

# Nutrition and health problems related to substance abuse and medications

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## OBJECTIVES

- To appreciate that substance abuse can affect nutritional status.
- To understand mechanisms by which tobacco, alcohol, medication (self and prescribed) and drugs of addiction affect nutritional status.
- To develop the concepts required for a comprehensive lifestyle approach to health and wellbeing.

## WHAT IS SUBSTANCE ABUSE?

Substance with potential for abuse can be recreational or medicinal, which when used in increasing amounts, with increasing frequency or over longer durations, can lead to adverse social or health effects.

Substance abuse ranges from that of legal substances like alcohol or tobacco, caffeinated beverages and medication overuse to the illicit use of anabolic steroids by body builders and others who seek body image and performance, amphetamines, inhalants, cannabis, prescription psychoactive drugs, cocaine and heroin, and traditional products like the East African euphoric and excitatory chewable khat (Destarlais, 1995). Globally, illicit drug sales (without alcohol and tobacco) are so great that they rival the oil industry (Destarlais, 1995).

## PREDISPOSING FACTORS

Substance abuse arises where individual coping skills are immature or inadequate, and where they are not complemented by family or societal supports or are compromised by an exploitative environment (Destarlais, 1995). This understanding can contribute to prevention. A range of interactions between substance abuse and nutritional status are now recognised which are worth taking into account in prevention and management.

## EPIDEMIOLOGY OF ABUSE AND DEPENDENCY

National health surveys, like that in Australia in 1989–1990 generally provide, inter alia, information about substance abuse, both legal and illicit (Table 46.1). The National Drug Strategy in Australia targets the problems and repeat surveys indicate whether there are any favourable outcomes. In the 1993 National Household Survey, 37% of the population aged 14 years or over had used an illicit drug (14% in the last year). From 1985 to 1993 the proportions using amphetamines, barbiturates and cocaine appeared to have undergone small decreases of 1% to 5% prevalences each, with increases in cannabis (6%), ecstasy/designer drugs (3%) and heroin (1%) prevalences. Mortality data provide further insights. Between 1985 and 1991, the death rates per 100 000 population attributable to tobacco and alcohol each declined by 12%, suggesting that the Strategy is having an impact.

Similarly, in 1992 in Australia the proportion of all deaths caused by drugs and medications for men and women, age-adjusted to the 1988 population, was 2.7% and 2.8% respectively, with a considerable day-by-day health cost which is difficult to measure. There is increased concern about alcohol and tobacco, and at the same time growing support for strategies to avoid adverse effects of intravenous drug use (e.g. needle exchange programs). Appropriate use of over-the-counter (OTC) medication and of prescription medication is also relevant to the question of substance abuse (Table 46.1). For example, pain killers, sleeping pills, tranquillizers and sedatives may be overused leading to dependency, if not addiction. An interesting question is whether, where medication is sought, low health risk nutrient supplements and pain relievers might decrease the likelihood of higher health risk substances of abuse. In traditional societies, traditional foods and medicine may be preventive against substance abuse but this proposition requires more study. Usage of certain risk substances such as chewables (khat or coca leaves) in some societies is regarded as abuse in others, so that cross-cultural comparisons may be difficult. The phenomenon of substance abuse may also relate to inappropriate food and beverage consumption, as part of broader behavioural patterns. Again, interest in healthy eating and drinking patterns may help reduce the risk of substance abuse. For example, the pleasure and social roles of food may be sufficiently fulfilling with non-alcoholic beverages displacing alcoholic ones. The

current 'disco' fashion of dancing with a bottle of mineral water in one hand illustrates the point.

## SMOKING AND NUTRITIONAL CONSEQUENCES

The nutritional effects of smoking include the following.

- 1 *Increased metabolic rate.* This is one reason why people who smoke tend to weigh less for the same height than their non-smoking counterparts (James, 1992). It also partly explains why lower BMIs predict increased mortality. It is, therefore, not a safe way to keep weight lower, although the tobacco industry sends out messages that encourage tobacco use for this purpose, especially

**Table 46.1** Prevalence (% of population) of substance abuse in Australia

	Men	Women	All	
<b>Smoker status (1988–1990)</b>				
current	32	25	28	
ex	29	18	23	
never	39	57	48	
<b>Alcohol</b>				
total (any level of intake)	73	52	63	
high risk	7	2	4	
<b>Medication (use over two weeks in 1989–1990)</b>				
vitamin and mineral supplements			23	
cough and cold medication			12	
pain relievers			35	
sleeping medication			5	
tranquillizers and sedatives			2	
(includes justifiable use and abuse)				
<b>Illicit (use in past year)</b>				
	1991	1991	1993	
cannabis	17 (38)	9 (20)	13	13
amphetamines	4	2	3	2
barbiturates	2	2	2	–
hallucinogenic	– (9)	– (3)	2	1
heroin	– (2)	– (2)	1	–
cocaine	– (3)	1 (1)	1	1
ecstasy/designer drugs	2 (4)	1 (2)	1	1
Total illicit				14

Figures shown in parentheses are for age group 14–24 years, except for heroin which is shown for 25–39 years

Source: ABS Year Book of Australia, 1995 and the Report of the Task Force on Drug Abuse, vol. 2. Drug Abuse information and analysis, AIHW, Sep 1995 (based on National Household Surveys, 1991 and 1993).

to women. The corollary is that increase in weight is likely with smoking cessation; in order to minimise weight gain during a 'Quit smoking' program, people are advised to engage in regular physical activity, like walking (which, in any case, helps the process of quitting).

- 2 *Abdominal fatness.* Even though BMI may be lower in smokers, fat is more abdominally distributed (Shimokata et al., 1989), presenting an additional health hazard (and cosmetic problem!).
- 3 *Taste impairment.* Taste receptors are damaged by cigarette smoke, reducing the pleasure and discrimination associated with healthy eating.

Caffeine increases taste sensitivity and, perhaps, this is a reason why coffee consumption and smoking have often gone together and why this can be a difficult nexus to break.

- 4 *Micronutrient deficiency.* Whether through reduced intake or increased utilisation, plasma concentrations of the anti-oxidant vitamin C are lower in smokers than non-smokers (Duthie, 1993).

## ALCOHOL

The nutritional effects and safe level of alcohol consumption are discussed in Chapter 39.

**Table 46.2 Effects of medications on vitamins**

<b>Decrease absorption</b>	
aluminium hydroxide (antacid, phosphate binder)	phosphate, vitamin A, thiamin destruction
bisacodyl (laxative)	fluid and electrolyte loss, hypokalemia
cholestyramine (antihyperlipemic, bile acid sequestrant)	fat, iron, carotene, vitamins A, D, K, folacin
colchicine (antigout)	sodium, potassium, fat, carotene, vitamin B12
mineral oil (laxative)	carotene, vitamins A, D, E and K, calcium, phosphorus
sulfasalazine (anti-inflammatory)	folacin
<b>Alter nutrient metabolism</b>	
hydralazine (antihypertensive)	vitamin B6 antagonism
isoniazid (antitubercular)	vitamin B6 antagonism
methotrexate (antitumour, antipsoriatic)	folacin antagonist, also malabsorption folacin, vitamin B12, fat
penicillamine (anti-arthritis)	inhibits pyridoxal dependent enzymes, also chelates copper, iron, zinc
phenobarbital (anticonvulsant, sedative)	increases activation of vitamin D, lowers serum folacin, vitamins B12, B6, calcium, magnesium
phenytoin (anticonvulsant, anti-arrhythmic)	increases activation of vitamin D, lowers serum folacin, minerals
pyrimethamine (antimalarial)	folacin antagonist
triarterene (potassium sparing diuretic)	folacin antagonist, possible hyperkalemia
<b>Alter urinary excretion</b>	
aspirin (analgesic, antipyretic, anti-inflammatory)	increased vitamin C, potassium, iron excretion
furosemide (potassium depleting diuretic)	increased excretion of potassium, calcium, magnesium, sodium, chloride
spironolactone (potassium sparing diuretic)	increased excretion of sodium, chloride
thiazide (potassium depleting diuretic)	increased excretion of potassium, magnesium, sodium; decreased excretion of calcium
<b>Fluid or electrolyte disturbances</b>	
adrenal corticosteroids	protein catabolism, lipolysis with possible redistribution of body fat, anti-vitamin D activity
anabolic steroids	fluid and electrolyte disturbances
clonidine (antihypertensive)	fluid and electrolyte retention, oedema
oestrogens	salt and fluid retention, oedema
guanethidine (antihypertensive)	salt and fluid retention, oedema
indomethacin (anti-inflammatory)	salt and fluid retention, oedema
methyldopa (anti-hypertensive)	salt and fluid retention, oedema
phenylbutazone (anti-inflammatory)	salt and fluid retention, oedema
calcium channel blockers	salt and fluid retention, oedema

## MEDICATION: IATROGENIC AND SELF-PRESCRIBED

Various medications can have adverse nutritional effects. These include:

- 1 decreased ability to obtain, prepare and eat food, notably with illicit drugs of dependence
- 2 decreased appetite, which is a common side-effect of medication
- 3 nausea, which is a common side-effect of medication
- 4 anti-nutrient effects by decreasing intestinal absorption, or by altering nutrient metabolism or by altering nutrient urinary excretion or by producing fluid or electrolyte disturbances, which may increase essential micronutrient requirements (see Table 46.2) (Wahlqvist, 1987; Hamilton Smith and Bidlack, 1984).

## DRUGS OF ADDICTION

Not only can these disrupt regular food consumption through their social and individual lifestyle conse-

quences, but they can increase the likelihood of wasting (PEM). This is because of:

- 1 increased frequency of infection which may be introduced intravenously; particularly problematic are infective endocarditis (infection on valves or lining of the heart), hepatitis B and the HIV virus.
- 2 the cycle of PEM leading to immunodeficiency and infection, and then another phase of wasting (see Chapter 40).

## DIETING DISORDERS AND SUBSTANCE ABUSE

This is another area of increasing interest in the co-morbidity of eating or dieting disorders and substance abuse (see also Chapter 36) (Braun et al., 1994; Katzman et al., 1991).

## SUMMARY

- There can be direct and indirect adverse nutritional consequences of substance abuse through lifestyle disruption, disordered food intake and metabolic effects, as well as effects on the immune system.
- A healthful interest in food and beverage can enhance social activity and support, and provide safe alternatives to substance abuses (as can other lifestyle measures such as physical activity).

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# FOOD AND NUTRITION

Australasia, Asia and the Pacific

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*Thanks to Antigone Kouris-Blazos for her  
editorial and technical assistance.*

ALLEN & UNWIN

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First published in 1997 by  
Allen & Unwin Pty Ltd  
9 Atchison Street, St Leonards, NSW 1590 Australia  
Phone: (61 2) 8425 0100  
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National Library of Australia  
Cataloguing-in-Publication entry:

Food and nutrition: Australasia, Asia and the Pacific.

Bibliography.

Includes index.

ISBN 1 86448 220 6.

1. Food. 2. Nutrition. I. Wahlqvist, Mark L.

641.3

Set in 11/13 pt Bembo by DOCUPRO, Sydney  
Index compiled by Russell Brooks  
Printed by Dah Hua Printing Press Co. Ltd, Hong Kong

10 9 8 7 6 5 4 3 2 1

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# Contents

Contributors	vii
<b>Part I EVOLUTION, CULTURE AND FOOD</b>	
1 Human history and food <i>Mark L. Wahlqvist</i>	3
2 Anthropological and sociological approaches to understanding food, eating and nutrition <i>Patricia A. Crotty</i>	9
3 Industrialisation and urbanisation <i>Richard S.D. Read</i>	25
4 Recent developments in food technologies <i>David R. Briggs &amp; Louise B. Lennard</i>	30
5 What is food? <i>David R. Briggs &amp; Mark L. Wahlqvist</i>	45
<b>Part II CONTEMPORARY FOOD USE</b>	
6 Food supply systems <i>Gwyn P. Jones</i>	53
7 Trends in the available food supply <i>Ingrid H.E. Rutishauser</i>	59
8 Current food consumption <i>Ingrid H.E. Rutishauser</i>	67
<b>Part III FOOD COMPOSITION, PROCESSING, REGULATION AND SAFETY</b>	
9 Food composition <i>Gwyn P. Jones</i>	81
10 Food processing <i>Gwyn P. Jones</i>	89
11 Food preparation <i>Gwyn P. Jones</i>	97
12 Food microbiology and food poisoning <i>David R. Briggs &amp; Louise B. Lennard</i>	104
13 Naturally occurring toxicants and food contaminants <i>David R. Briggs</i>	120
14 Food additives <i>David R. Briggs</i>	128
15 Real and perceived risks in food <i>David R. Briggs &amp; Louise B. Lennard</i>	143
16 Food law, regulation and surveillance in Australia <i>David R. Briggs</i>	148
17 Food law and regulation: an international perspective <i>David R. Briggs &amp; Louise B. Lennard</i>	157
<b>Part IV THE BIOLOGY OF FOOD COMPONENTS</b>	
18 Food energy and energy expenditure <i>Richard S.D. Read</i>	167
19 Digestion of food <i>Richard S.D. Read</i>	177

20 Protein	<i>Richard S.D. Read</i>	188
21 Carbohydrates	<i>Gwyn P. Jones</i>	199
22 Fats	<i>Gwyn P. Jones</i>	205
23 Dietary fibre and resistant starch	<i>Gwyn P. Jones</i>	215
24 Vitamins and vitamin-like compounds	<i>Mark L. Wahlqvist</i>	222
25 Minerals	<i>Gwyn P. Jones</i>	249
26 Water	<i>Gwyn P. Jones</i>	255
<b>Part V LIFESPAN NUTRITION</b>		
27 Pregnancy and lactation	<i>Ingrid H.E. Rutishauser</i>	263
28 Infant nutrition	<i>Ingrid H.E. Rutishauser</i>	274
29 Childhood and adolescence	<i>Ingrid H.E. Rutishauser</i>	284
30 Foods, physical activity and sport	<i>Richard S.D. Read &amp; Antigone Kouris-Blazos</i>	293
31 Survival nutrition	<i>Richard S.D. Read and Gwyn P. Jones</i>	311
32 Requirements in maturity and ageing	<i>Mark L. Wahlqvist</i>	317
<b>Part VI FOODS AND DISEASE</b>		
33 Genetic individuality, diet and disease	<i>Mark L. Wahlqvist</i>	331
34 Protein energy malnutrition	<i>Madeleine Ball</i>	335
35 Overweight and obesity	<i>Richard S.D. Read &amp; Antigone Kouris-Blazos</i>	346
36 Eating disorders	<i>Richard S.D. Read</i>	366
37 Atherosclerotic vascular disease and hypertension	<i>Madeleine Ball</i>	373
38 Diabetes	<i>Madeleine Ball</i>	384
39 Alcohol and alcohol related diseases	<i>Madeleine Ball</i>	394
40 Nutrition, infection and immune function	<i>Mark L. Wahlqvist</i>	402
41 Nutrition and cancer	<i>Mark L. Wahlqvist</i>	407
42 Nutrition and osteoporosis	<i>Mark L. Wahlqvist &amp; Naiyana Wattanapenpaiboon</i>	416
43 Food sensitivities	<i>David R. Briggs &amp; Louise B. Lennard</i>	425
44 Nutritional disease related to poverty, famine and organic disease	<i>Madeleine Ball</i>	434
45 Nutritional problems related to cultural and environmental transition	<i>Mark L. Wahlqvist</i>	440
46 Nutrition and health problems related to substance abuse and medications	<i>Mark L. Wahlqvist</i>	454
<b>Part VII NUTRITION MONITORING AND SURVEILLANCE</b>		
47 Monitoring food and nutrition status at the population level	<i>Ingrid H.E. Rutishauser</i>	461
48 Assessment of nutritional status in the individual	<i>Ingrid H.E. Rutishauser</i>	470
49 Nutritional standards of reference	<i>Ingrid H.E. Rutishauser</i>	475
<b>Part VIII PRIMARY HEALTH CARE AND NUTRITION</b>		
50 Health promotion and nutrition	<i>Patricia A. Crotty</i>	489
51 Nutrition in primary health care	<i>Madeleine Ball &amp; Iain Robertson</i>	500
52 Dietary advice and food guidance systems	<i>Mark L. Wahlqvist &amp; Antigone Kouris-Blazos</i>	508
<b>Part IX FOOD PRODUCTION AND THE ENVIRONMENT</b>		
53 Food, population and development	<i>Richard S.D. Read</i>	525
54 Sustainable environments	<i>Richard S.D. Read</i>	534
55 Food and nutrition policies	<i>Mark L. Wahlqvist</i>	541
Abbreviations		549
Index		551