

Index

A

Adipocytes, 52
 death, 54–58
 hypertrophic, 53, 102
 pink, 68
 visceral, 58–59
Adiponectin, 254
Adipose cell apoptosis, 103
Adiposopathy
 anatomic manifestations, 102–104
 clinical manifestations, 105–106
 pathophysiological manifestations, 104
Adolescent obesity, 312, 313, 316
 bariatric surgery, 316
 prevalence, 298
Affect regulation model, 358
Amylin, 45, 81–82
Anthropometric indices, 5
Apnoea-hypopnoea index (AHI), 246
Arcuate nucleus (ARC), 36

B

Bariatric surgery, 283
 adjustable gastric banding, 375
 biliopancreatic diversion–duodenal switch,
 377–378
 diabetes and co-morbidities, improvement
 in, 378–379
 glycemic control, 382–383
 indication for, 383–384
 long-term complications, prevention of,
 393–394
 mechanisms of weight loss, 379–381
 metabolic bone disease, 391–392
 mortality benefit, 378
 neurologic complications, 392–393
 nutritional anemia, 390–391
 psychological impact, 394

 quality of life, improvement in, 379
 Roux-en-Y gastric bypass, 377
 sarcopenia, 393
 sleeve gastrectomy, 375–377
 surgical and GI complications, 387–389
BAT, *see* Brown adipose tissue (BAT)
Beta-cell dedifferentiation, 200–203
Biliopancreatic diversion (BPD), 83
Binge eating disorder (BED), 129,
 358–359
 body shape/weight, overvaluation of, 134
 diagnostic criteria for, 133, 134
 feature of, 134
 psychiatric comorbidity, 135
 treatment, 146
Biological rhythms, 93
Body weight management,
 type 2 diabetes
 avoidance of weight regain approaches,
 213–214
 bariatric surgery, 215–216
 dietary management, 212–213
 DiRECT, 212
 exercise, 214–215
 goals, 211–212
 LookAHEAD study, 212–213
Brain-adipose tissue axis, 97–99
Brain-gut axis, 95–97
Brain-skeletal muscle axis, 100–101
Brown adipose tissue (BAT), 63–68, 70
Burden of disease, 12–13, 16, 20

C

Cardio-metabolic syndrome, 228
Cardiovascular disease (CVD)
 genetic studies, 285–286
 morbidity and mortality, 276–280
 regional adiposity, 286
 weight reduction, bariatric surgery, 282

- Caspase 1, 57
- Central nervous system, 428
- c-Fos immunohistochemical expression, 38
- Childhood obesity
- body-mass index, 296
 - cardiovascular co-morbidities, 305
 - device therapy, 316
 - epidemiology, 298
 - etiology, 298–305
 - individual/patient-level prevention and intervention, 311–316
 - lifestyle modification therapy, 314–315
 - metabolic and endocrine co-morbidities, 306–307
 - mortality, 311
 - musculoskeletal co-morbidities, 308
 - pharmacotherapy, 315
 - population-based prevention programs, 316–318
 - prevalence, 298
 - psychological co-morbidities, 309–310
- Cholecystokinin (CCK), 42, 77–78
- Cholesterylester-transfer-protein (CETP), 235
- Chronodisruption, 94
- Chylomicrons, 235
- Circumventricular organs, 36, 45
- Clinical assessment, obesity, 152–153
- aetiology, 153–155
 - cardiovascular disease, 156
 - gastrointestinal disease, 161
 - metabolic disease, 157
 - musculoskeletal disease, 165
 - neoplastic disease, 166
 - neurological disease, 167
 - psychiatric, 168
 - reproductive health, 159
 - respiratory disease, 163
 - scoring systems, 169
- Cognitive behavioural therapy (CBT), 360
- Co-morbidities, obesity
- cardiovascular disease, 156–157
 - gastrointestinal disease, 161–163
 - metabolic disease, 157–159
 - musculoskeletal disease, 165–166
 - neoplastic disease, 166–167
 - neurological disease, 167–168
 - psychiatric, 168–169
 - reproductive health, 159–161
 - respiratory disease, 163–165
 - scoring systems, 169–170
- Compassion focused therapy (CFT), 362
- Continuous positive airway pressure (CPAP) therapy, 256
- Cyclic obesity and weight-based stigma (COBWEBS), 351
- D**
- De novo* lipogenesis, 198, 206
- Diabetes in Remission Clinical Trial (DiRECT), 212
- Diabetes nephropathy, 255
- Diacylglycerol (DAG), 235
- Dialectical behaviour therapy (DBT), 361
- DiRECT, *see* Diabetes in Remission Clinical Trial (DiRECT)
- DSM-5, 131, 144, 147
- anorexia nervosa, 132
 - binge eating disorder, 133, 134
 - bulimia nervosa, 132–133
 - impact of, 141–142
- Dyslipidemia, 233–238
- E**
- Eating Disorders Postobesity Surgery, 137
- Economic cost, 19
- Ectopic fat, 276, 287, 289
- deposition, 104
- Emotional eating, 354
- Energy balance, 325–333
- and gut microbiota (*see* Gut microbiota)
- Entero-endocrine cells (EECs), 77
- Escape theory, 358
- Euglycaemic hyperinsulinaemic clamp technique, 204
- Exercise and obesity treatment
- behavior change processes, 343–344
 - energy gap, 329–331
 - with food restriction, 328–329
 - without food restriction, 327–328
 - weight gain, prevention of, 343
 - weight loss and weight loss maintenance (*see* Weight loss and exercise)
 - weight management programs, 339–343
- Expectancy theory, 359
- F**
- FAT ATTAC model, 56–57
- Fatty acids, 184, 188
- Fatty liver, *see* Non-alcoholic fatty liver disease (NAFLD)

Feeding and eating disorders (FED)
 DSM-5 diagnostic criteria for, 132–133
 epidemiology of, 141
 treatment of, 146

Fibrosis, 103

Food, 353–355
 addiction, 129, 138, 139

Free fatty acids (FFAs), 230, 236

G

Gastric inhibitory peptide (GIP), 80–81

Ghrelin, 42, 83–84

Glucagon-like peptide-1 (GLP-1), 44–45,
 78–79

Gut hormones
 amylin, 81
 CCK, 78
 entero-endocrine cells, 77
 ghrelin, 84
 GIP, 80
 GLP-1, 78
 leptin, 83
 mechanisms, 84–85
 oxyntomodulin, 80
 peptides, 81

Gut microbiota
 composition of, 111–112
 epigenetic changes, 116
 exercise impact on, 118–119
 high fat diets, 116
 metabolic endotoxemia, 114–116
 plant vs. animal diets, 116–118
 short chain fatty acids, 113–114

H

Heart failure, 280, 286, 290

Hepatic insulin resistance
de novo lipogenesis, 198, 206
 IRS-2 phosphorylation, 206, 207

High density lipoprotein (HDL), 234, 235

Hypertension, 428
 hormones, 231–233
 mechanisms, 230–231
 prevalence of, 230
 Renin-angiotensin-aldosterone system, 428

Hypertrophic adipocytes, 53–54

Hypopnea, 245

Hypothalamic obesity, 302

Hypothalamic-pituitary-adrenal (HPA) axis,
 253

Hypothalamus, 33, 34, 36, 37, 40, 42, 43, 44, 46

Hypoxia, 103

I

Iatrogenic mechanisms, 357

Insulin, 35, 38, 41–42
 resistance, 184, 185, 189

Integrated obesity care pathways
 cancer model, 433
 clinical signs of, 429
 diagnostics, 430–431, 433
 integrated care, model of, 429–430
 motivation and compliance, 432
 multidisciplinary care, 429, 433
 multiple mechanisms of
 treatments, 431
 obese morbidity, 429
 predictors of response, 434
 treatment targets, 432–433

Intermittent hypoxia, 252

J

Jak2-STAT3 signaling pathway, 41

L

Leptin, 35, 37, 39, 40, 43, 46, 82–83
 deficiency, 233

Lipoprotein metabolism, 234–235

Liraglutide, 411–414

Liver-pancreatic brain axis, 99–100

LookAHEAD (Action for Health in Diabetes
 Study), 212

Lorcaserin (Belviq[®]), 409

Low-density lipoprotein (LDL), 234, 238

Low-grade inflammation, 103

M

Medications for chronic weight management,
 404
 liraglutide, 411
 lorcaserin, 409–411
 naltrexone/bupropion, 416–418
 orlistat, 404
 phentermine/topiramate extended release,
 414–416
 practices for patient management, 418–420

Melanocortin 4 receptor (MC4-R)
 deficiency, 233

Metabolic-neurochemical processes, 357

Metabolic regulation, 326–327, 331–333,
 338, 344, 345

Metabolic surgery, *see* Bariatric surgery

- Metabolic syndrome (MetS), 183, 185, 228, 306, 307
- Mindfulness, 363
- Mitochondria, 52
- Morbidity, 2, 4–5, 6
- Mortality, 3–4, 16–18
- Motivational interviewing (MI), 361
- Multidisciplinary team working, 173
- Multiorgan cross-talk, 96, 101
- Muscular insulin resistance
 - elevation of non-esterified-fatty-acids, 205
 - euglycaemic hyperinsulinaemic clamp technique, 204
 - intracellular insulin action, pathways, 204
 - mitochondrial functions, 205
- N**
- Naltrexone/bupropion, 416
- National Weight Control Registry (NWCR), 341
- Neprilysin, 82
- Neuropeptide Y, 233
- Niemann-Pick C1 Like 1 protein (NPC1L1), 235
- Night eating, 128, 136
- Non-alcoholic fatty liver disease (NAFLD), 307–308
 - diagnosis, 185–187
 - pathogenesis, 184–185
 - prevalence, 182
 - spectrum and development, 183
 - therapeutic approaches, 187–189
- Non-alcoholic steatohepatitis, 189
- O**
- Obesity, 54, 68, 129, 129–130, 142–144, 147, 180–182
 - anthropometric indices, 5
 - and antibiotics, 119–121
 - bariatric-metabolic surgery (*see* Bariatric-metabolic surgery)
 - binge eating, 358–359
 - and binge eating disorder, 133–135
 - BMI (Body Mass Index), 275, 277
 - burden of disability and premature mortality, 16
 - burden of disease, 12
 - children's criteria, 9–11
 - clinical assessment (*see* Clinical assessment, obesity)
 - CVD morbidity and mortality, 276
 - definition, 244, 275, 297
 - dieting experience, 357
 - dyslipidemia, 234
 - economic impact, 18–20
 - functional impairments, 15–16
 - genetic studies, 285
 - grazing, 137
 - and gut microbiota (*see* Gut microbiota)
 - heart failure and obesity paradox, 280
 - and human evolution, 180
 - hypertension, 229–233
 - induced liver disease (*see* Non-alcoholic fatty liver disease (NAFLD))
 - intergenerational amplification and cohort effects, 11–12
 - and mental health, 356
 - morbidity, 4
 - mortality risk, 3
 - motivation, 352–353
 - in non-Caucasian communities, 5–7
 - predictors of weight loss and metabolic benefits, 385–386
 - pre-operative assessment and preparation, 386–387
 - prevalence of, 228, 275
 - prevention and economic benefits, 20
 - procedure selection, 384–385
 - psychological interventions (*see* Psychological interventions, obesity)
 - regional adiposity and cardiometabolic disease, 286
 - risk of cancer, 13–15
 - secular trends and sex differences, 7
 - and stress, 357
 - therapeutic targets, 121–122
 - type 2 diabetes, 208
 - weight reduction, bariatric surgery, 282
- Obesity, pathophysiology
 - de novo* lipogenesis, 198, 206
 - ectopic fat, 208
 - elevation of non-esterified-fatty-acids, 205
 - euglycaemic hyperinsulinaemic clamp technique, 204
 - insulin resistance and mitochondrial functions, 205–206
 - insulin resistance in muscles, 204
 - intracellular insulin action, pathways, 204
 - IRS-2 phosphorylation, 206–207, 207
 - physical inactivity, 207–208
 - visceral fat, 208
- Obesity paradox, 280–282, 287, 290

- Obstructive sleep apnea (OSA), 308
 adiponectin, 254, 254
 associations and complications, 246–247
 autonomic function, 253
 clinical features, 245
 continuous positive airway pressure
 treatment, 256–259
 diabetes complications, 255
 diabetes nephropathy, 255
 dyslipidaemia, 252, 252
 HPA axis, 253
 hypertension, 251, 252
 inflammatory responses, 254
 insulin resistance and type 2 diabetes,
 247–248
 mandibular advancement devices, 262
 metabolic syndrome, 248–250
 obesity, 250–251
 oxidative stress, 253
 pathophysiological pathways, 249
 pharmacological/positional therapy, 263
 prevalence, 245
 risk factors, 245
 short sleep duration, 254
 upper airway surgical procedures, 263
 weight loss treatment, 260–262
- Orlistat (Xenical, Alli), 404–409
- Other specified feeding or eating disorders
 (OSFED), 133, 135–141
- Oxytomodulin, 80
- P**
- Pathogenesis of obesity, gene-environment
 disequilibrium, 91–93
- Peptide YY, and pancreatic polypeptide, 43
- Personal fat threshold (PFT) hypothesis, 210,
 210–211
- Pharmacologic agents, 146
- Phentermine/topiramate extended
 release, 414
- Phospholipid transfer protein (PLTP), 235
- Pink adipocytes, 68
- Polycystic ovary syndrome, 307
- Practice guidelines, 144
- Prevalence, 7–9, 17
- Prevention, 20–26
- Protein tyrosine phosphatase 1B (PTP1B), 83
- Psychiatry, 133
- Psychological interventions, obesity
 cognitive behavioural therapy, 360
 compassion focused therapy, 362
 dialectical behaviour therapy, 361
 mindfulness, 363
 motivational interviewing, 361
 targeting behaviour, 360
- Psychosocial stress, 357
- PTSD, 355
- R**
- Regional adiposity, 286–289
- Renin–Ang system (RAS), 230
- Restraint theory, 357
- S**
- Set point, 427–428
- Sleep-disordered breathing (SDB), 244
- Solitary tract nucleus, 36
- Steatosis, 186
- Sympathetic nervous system (SNS), 230, 231,
 233
- Symptoms, 429
 hunger, 429
 satiation, 429
- T**
- Treatment, 135, 144–147
- Triacylglycerol (TAG), 234, 235
- Tumour necrosis factor- α (TNF- α), 254
- Twin cycle hypothesis, 197, 198
- Type 2 diabetes, 306
 avoidance of weight regain approaches, 213
 bariatric surgery, 215
 beta-cell dedifferentiation, 200
 beta-cell exhaustion, 201
 Counterbalance study, 200, 201
 deposition of amyloid, 202
 desensitization of beta-cells, 201–202
 diagnosis, 60, 64
 dietary management for weight loss, 212
 DiRECT, 212
 endoplasmic reticulum stress, 202–203
 exercise, 214
 goals of weight management, 211
 long term reversibility, 200
 vs. obesity, 208–211
 pathophysiology, 196–197
 PFT hypothesis, 210, 210
 twin cycle hypothesis, 197, 198
 Whitehall II study, 197, 199

U

- United Kingdom Prospective Diabetes Study (UKPDS)
 - dietary management for weight loss, 212
 - insulin impairment and beta-cell reduction, 200
 - relationship between type 2 diabetes and obesity, 209, 209
- Uvulopalatopharyngoplasty (UPPP), 263

V

- Very low density lipoproteins (VLDL), 235, 236
- Visceral adiposity, 102

W

- White adipose tissue (WAT), 63, 65, 70
- Weight loss and exercise
 - and dietary restriction, 337–338
 - supervised exercise, 333–336
 - unsupervised exercise, 336
 - weight loss maintenance, 338–339
- Weight loss, bariatric-metabolic surgery,
 - see* Bariatric-metabolic surgery
- Weight reduction, 282–285
- Weight stigma, 351–352
- Whitehall II study, 197, 199