WHO Technical Report Series

894

OBESITY: PREVENTING AND MANAGING THE GLOBAL EPIDEMIC

Report of a WHO Consultation



Contents

1.	Introduction					
	1.1 1.2	Structure of the report Themes of the report				
Part	:1 T	he problem of overweight and obesity	5			
2.	Defining the problem					
	2.1	Introduction	6			
	2.2	Why classify overweight and obesity?	6 7			
		Body mass index	8			
		2.3.1 Use of other cut-off points in the classification of obesity	8			
		2.3.2 Variation in the relationship between BMI and body fatness	8			
		2.3.3 Use of BMI to classify obesity	g			
	2.4	Waist circumference and waist:hip ratio	g			
	2.5	Additional tools for the assessment of obesity	11			
	2.6	Classifying obesity in childhood	11			
		2.6.1 Use of growth charts	11			
		2.6.2 International childhood reference population	12			
		2.6.3 BMI-for-age reference curves	12			
	References					
3.	Global prevalence and secular trends in obesity					
	3.1	•				
	3.2	A note of caution	17			
	3.3	The WHO MONICA project	17			
	3.4	African Region	20			
		3.4.1 Secular trends in obesity	20			
		3.4.2 Current prevalence of obesity	21			
	3.5	Region of the Americas	21			
		3.5.1 Secular trends in obesity	21			
		3.5.2 Current prevalence of obesity	22			
	3.6	South-East Asia Region	23			
		3.6.1 Secular trends in obesity	23			
		3.6.2 Current prevalence of obesity	24			
	3.7	European Region	24			
		3.7.1 Secular trends in obesity	24			
	0.0	3.7.2 Current prevalence of obesity	24 25			
	3.8	Eastern Mediterranean Region	25			
		3.8.1 Secular trends in obesity3.8.2 Current prevalence of obesity	26			
	2.0	Western Pacific Region	27			
	3.9	3.9.1 Secular trends in obesity	27			
		3.9.2 Current prevalence of obesity	29			
	3 10	Body mass index distribution in adult populations	30			
		Obesity during childhood and adolescence	31			
	References					

Pa	rt II	Establishing the true costs of the problem of overweight			
		and obesity	38		
4.	Цог	alth consequences of overweight and obesity in adults			
4.	and	and children			
	4.1				
	4.2	Obesity as a risk factor for noncommunicable diseases	40		
	4.3	Difficulties in evaluating the health consequences of obesity	40		
	4.4	Relative risk of obesity-associated health problems	42		
	4.5	Intra-abdominal (central) fat accumulation and increased risk	43 44		
	4.6	Obesity-related mortality			
	4.7		46		
		4.7.1 Cardiovascular disease and hypertension	46		
		4.7.2 Cancer	48		
		4.7.3 Diabetes mellitus	49		
		4.7.4 Gallbladder disease	50		
	4.8	Endocrine and metabolic disturbances associated with obesity	51		
		4.8.1 Endocrine disturbances	51		
		4.8.2 Metabolic disturbances	53		
	4.9	Debilitating health problems associated with obesity	54 54		
		4.9.1 Osteoarthritis and gout	55 55		
	4.10	4.9.2 Pulmonary diseases Psychological problems associated with obesity	55 55		
	4.10	4.10.1 Social bias, prejudice and discrimination	56		
		4.10.2 Psychological effects	57		
		4.10.3 Body shape dissatisfaction	57		
		4.10.4 Eating disorders	57		
	4.11	Health consequences of overweight and obesity in childhood	0.		
		and adolescence	58		
		4.11.1 Prevalence	58		
		4.11.2 Psychosocial effects	59		
		4.11.3 Cardiovascular risk factors	59		
		4.11.4 Hepatic and gastric complications	59		
		4.11.5 Orthopaedic complications	60		
		4.11.6 Other complications of childhood obesity	60		
	Refe	erences	60		
5.	Hea	Ith benefits and risks of weight loss	69		
	5.1		69		
	5.2	Problems in evaluating the effects of long-term weight loss	69		
	5.3	Weight loss and general health	70		
		5.3.1 Modest weight loss	70		
		5.3.2 Extensive weight loss	70		
	5.4	Weight loss and mortality	70		
	5.5	Impact of weight loss on chronic disease, and on endocrine			
		and metabolic disturbances	71		
		5.5.1 Cardiovascular disease and hypertension	71		
		5.5.2 Diabetes mellitus and insulin resistance	71		
		5.5.3 Dyslipidaemia	72		
	E 0	5.5.4 Ovarian function	72		
	5.6 5.7	Weight loss and psychosocial functioning	72		
	5.7	Hazards of weight loss	73		

	5.9	8 Weight cycling 9 Effects of weight loss in obese children and adolescents eferences		
6.	6.1 6.2 6.3	Introduction Cost-of-illness studies 6.2.1 Uses of cost-of-illness studies 6.2.2 Limitations of cost-of-illness studies 6.2.3 Steps in undertaking a cost-of-illness study 6.2.4 The disability-adjusted life year International estimates of the cost of obesity 6.3.1 Studies in developed countries 6.3.2 Studies on the broader economic issues 6.3.3 Studies in developing countries 6.3.4 Conclusions Economic costs and benefits of obesity treatment 6.4.1 Analyses of obesity-control trials 6.4.2 Potential cost savings associated with a reduction in the prevalence of obesity 6.4.3 Cost-effectiveness of obesity prevention and treatment	78 78 79 80 81 83 83 83 86 88 88 89 90	
	Ref	erences	97	
Part	Ш	Understanding how overweight and obesity develop	100	
7.	7.1 7.2 7.3 7.4 7.5	Introduction Energy balance and the physiological regulation of body weight 7.2.1 Fundamental principles of energy balance 7.2.2 Physiological regulation of body weight 7.2.3 Dynamics of weight gain 7.2.4 Implications for public health Dietary factors and physical activity patterns 7.3.1 Dietary factors 7.3.2 Physical activity patterns Environmental and societal influences 7.4.1 Changing societal structures 7.4.2 Variation within societies 7.4.3 Cultural influences 7.4.4 Impact of societal changes on food intake and activity patterns Individual/biological susceptibility 7.5.1 Genetic susceptibility 7.5.2 Non-genetic biological susceptibility 7.5.3 Other factors promoting weight gain Weight loss	101 102 102 103 105 107 108 112 118 124 126 133 134 137 139 142	
Part	IV	Addressing the problem of overweight and obesity	153	
8.	Prin 8.1	ciples of prevention and management of overweight and obesity Introduction	154 1 54	

	8.2		egies for addressing the problem of overweight	156		
			bbesity	156		
	8.3		ention strategies			
		8.3.1	Effectiveness	157		
		8.3.2	Aims	158		
		8.3.3	Levels of preventive action	160		
		8.3.4	Integrating obesity prevention into efforts to prevent	100		
			other noncommunicable diseases	162		
	8.4		ng with individuals with existing overweight and obesity	163 164		
		8.4.1	The current situation			
		8.4.2	Knowledge and attitudes of health professionals	164		
		8.4.3	Improving the situation	166 167		
	8.5		erships for action on obesity	167		
		8.5.1	Shared responsibility	170		
	D . (8.5.2	Coordination of government policies	170		
	Ref	References				
9.			and management of overweight and obesity in	474		
			s: a public health approach	174		
	9.1		duction	174		
	9.2		rening at the population level	175		
		9.2.1	Relationship between average population BMI and the level of obesity	176		
		9.2.2	Optimum population BMIs	178		
		9.2.3	Will population-based approaches to preventing weight			
			gain lead to increased levels of underweight and eating			
			disorders?	179		
	9.3		c health intervention strategies	179		
		9.3.1	Improving the knowledge and skills of the community	179		
		9.3.2	Reducing population exposure to an obesity-promoting			
		Dulani	environment	180		
	9.4		ty interventions	180		
		9.4.1	Increasing physical activity	181		
		9.4.2	Improving the quality of the diet	181		
		9.4.3	Measures for use in evaluating obesity-prevention	100		
	0.5	Pooul	programmes	182		
	9.5	Results of public health programmes for the control of obesity				
			Countrywide public health programmes	183		
		0.5.2	Communitywide CUD provention programmes	184		
		9.5.3	Communitywide CHD prevention programmes Programmes targeting factors important in the	184		
		3.5.5	development of obesity	107		
		9.5.4	Implications for future public health programmes to	187		
		5.5.4	control obesity	100		
	9.6	Lesso	ons to be learned from successful public health	189		
	0.0	campaigns				
	9.7		c health strategies to improve the prevention and	190		
	٠.,		gement of obesity	100		
		9.7.1	Developed countries	190 192		
		9.7.2	Developing and newly industrialized countries	192		
	Refe	rences	S	194		
				104		

10.	Prevention and management of overweight and obesity in at-risk individuals: an integrated health-care services approach in				
	community settings				
		Introd		197	
	10.2		gement strategies for at-risk individuals and groups	198	
			Prevention of weight gain	198	
			Weight maintenance	200	
			Management of obesity comorbidities	200	
			Weight loss	201	
	10.3	A hea	alth-care services approach to the new concept of		
		weigh	t management	203	
		10.3.1	Recruitment and referral	203	
		10.3.2	Comprehensive health assessment	204	
		10.3.3	Setting appropriate targets	205	
			Selection and implementation of appropriate		
			management strategies	206	
		10.3.5	Monitoring, rewards and evaluation	208	
	10.4		nt support in obesity treatment	208	
			Support within the health-care service	209	
			Involvement of family	209	
			Self-help and support groups	210	
			Commercial weight-loss organizations	210	
	10.5		ment of obesity	211	
	10.0		Dietary management	211	
			Physical activity and exercise	213	
			Behaviour modification	215	
			Drug treatment	217	
			Gastric surgery		
			Traditional medicine	221	
				223	
	10.0		Other treatments	223	
	10.6		gement of obesity in childhood and adolescence Evidence that treatment of childhood obesity prevents later adult obesity	224 224	
		1062	Treatment of overweight and obese children	226	
			Obesity-management programmes for children	228	
	Rofo	rences		231	
	ricic	i ences	•	201	
Part	V (Challen	ges for the new millennium	239	
11.	Con	clusion	s and recommendations	240	
	11.1	Gener	ral conclusions	240	
	11.2	Recor	mmendations	241	
		11.2.1	Defining the problem of overweight and obesity	241	
		11.2.2	Establishing the true costs of the problem of		
			overweight and obesity	243	
		11.2.3	Understanding how the problem of overweight and		
			obesity develops	245	
		11.2.4	Addressing the problem of overweight and obesity	247	
Ackr	owle	dgeme	ents	251	
Anne	ЭX				
		or evalu	lating commercial institutions involved in weight loss	253	