# **Contents**

	-			
lict	ot co	mtri	butors	xxiv
1.151	o	<i>7</i> 1 1 L L L L L	Duttora	AAIV

4.3 Vitamin A 29
4.4 B-vitamins 31
4.5 Vitamin C 32
4.6 Vitamin D 32
4.7 Minerals 33

	List O	Contributors xxiv
1	Let's §	get started 1
	Jennife	er N. Nielsen and Victoria J. Quinn
	1.1	Nutrition rights and responsibilities 1
	1.2	Why we need to work together 2
	1.3	How the book is arranged 4
	Resour	rces 4
2	Nutri	ents and how the body uses them 5
	Tendekayi Henry Gadaga and Ann Burgess	
	2.1	What food is made of 5
	2.2	How the body uses nutrients 6
	2.3	Using nutrients to build the body 7
	2.4	Using nutrients to help metabolism 8
	2.5	Using nutrients to produce energy 8
	2.6	Using nutrients to protect the body against infection $10$
	2.7	Health-related non-nutrient compounds 10
	Trainin	ng exercises 10
	Resour	ces 10
3	Macr	onutrients, water, and energy 11
	Tende	kayi Henry Gadaga and Ann Burgess
	3.1	Carbohydrates 11
	3.2	Fats and oils 13
	3.3	Protein 17
	3.4	Energy needs 21
	3.5	Water 26
	Trainin	ng exercises 27
	Resour	ces 27
4	Micro	onutrients 29
	Jessica	Blankenship and Louise Sserunjogi
	4.1	What micronutrients are 29
	4.2	Vitamins 29

- 4.8 Iron 33
- 4.9 Iodine 36
- 4.10 Zinc 36
- 4.11 Calcium 37
- 4.12 Fluoride 37
- 4.13 Sodium and potassium 38
- 4.14 Antioxidants 38

Training exercises 38

Resources 39

## 5 Foods, food groups, and food paths

Joyce Kinabo, Mawuli Sablah, and Ann Burgess

- 5.1 Food groups 40
- 5.2 Commercially made and ready-to-eat foods and snacks 47
- 5.3 Household food security and the food paths 47

Training exercises 49

Resources 50

### 6 Processing and fortifying foods

Tendekayi Henry Gadaga and Mawuli Sablah

- 6.1 What is food processing? 51
- 6.2 Nutritional effects of processing 51
- 6.3 Processing by heat 51
- 6.4 Drying 53
- 6.5 Milling 54
- 6.6 Fermenting and souring 55
- 6.7 Other processing methods 56
- 6.8 What is fortification? 56

Training exercises 57

Resources 57

### 7 Keeping food safe and clean

Tendekayi Henry Gadaga and Daisy R. Nyaga

- 7.1 Safe and unsafe food and water 58
- 7.2 How food and water become contaminated 58
- 7.3 Helping people to keep food and water clean and safe 61

Training exercises 64

Resources 64

### **8** Buying food

Ann Burgess and Helena Pachón

- 8.1 Advising on food buying 65
- 8.2 Which foods are good value for money? 65
- 8.3 Helping households to budget for food 68

Training exercises 70

Resources 70

<b>9</b> Feed	eding the	household	71
---------------	-----------	-----------	----

Judith Kimiywe, Nicki Connell, and Ann Burgess

- 9.1 Helping households to plan healthy meals and diets 71
- 9.2 What is a 'healthy and sustainable diet'? 71
- 9.3 Dietary guidelines 72
- 9.4 Guidelines for feeding different household members 72
- 9.5 Using dietary guidelines to plan diets and meals 74

Training exercises 78

Resources 79

### **10** Breastfeeding 80

Felicity Savage King, Jennifer N. Nielsen, and Pooja Pandey Rana

- 10.1 Importance of breastfeeding 80
- 10.2 Advantages of breast milk and breastfeeding 80
- 10.3 Dangers of artificial feeding 82
- 10.4 How breast milk varies 83
- 10.5 How breast milk is produced 84
- 10.6 How a baby suckles 85
- 10.7 Helping mothers to breastfeed 87
- 10.8 Useful techniques 89
- 10.9 Common concerns 91
- 10.10 Common breast conditions 93
- 10.11 Helping working mothers 95
- 10.12 Babies with special needs 95
- 10.13 Mothers with special needs 97
- 10.14 Counselling and promoting breastfeeding 99

Training exercises 100

Resources 101

#### 11 Feeding from age 6 months to 5 years 102

Jennifer N. Nielsen, Pooja Pandey Rana, and Victoria J. Quinn

- 11.1 Complementary feeding 102
- 11.2 When to start complementary feeding 102
- 11.3 Healthy complementary foods 104
- 11.4 How to prepare complementary foods 108
- 11.5 How much and how often to feed 110
- 11.6 How to feed young children 110
- 11.7 Guidelines for feeding at different ages 113
- 11.8 Stopping breastfeeding 115

Training exercises 116

Resources 117

# **12** Good nutrition for school-age children, adolescents, and adults 118 Elizabeth Kamau-Mbuthia, Judith Kimiywe, and Andrew Hall

12.1 School-age children and adolescents 118

	12.2 Women 121
	12.3 Men 124
	12.4 Old people <i>124</i>
	Training exercises 126
	Resources 126
13	Feeding sick people, especially children 128
	Andrew Tomkins and Frederick Grant
	13.1 Why sick people become undernourished 128
	13.2 What families need to know about feeding sick children 129
	13.3 Feeding a child with diarrhoea 130
	13.4 Feeding a child with other conditions 132
	13.5 Feeding a child during recovery from illness 133
	13.6 Feeding a child who is HIV-positive 133
	13.7 Feeding sick school-age children, adults, and old people 134
	Training exercises 136
	Resources 136
14	Understanding malnutrition 138
	Victoria J. Quinn and Jennifer N. Nielsen
	14.1 Types of malnutrition 138
	14.2 Causes of undernutrition and micronutrient deficiencies 13
	14.3 Effects of malnutrition through the life cycle 142
	Training exercises 143
	Resources 143
15	Using body measurements to assess nutrition 144
•	Frederick Grant and Ann Burgess
	v
	15.1 Body measurements 144
	<ul><li>15.2 Measuring young children aged 0-5 years 144</li><li>15.3 Child growth charts 146</li></ul>
	15.4 Child growth monitoring and promotion 149
	15.5 Growth in height and stunting 156
	15.6 Wasting/thinness and fatness 157
	15.7 Measuring school-age children, adolescents, and adults 159
	Training exercises 161
	Resources 162
16	Malnutrition in young children 163
	Akoto K. Osei, Frederick Grant, and Elhadji Issakha Diop
	16.1 Which young children are malnourished? 163 16.2 Acute malnutrition 163
	16.3 Moderate acute malnutrition 164 16.4 Stunting 166
	16.4 Stunting 166  16.5 Overnutrition 166
	10.5 Overmunium 100

	16.6	How to find and diagnose a malnourished child 167
	16.7	How to manage moderate acute malnutrition in young children 167
	16.8	Malnutrition at different stages of a child's life 171
	16.9	Low-birthweight babies 171
	16.10	Malnutrition by age group—what you can do 172
	Trainir	ng exercises 174
	Resour	ces 175
17	Sever	e acute malnutrition 176
	Freder	ick Grant, Martin Nankap, and Elhadji Issakha Diop
	17.1	Identifying severe acute malnutrition (SAM) 176
	17.2	How to treat SAM in children aged over 6 months 177
	17.3	Treatment of 'SAM without complications' 180
	17.4	Treatment of 'SAM with complications' 183
	17.5	How to treat SAM in children aged under 6 months 184
	17.6	Monitoring the management of SAM 185
	17.7	Social and emotional care for children with SAM and their families 185
	17.8	Follow-up 187
		ng exercises 187
	Resour	ces 188
18	Malnutrition in adolescent girls and women 189	
	Jillian	L. Waid and Ann Burgess
	18.1	Why malnutrition in girls and women is important 189
	18.2	Why girls and women become malnourished 191
	18.3	How to prevent women from becoming malnourished 192
	18.4	How to diagnose and treat malnutrition 196
	Trainii	ng exercises 197
	Resour	rces 197
19	Maln	utrition in school-age children, adolescent boys,
	men, and old people 198	
	Elizab	eth Kamau-Mbuthia and Andrew Hall
	19.1	School-age children 198
	19.2	Adolescent boys and men 200
		Old people 201
		ng exercises 201
	Resour	rces 202
20	Vitan	nin A deficiency 203
	Jessica	Blankenship, Nancy J. Haselow, and Shawn K. Baker
	20.1	What is vitamin A deficiency? 203
	20.2	Vitamin A deficiency prevention programmes 204
	20.3	Monitoring vitamin A deficiency programmes 207
	20.4	Xerophthalmia and how to treat it 207

Training	exercises	208
----------	-----------	-----

Resources 209

## 21 Iron deficiency and anaemia

Akoto K. Osei and Martin Nankap

- 21.1 What iron deficiency and anaemia are 210
- 21.2 How iron deficiency anaemia develops 211
- 21.3 Other nutritional anaemias 212
- 21.4 Groups at risk of anaemia 212
- 21.5 Diagnosing anaemia 214
- 21.6 How to prevent anaemia 215
- 21.7 How to treat anaemia 216

Training exercises 218

Resources 219

#### 22 Iodine, zinc, and other micronutrient deficiencies

Jessica Blankenship and Andrew Seal

- 22.1 Iodine deficiency disorders 220
- 22.2 Zinc deficiency 223
- 22.3 Thiamine, riboflavin, and niacin deficiencies 224
- 22.4 Folate deficiency 225
- 22.5 Vitamin B<sub>12</sub> deficiency 225
- 22.6 Vitamin C deficiency 225
- 22.7 Vitamin D deficiency 226
- 22.8 Multiple micronutrient deficiencies 227

Training exercises 227

Resources 228

# 23 Obesity and other nutrition-related non-communicable diseases 229

Hélène Delisle

- 23.1 The growing problem of non-communicable diseases in developing countries 229
- 23.2 Obesity 230
- 23.3 Major risk factors for obesity and other nutrition-related non-communicable diseases 232
- 23.4 The double burden of undernutrition and overnutrition 234
- 23.5 Tackling obesity and other nutrition-related non-communicable diseases, and the double burden of malnutrition 235

Training exercises 237

Resources 238

### 24 Diabetes—overview and nutritional management 239

Chittaranjan Yajnik and Shilpa Joshi

- 24.1 What is diabetes? 239
- 24.2 Management of diabetes and other obesity-related non-communicable diseases 240

Training exercises 244

Resources 244

25		view of community nutrition actions 245		
	Jennif	er N. Nielsen, Martin Nankap, and Pooja Pandey Rana		
		Introducing this chapter 245		
	25.2	Actions for the 'first 1000 days' 245		
	25.3	Nutrition actions over the rest of the life cycle 247		
	25.4	Putting actions into practice 251		
	Traini	ng exercises 251		
	Resout	rces 252		
26	Improving household food security 253			
	Amini	uzzaman Talukder, Frederick Grant, and Ann Burgess		
	26.1	Household food security 253		
	26.2	Small-scale food production 254		
	26.3	Homestead food production, including raising small animals and fishponds 255		
	26.4	Food storage and preservation 257		
	26.5	Buying food 260		
	26.6	Preparing healthy meals 261		
	26.7	Basic barriers to food security 262		
	Trainii	ng exercises 262		
	Resour	rces 264		
27	Impre	oving community nutrition, care, and health 265		
	-	er N. Nielsen and Pooja Pandey Rana		
	27.1	Removing barriers to good care and health 265		
	27.2	Women, nutrition, and removing barriers on the food paths 266		
		Family planning and nutrition 268		
		Improve living conditions 272		
		How old and new customs and practices affect the food paths 272		
		ng exercises 274		
		ces 274		
28	Work	ing with communities and households 275		
	Charity Dirorimwe, Pooja Pandey Rana, and Ann Burgess			
	28.1	Working with the community 275		
	28.2	Learning about your community 275		
	28.3	Potential resources for nutrition activities 279		
	28.4	Working with community groups 280		
	28.5	Working with a household 284		
	28.6	Finding malnourished or 'at-risk' households 286		
	28.7	Visiting a household at home 287		
		ng exercises 292		
		ces 293		
29	Helpi	ng people learn about nutrition 294		
	-	r N. Nielsen and Pooja Pandey Rana		

kii CONTENTS	
	29.1 Nutrition education approaches 294 29.2 Using the behaviour change approach 294 29.3 Working with households 300 29.4 Working with small groups 300 29.5 Talking with large groups 302 29.6 Working with the mass media 304 29.7 Learning aids and activities 304 Training exercises 307 Resources 308
30	Nutrition in schools 309
31	Ann Burgess and Andrew Hall  30.1 Why nutrition in schools is important 309 30.2 Pre-primary schools 310 30.3 Primary and secondary schools 310 30.4 Nutrition activities in schools 311 30.5 Learning about nutrition outside the school 311 30.6 Food at school 312 30.7 School health programmes 313 30.8 School food production 314 Training exercises 315 Resources 315 Training for nutrition 316 Manisha Tharaney 31.1 Planning training 316 31.2 Steps in nutrition training 316 31.3 After the training 320 Resources 321
Appendix 1	Tables of energy requirements and recommended intakes of nutrients 322
	A1.1 Recommended intake of protein, sugar, fat, fibre, and salt 322  Food composition tables 327  Zohra Lukmanji  A2.1 Understanding food composition tables 327
Annendix 3	Sources of selected nutrients 340
• • •	Basic anthropometric information 343
дррепиі <b>х 4</b>	A4.1 z-scores 343  A4.2 Taking body measurements 343  A4.3 World Health Organization standard charts for assessing children aged 0–5 years 344  A4.4 World Health Organization BMI-for-age charts for girls and boys aged 5–19 years 346

A4.5 Cut-off values for body mass index and mid-upper arm circumference 347

## Appendix 5 Keeping up-to-date 348

A5.1 Resources for keeping up-to-date 348

A5.2 Online and downloadable training courses 350

A5.3 Resources for nutrition in emergencies 351

# **Appendix 6** Key household actions to prevent the double burden of malnutrition 352

A6.1 Actions that keep household members well nourished 352

Glossary 355 Index 361