RNI

Recommended Nutrient Intakes for Malaysia

A Report of the Technical Working Group on Nutritional Guidelines

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National Coordinating Committee on Food and Nutrition
Ministry of Health Malaysia
Putrajaya
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Contents

Foreword

Good nutritional status that leads to an optimal quality of life is basic to sustainable development. As Malaysia forges ahead towards Vision 2020, it is imperative for us to consider the nutritional well-being of its population as a matter of everyday concern and practice. The need to assess energy and nutrient requirements is a never-ending task, judging from the ongoing debates on the role of nutrients in health and diseases.

Recommended Nutrient Intakes (RNI) are the level of intake of essential nutrients that, on the basis of scientific knowledge, are judged to be adequate to meet the known nutrient needs of practically all healthy persons. The RNIs are essential standards against which nutrients in food eaten can be assessed for its adequacy in any given population. It is also widely used in planning and procuring food supplies, in nutrition education and intervention programmes, in development of diet manuals and in food products development.

New scientific knowledge in nutritional sciences generated over the past three decades has prompted the Technical Working Group (TWG) on Nutritional Guidelines under the auspices of the National Coordinating Committee on Food and Nutrition (NCCFN), Ministry of Health Malaysia, to revise the RDI which was compiled in 1975.

A comprehensive compilation on the new RNI has been prepared and circulated to relevant Ministries, agencies and individuals for their comments and inputs. It is hoped that this new RNI will enable the government, organisations and industries to better plan, monitor and evaluate nutrition programmes and policies in the future.

On behalf of the Ministry of Health Malaysia, I wish to congratulate the Technical Working Group and the various Sub-committees who drafted the background papers, the participants of the Consensus Workshop, and all those who have assisted in producing this valuable document.

TAN SRI DATU DR HAJI MOHAMAD TAHA BIN ARIF
Director-General of Health
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21 February 2005

Preface

The recommended dietary intakes (RDI) were compiled in 1975 based on numerous WHO Technical Report Series published between 1962 and 1973. New scientific knowledge in nutritional sciences generated over the past three decades has prompted the Technical Working Group (TWG) on Nutritional Guidelines under the auspicies of the National Coordinating Committee on Food and Nutrition (NCCFN), Ministry of Health Malaysia, to revise the RDI.

At the first meeting of the TWG held on 20 September 2002, three Sub-committees were established, namely the Technical Sub-committee for Energy and Macronutrients, Technical Sub-committee on Vitamins, and Technical Sub-committee on Minerals. The main tasks of the sub-committees were to review the "state of the art" of current dietary recommendations and to update the RDI. The Sub-Committees were guided by several recent publications as a key source of reference namely, FAO (2004) for energy requirements, FAO/WHO (2002) and IOM-FNB (1997-2002) reports for vitamin and mineral requirements. Besides these publications, data from several local studies were also used in the revised edition.

Over a period of two years, the TWG had produced a draft recommendation that was presented in a 2-day Consensus Workshop held on 17 – 18 December 2004. Some 60 participants mainly nutritionists and dietitians representing the academia, research institutes, several related Ministries, professional organisations and the food industries provided input to improve further the draft recommendation. The revised draft was then sent out to relevant agencies and individuals for comments and inputs prior to its publication.

The revised recommendation differs in a number of ways from the 1975 recommendation as summarised below:

- A new nomenclature has been adopted and the recommendation shall be known as Recommended Nutrient Intakes (RNI) for Malaysia.
- For age-categories, infants are grouped into 0 – 5 months and 6 – 11 months. Adults are divided into two groups (19 – 29 years; 30 – 59 years) instead of four, while elderly are those 60 years and above.
- Reference body weights are established based on local studies.
- Additional nutrients are included.

Besides energy and protein recommendations, the RNI also provides dietary recommendations for fats and carbohydrates including dietary fibre. For energy requirements, body weights were obtained from local studies and the physical activity level values for moderate physical activity were adopted from FAO (2004). All basal metabolic rate values were derived from FAO (2004) with the exception of adolescents and adults for whom local data are available.

The new RNI has retained seven of the eight vitamins reported in the 1975 recommendation, with the omission of vitamin B12 and the inclusion of vitamin E. Besides calcium and iron, the new RNI provide recommendations for three other minerals; namely iodine, zinc and selenium. For iron, the new RNI provides two recommendations based on bioavailibility levels of 10% (diets of the poor or vegetarian) and 15% (western diets).

The new RNI also provide brief write-ups on deficiencies, food sources, factors affecting requirements, setting requirements and recommended intakes, and toxicity and tolerable upper intake (UL) levels for each nutrient.

The TWG on Nutritional Guidelines are confident that this revised RNI will enable the government, organisations and industries to better plan, monitor and evaluate nutrition programmes and policies towards achieving optimal nutritional well-being of the Malaysian population.

I would like to thank the members of the TWG, the Chairpersons and members of Sub-committees who drafted the background papers, the Consensus Workshop participants, the assessors and all those that assisted in producing this landmark report.

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Recommended Nutrient Intakes for Malaysia 2005: Summary Table

	Age	Energy kcal	Protein g	Calcium mg	Iron mg		Iodine µg	Zinc mg	Selenium µg
					Bioavailability				
					10%	15%			
Infants (boys)	0 – 5 months	560	11	300 (bf) 400 (ff)	*b*	*b*	90	1.1 (bf) 2.8 (ff)	6
	6 – 11 months	640	12	400	9	6	120	3.7	9
Infants (girls)	0 – 5 months	550	11	300 (bf) 400 (ff)	*b*	*b*	90	1.1 (bf) 2.8 (ff)	6
	6 – 11 months	630	12	400	9	6	120	3.7	9
Children (boys)	1 – 3 years	980	17	500	6	4	72	4.1	17
	4 – 6 years	1340	23	600	6	4	108	5.1	21
	7 – 9 years	1780	32	700	9	6	104	5.8	22
Children (girls)	1 – 3 years	910	17	500	6	4	72	4.1	17
	4 – 6 years	1290	23	600	6	4	108	5.1	21
	7 – 9 years	1590	32	700	9	6	104	5.8	22
Adolescent (boys)	10 – 12 years	2180	45	1000	15	10	144	9.0	28
	13 – 14 years	2690	63	1000	15	10	106	9.0	28
	15 years	2690	63	1000	19	12	106	9.0	28
	16 – 18 years	2840	65	1000	19	12	118	9.0	28
Adolescent (girls)	10 – 12 years	1990	46	1000	14 (nm) 33 (m)	9 (nm) 22 (m)	148	7.5	23
	13 – 14 years	2180	55	1000	14 (nm) 33 (m)	9 (nm) 22 (m)	98	7.5	23
	15 years	2180	55	1000	31	21	98	7.5	23
	16 – 18 years	2050	54	1000	31	21	104	7.5	23
Men	19 – 29 years	2440	62	800	14	9	124	6.7	33
	30 – 50 years	2460	62	800	14	9	124	6.7	33
	51 – 59 years	2460	62	800	14	9	124	6.7	33
	60 – 65 years	2010	59	800	14	9	124	6.7	33
	> 65 years	2010	59	1000	14	9	114	6.2	29
Women	19 – 29 years	2000	55	800	29	20	110	4.9	25
	30 – 50 years	2180	55	800	29	20	110	4.9	25
	51 – 59 years	2180	55	1000	11	8	110	4.9	25
	60 – 65 years	1780	51	1000	11	8	110	4.9	25
	> 65 years	1780	51	1000	11	8	98	4.3	23
Pregnancy	1st trimester	+ 0	+ 7.5	1000	29	20	200	5.5	25
	2nd trimester	+ 360	+ 7.5	1000	*c*	*c*	200	7.0	27
	3rd trimester	+ 470	+ 7.5	1000	*c*	*c*	200	10.0	29
Lactation	1st 6 months	+ 500	+ 20	1000	15	10	200	9.5 (1-3 mths) 8.8 (4-6 mths)	34
	2nd 6 months	*a*	+ 15	1000	15 (nm) 32 (m)	10 (nm) 21 (m)	200	7.2	39

Note: (1) All RNIs are for daily intakes

(2) For all age categories, the ending age extends till just before the beginning age of the subsequent category. For example, for the category 0-5 months, 5 months include up to 5.9 months

a – no recommendations. Energy requirement depends on amount of breastmilk produced

b – no recommendations. Neonatal iron stores are sufficient to meet iron requirement for first 6 months in full-term infants. Premature infants and low birth weight infants require additional iron

c – iron supplements in table form recommended for all pregnant women. In the non-anaemic pregnant woman, daily supplements of 100 mg iron given during second half of pregnancy are adequate. In anaemic women, higher doses are usually required.

bf – breast fed, ff – formula fed

nm– non-menstruating, m - menstruating

Recommended Nutrient Intakes for Malaysia 2005: Summary Table (continued)

	Age	Thiamin mg	Riboflavin mg	Niacin mg NE	Folate µg	Vitamin C mg	Vitamin A µg	Vitamin D µg	Vitamin E mg
Infants (boys)	0 – 5 months	0.2	0.3	2	80	25	375	5	3
	6 – 11 months	0.3	0.4	4	80	30	400	5	3
Infants (girls)	0 – 5 months	0.2	0.3	2	80	25	375	5	3
	6 – 11 months	0.3	0.4	4	80	30	400	5	3
Children (boys)	1 – 3 years	0.5	0.5	6	160	30	400	5	5
	4 – 6 years	0.6	0.6	8	200	30	450	5	5
	7 – 9 years	0.9	0.9	12	300	35	500	5	7
Children (girls)	1 – 3 years	0.5	0.5	6	160	30	400	5	5
	4 – 6 years	0.6	0.6	8	200	30	450	5	5
	7 – 9 years	0.9	0.9	12	300	35	500	5	7
Adolescent (boys)	10 – 12 years	1.2	1.3	16	400	65	600	5	10
	13 – 14 years	1.2	1.3	16	400	65	600	5	10
	15 years	1.2	1.3	16	400	65	600	5	10
	16 – 18 years	1.2	1.3	16	400	65	600	5	10
Adolescent (girls)	10 – 12 years	1.1	1.0	16	400	65	600	5	7.5
	13 – 14 years	1.1	1.0	16	400	65	600	5	7.5
	15 years	1.1	1.0	16	400	65	600	5	7.5
	16 – 18 years	1.1	1.0	16	400	65	600	5	7.5
Men	19 – 29 years	1.2	1.3	16	400	70	600	5	10
	30 – 50 years	1.2	1.3	16	400	70	600	5	10
	51 – 59 years	1.2	1.3	16	400	70	600	10	10
	60 – 65 years	1.2	1.3	16	400	70	600	10	10
	> 65 years	1.2	1.3	16	400	70	600	15	10
Women	19 – 29 years	1.1	1.1	14	400	70	500	5	7.5
	30 – 50 years	1.1	1.1	14	400	70	500	5	7.5
	51 – 59 years	1.1	1.1	14	400	70	500	10	7.5
	60 – 65 years	1.1	1.1	14	400	70	500	10	7.5
	> 65 years	1.1	1.1	14	400	70	600	15	7.5
Pregnancy	1st trimester	1.4	1.4	18	600	80	800	5	7.5
	2nd trimester	1.4	1.4	18	600	80	800	5	7.5
	3rd trimester	1.4	1.4	18	600	80	800	5	7.5
Lactation	1st 6 months	1.5	1.6	17	500	95	850	5	7.5
	2nd 6 months	1.5	1.6	17	500	95	850	5	7.5