sup>a,b,c</sup> Mean values with unlike superscript letters were significantly different according to Dunn's *post hoc* test for pairwise comparison,  $p < 0.05$

\*p values from the Kruskal-Wallis test, non-consumers vs tertiles of consumption

SD = Standard Deviation

NS = non significant

SFA = Saturated Fatty Acids

**Table D1** - Daily food groups intakes (g/d) for non-consumer of whole grain and across tertiles of mean daily whole grain intakes in adults/older adults

	Non-consumers		Consumers						p*
	Mean	SD	0.1 to 5.7 g/d		5.7 to 14.9 g/d		≥ 15 g/d		
			Mean	SD	Mean	SD	Mean	SD	
	n. 2189		n. 212		n. 217		n. 212		
Cereals and cereal products	263.0 <sup>a</sup>	103.9	258.8 <sup>ab</sup>	116.7	232.5 <sup>b</sup>	98.5	251.0 <sup>ab</sup>	92.6	0.0002
Legumes, fresh and processed	11.1	23.5	12.7	25.2	10.8	17.9	14.1	26.6	NS
Vegetables, fresh and processed	221.2	108.1	214.2	105.1	226.5	113.3	239.1	151.2	NS
Potatoes, tubers and products	51.4	55.3	55.0	59.3	45.0	53.8	48.7	55.1	NS
Fruit, fresh and processed	210.1 <sup>a</sup>	158.8	237.3 <sup>b</sup>	161.1	255.0 <sup>b</sup>	162.5	258.9 <sup>b</sup>	167.3	<.0001
Meat, meat products	113.2 <sup>a</sup>	63.0	107.4 <sup>ab</sup>	57.8	97.5 <sup>b</sup>	59.1	101.8 <sup>b</sup>	79.3	<.0001
Fish, seafood and their products	45.6	52.3	42.9	46.3	43.8	47.8	42.9	46.8	NS
Milk, milk products	178.6 <sup>a</sup>	120.1	213.8 <sup>b</sup>	112.8	204.9 <sup>b</sup>	124.1	236.2 <sup>b</sup>	142.3	<.0001
Oils & fats	41.7 <sup>a</sup>	16.2	42.4 <sup>ab</sup>	18.1	37.4 <sup>b</sup>	15.6	40.1 <sup>ab</sup>	16.9	0.002
Alcoholic beverages	113.3 <sup>a</sup>	163.0	79.9 <sup>ab</sup>	126.0	81.0 <sup>b</sup>	121.2	89.3 <sup>ab</sup>	132.6	0.002
Sweet products	31.8	32.5	35.0	30.6	35.4	34.7	34.7	31.4	NS
Meal substitutes	0.0	1.2	0.0	0.0	0.1	2.1	0.0	0.0	NS
Eggs	21.8	24.8	19.3	22.5	18.3	22.3	20.1	26.1	NS
Water and other non alcoholic beverages	824.7 <sup>a</sup>	421.3	959.6 <sup>b</sup>	461.8	939.9 <sup>b</sup>	431.7	960.8 <sup>b</sup>	498.2	<.0001
Miscellaneous	3.1	3.8	3.5	3.9	3.4	4.1	3.9	4.7	NS

<sup>a,b,c</sup> Mean values with unlike superscript letters were significantly different according to Dunn's *post hoc* test for pairwise comparison, p <0.05

\*p values from the Kruskal-Wallis test, non-consumers vs tertiles of consumption

SD = Standard Deviation

NS = non significant

**Table D2** - Daily food groups intakes (g/d) for non-consumer of whole grain and across tertiles of mean daily wholegrain intakes in children/adolescents

	Non-consumers		Consumers						P*
			0.1 to 2.7 g/d		2.8 to 8.7 g/d		≥8.8 g/d		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
	n. 336		n.35		n.35		n.34		
Cereals and cereal products	264.6	111.1	285.4	96.0	268.9	77.2	313.3	103.6	NS
Legumes, fresh and processed	10.2	18.8	12.8	22.3	15.4	26.6	11.8	18.0	NS
Vegetables, fresh and processed	151.3	85.8	176.4	89.8	173.1	88.0	185.9	92.5	NS
Potatoes, tubers and products	55.9 <sup>ab</sup>	54.7	50.1	55.0	39.9 <sup>a</sup>	53.6	39.4 <sup>ab</sup>	49.7	0.011
Fruit, fresh and processed	146.2	103.8	163.0	140.5	159.4	131.9	141.6	135.2	NS
Meat, meat products	111.7	54.5	118.3	59.8	103.9	69.3	126.6	53.1	0.043
Fish, seafood and their products	44.1	49.6	48.7	58.2	71.5	77.4	31.4	41.2	NS
Milk, milk products	234.5	122.2	267.0	119.8	275.8	126.1	267.2	103.1	NS
Oils & fats	37.4	15.6	39.3	16.1	41.0	14.6	40.0	17.1	NS
Alcoholic beverages	1.9	11.8	1.4	8.0	0.0	0.1	2.9	12.0	NS
Sweet products	38.4	37.5	44.4	41.8	42.3	38.8	42.4	41.6	NS
Meal substitutes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NS
Eggs	20.1 <sup>ab</sup>	23.3	21.8	28.0	22.0 <sup>ab</sup>	33.5	27.8 <sup>a</sup>	24.8	0.011
Water and other non alcoholic beverages	757.7	373.9	804.4	384.9	798.5	366.0	857.2	495.5	NS
Miscellaneous	2.5 <sup>a</sup>	3.3	3.4	3.4	3.0 <sup>ab</sup>	3.3	4.1 <sup>b</sup>	4.0	0.007

<sup>a,b,c</sup> Mean values with unlike superscript letters were significantly different according to Dunn's *post hoc* test for pairwise comparison,  $p < 0.05$

\*p values from the Kruskal-Wallis test, non-consumers vs tertiles of consumption

SD = Standard Deviation

NS = non significant