

Navigating Through The New Era of Obesity Management

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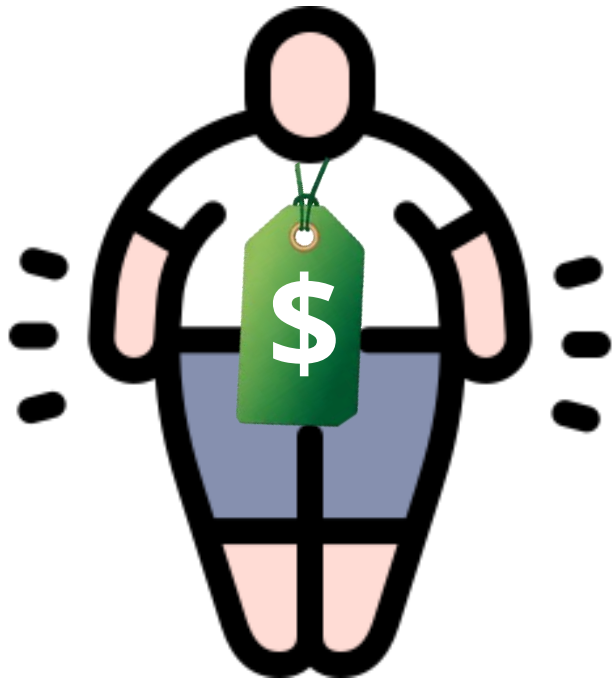
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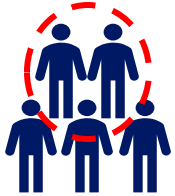
The Economic Burden of Obesity & Comorbidities



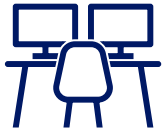
The \$4.32 Trillion Statistic: The comprehensive report by the **World Obesity Federation**, projects that the global economic impact of overweight and obesity will surpass \$4 trillion annually by 2035—accounting for roughly 3% of the global GDP.

The Comorbidity Multiplier: Bjornson et al. in their systematic review reported that relative to a normal weight cohort, total costs **among PwO ranged from 1.1-fold (class I) to 3.3-fold (class III) higher** and costs by the presence of **obesity-related complications** (relative to an “obesity-only” group) **costs** were up to **5-fold greater** among **PwO with both type 2 diabetes and hypertension**.

Obesity burden in the APAC region



The APAC region now includes the largest number of individuals living with overweight or obesity worldwide (BMI ≥ 25 and ≥ 30 kg/m², respectively) – approximately **one billion** individuals, which equates to two out of every five adults in the region¹



Public health experts attribute this regional phenomenon to the increase in the availability of **lower-cost high-calorie food**, and more **sedentary lifestyles** due to rapid urbanisation and a shift away from manufacturing-led employment¹



The burden of obesity in the APAC region is compounded by the observed increased prevalence of **obesity-related comorbidities** at a much **lower BMI** in some Asian countries than is seen in Western countries²



The WHO BMI threshold of ≥ 30 kg/m² may therefore be substantially **underestimating** the true health **burden of obesity**, and further magnifies the need for clear estimates of its impact in a region of the world where obesity incidence is developing fastest

APAC, Asia-Pacific; BMI, body mass index

1. ADBI Working Paper Series – Asian Development Bank: *The Imminent Obesity Crisis in Asia and the Pacific: First Cost Estimates*. 2017. Available at: <https://www.adb.org/sites/default/files/publication/320411/adbi-wp743.pdf>. Accessed May 2023; 2. Pradeepa R et al. *Indian J Med Res* 2015;142:139–50.

RESEARCH

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Population-level impact of weight loss on predicted healthcare spending and the incidence of obesity-related outcomes in the Asia-Pacific region: a modelling study

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Abstract

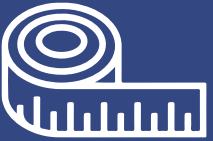
Background The Asia-Pacific (APAC) region includes a significant proportion of the global population currently living with overweight and obesity. This modelling analysis was conducted to quantify the incidence of obesity-related comorbidities and change in obesity-related costs over 10 years with a hypothetical 10% weight loss in Australia, South Korea, Thailand, and India.

Methods An epidemiological-economic model was used to describe current prevalence and direct medical costs of ten obesity-related comorbidities, including type 2 diabetes and hypertension, in adults aged 20–69 years living with obesity, and estimate incidence and costs over 10 years. Incidence reduction and the associated savings by 2032 were then estimated for a 10% weight-loss scenario.

Results The total estimated medical costs for the ten obesity-related comorbidities in 2022 were 2.9, 7.5, 10.2, and 23.3 billion USD in Australia, South Korea, Thailand, and India, respectively. Costs increase to 6.9, 18.4, 23.5, and 44.3 billion USD in 2032, if insufficient action is taken. A 10% weight reduction would result in estimated savings of 0.3, 1.2, 2.2, and 3.0 billion USD in Australia, South Korea, Thailand, and India, respectively, in 2032, with cumulative savings over the 10-year period of 1.8, 7.0, 13.0, and 17.4 billion USD. Incidence of comorbidities were estimated to rise less in the weight-loss scenario.

Conclusions The financial, societal, and health benefits of a substantial but achievable 10% weight loss in adults living with obesity, and the consequences of insufficient action, are pronounced in the APAC region. To achieve sustained weight loss in the real world, policy actions for addressing barriers to obesity management are required.

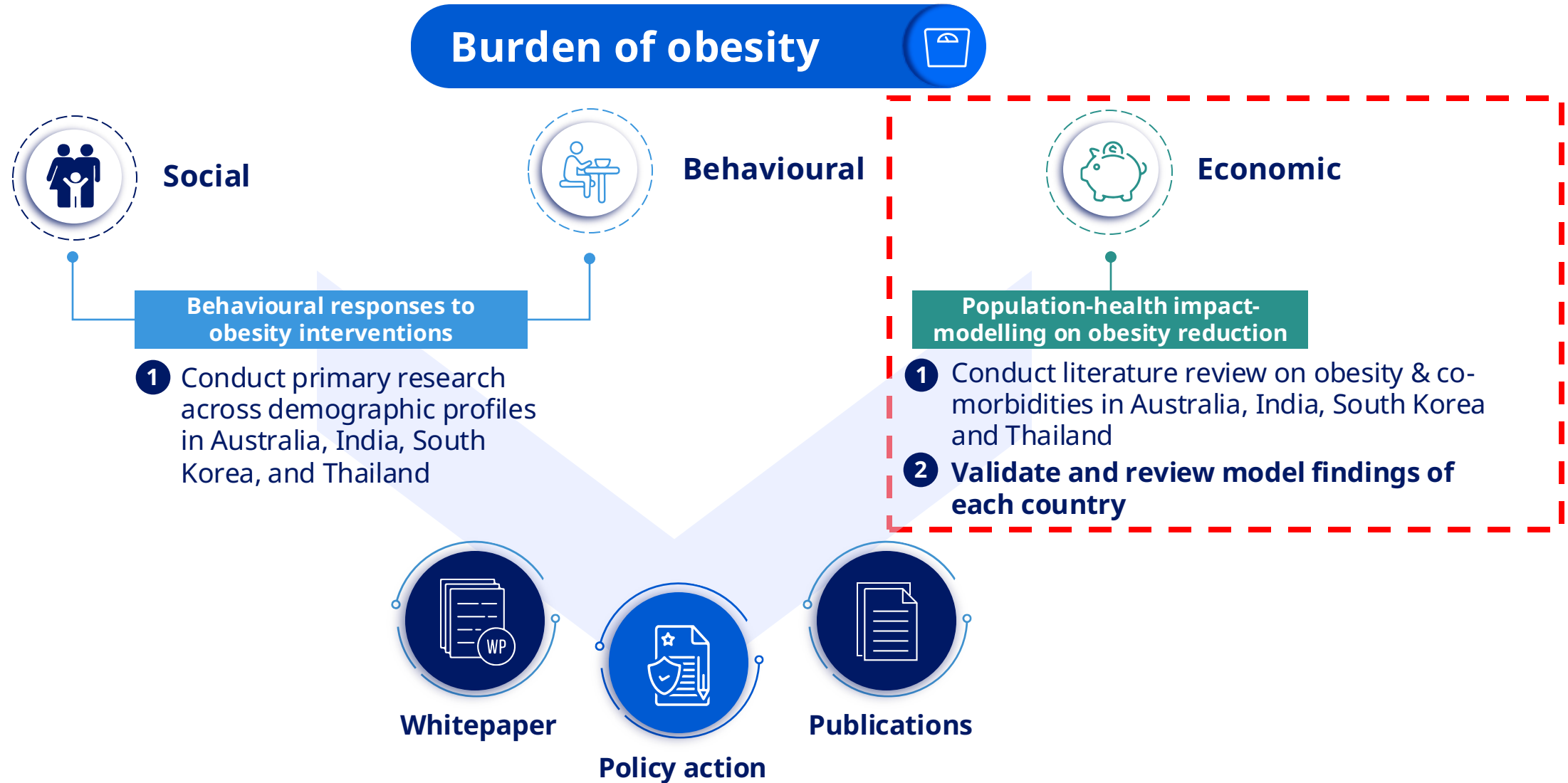
Keywords Asia-Pacific, Healthcare cost, Obesity, Obesity comorbidity, Policy, Weight loss



APAC Obesity Disease Burden Study

Secondary Research Design & Outcomes

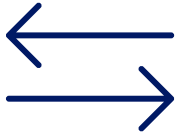
Obesity disease burden study structure



Cost of obesity in the APAC region



In the APAC region obesity contributes to approximately 12% of the total current regional healthcare expenditure, with an associated cost to the global economy of 166 billion USD a year¹



Additional burden arises from obesity-related excessive medical expenses; these carry a large opportunity cost, and reduce and divert the availability of healthcare resources away from other urgent health crises



Failure to respond to the economic burden of overweight and obesity and failure to adhere to targets will have extensive implications for healthcare systems, and considerable impacts on economic growth and productivity²

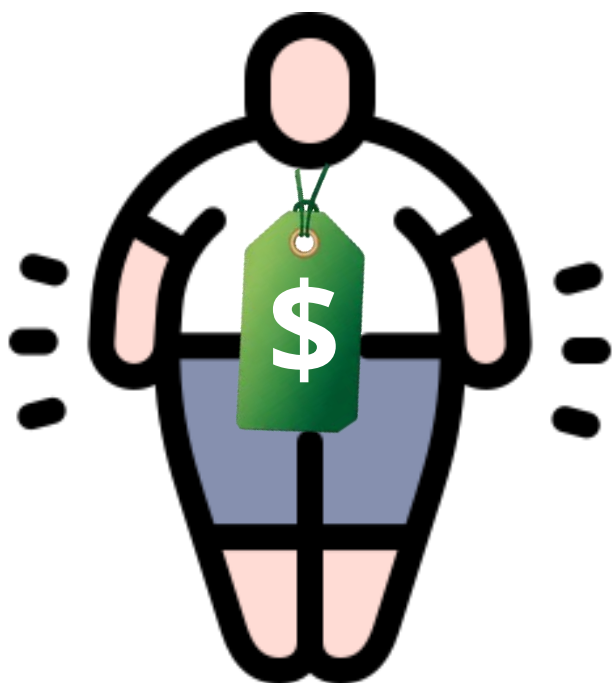


Understanding the potential societal benefit of a 10% weight loss at the population-level is now a relevant and timely exercise for the APAC region

APAC, Asia-Pacific; BMI, body mass index; USD, United States dollars

1. ADBI Working Paper Series – Asian Development Bank: *The Imminent Obesity Crisis in Asia and the Pacific: First Cost Estimates*. 2017. Available at: <https://www.adb.org/sites/default/files/publication/320411/adbi-wp743.pdf>. Accessed May 2023; 2. World Obesity Federation. *Obesity: missing the 2025 global targets*. 2020. Available at: https://s3-eu-west-1.amazonaws.com/wof-files/970_-_WOF_Missing_the_2025_Global_Targets_Report_ART.pdf. Accessed May 2023

The Economic Burden of Obesity & Comorbidities



Out-of-Pocket Financial Toxicity in India: Research shows that urban Indian households with obese or morbidly obese individuals face massive out-of-pocket health expenditures that eat up over 5% of their total domestic income.

Region / Study	Average Out-of-Pocket Expense (OOPE)	Key Drivers of Financial Toxicity
Western Europe (France)	5% of total household revenue (Avg. €2,027 per individual annually)	Despite universal healthcare covering core medical costs, households pay heavily for specialized nutrition, psychological support, physical therapy, and lifestyle adjustments.
Multi-National Survey (Italy, Spain, South Korea, Brazil, Japan)	Nearly 17% of annual household income (Global mean of \$7,351 spent annually)	Driven by the fact that many national health systems classify anti-obesity medications (AOMs) as "cosmetic" or lifestyle therapies, forcing patients to pay 100% of drug costs out of pocket.
United States	Exceeds 20% of post-subsistence income for low-income brackets with obesity	Driven by high commercial insurance deductibles, co-pays, and the staggering out-of-pocket cost of modern medications when excluded (Federal, K. et al. 2024)

Results: direct medical costs in 2022 and in 10 years (no-intervention scenario)

		2022		2032
Country	Population with obesity	Direct medical costs ^{POP} N (USD)	Proportion of GDP (%)	Direct medical costs ^{POP} N (USD)
Australia*	5.2 million	2.9 billion	0.21%	6.9 billion
South Korea*	13.8 million	7.5 billion	0.46%	18.4 billion
Thailand*	14.9 million	10.2 billion	2.1%	23.5 billion
India [†]	223 million	23.3 billion	0.86%	44.3 billion

*Costs estimated for Australia, South Korea and Thailand factor the direct medical costs of ten obesity-related comorbidities – diabetes, hypertension, dyslipidaemia, heart failure, atrial fibrillation, unstable angina/myocardial infarction, hip/knee osteoarthritis, asthma, sleep apnoea, and chronic kidney disease.

[†]Costs estimated for India only factor in six out of the ten obesity-related comorbidities factored in this model. Sleep apnoea, dyslipidaemia, atrial fibrillation and flutter, and unstable angina are excluded owing to data inconsistencies/limitations.

GDP, gross domestic product; POPN, population; USD, United States dollars.

Asia-Pacific: the economics are different

High volume, earlier metabolic risk and high out-of-pocket exposure change the business case.

- Asian populations develop diabetes, MASLD/MAFLD and CKD at lower BMI thresholds.
- Pacific Island nations carry some of the highest obesity and fatty-liver risk globally.
- India, China, Japan, Korea, Australia and ASEAN represent different payer realities—but the same metabolic cascade.
- The economic opportunity is prevention of downstream diabetes, kidney failure and liver progression—not only weight loss.

Clinical trigger

BMI alone under-prices risk; waist, metabolic phenotype and complications matter.

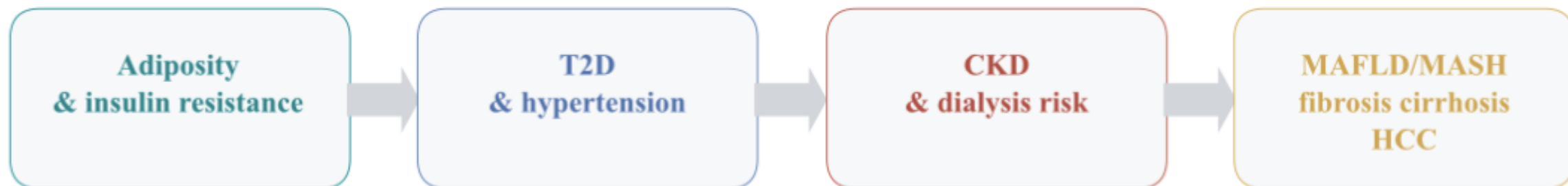
Payer trigger

Value must be benchmarked to avoided diabetes, CKD, dialysis, cirrhosis and HCC costs.

Source: WHO/IOTF Asia-Pacific BMI perspective; APASL MAFLD guideline; AIHW burden data.

The obesity cost cascade

The visible prescription or operation cost is small compared with downstream complications.



- Practice economics must price the avoided cascade, not only the immediate intervention.
- Patients may enter through diabetes, fatty liver, CKD, sleep apnoea or cardiovascular clinics—not only bariatric clinics.

Country cost examples that make the case

Use local numbers when speaking to payers, hospitals and governments.

Japan

Obesity-related complication costs: ~USD 46.4B in 2024; T2D ~USD 15.7B; CKD ~USD 1.8B.

Australia

Overweight/obesity: AUD 10.8B health spending in 2023–24; T2D AUD 1.8B, CKD AUD 1.4B.

Bangladesh

NAFLD evaluation burden projected at USD 7.11B if all estimated NAFLD patients were evaluated once.

China/HK

China diabetes burden projected at USD 355.2B in 2025; HK diabetes expenditure HKD 18.6B in 2023.

Source: ISPOR Japan 2024; AIHW 2026; Alam et al. Bangladesh NAFLD cost-of-illness 2023; Liu et al. Diabetes Obesity Metabolism 2025.

Results: baseline demographics

Type 2 diabetes was more common in South Korea and India than in Australia and Thailand, whereas **hypertension** was substantially more prevalent in Australia than the other countries

				
	Total			
	Australia	South Korea	Thailand	India
N	5,178,153	13,835,510	14,866,687	223,247,243
Comorbidity prevalence				
Type 2 diabetes	10.7%	15.3%	7.3%	15.9%
Asthma	20.7%	18.8%	19.0%	19.8%
Sleep apnoea	2.9%	1.1%	1.1%	1.2%
Hip/knee osteoarthritis	4.0%	2.4%	2.2%	2.0%
Hypertension	30.9%	24.0%	20.0%	20.5%
Dyslipidaemia	24.1%	23.7%	16.6%	19.3%
Heart failure	0.9%	0.6%	0.5%	0.5%
Chronic kidney disease	3.3%	2.7%	2.3%	2.3%
Atrial fibrillation and flutter	1.8%	1.2%	0.9%	0.9%
Unstable angina / myocardial infarction	2.4%	2.3%	1.5%	1.5%

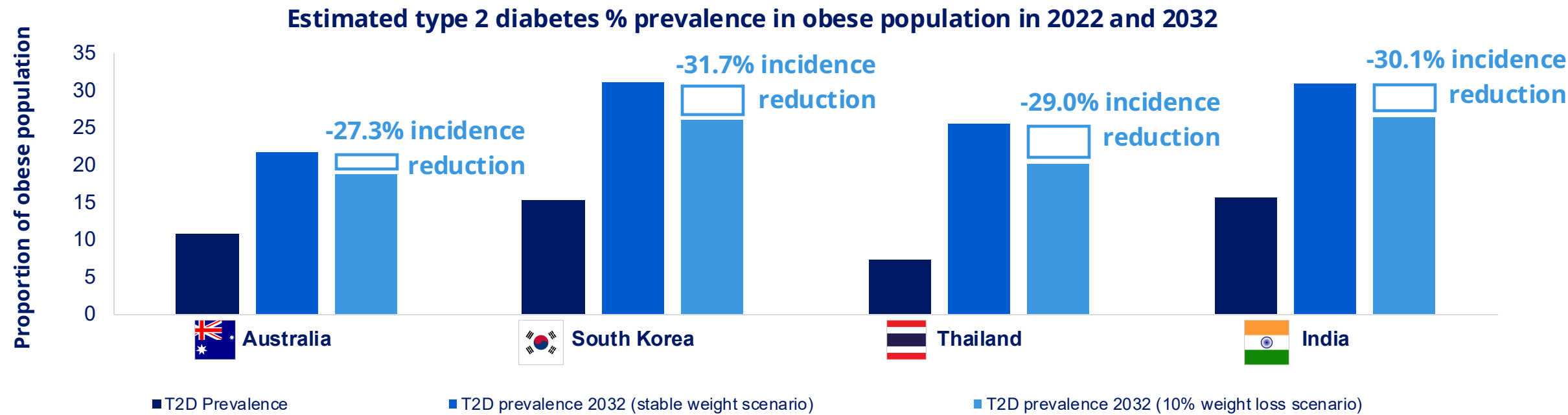
***Prevalence for local cohort with BMI 25/30 to 50 kg/m² and age 20–69 scaled from UK data.
BMI, body mass index.

Yoong J et al. Oral presentation. APAC Obesity Disease Burden Study and Policy Recommendations. ICO 2022

Results: cost savings in 2032 and cumulative cost savings in the 10% weight-loss scenario

				
	Australia	South Korea	Thailand	India
2032 savings vs no-intervention scenario	298 million USD BMI 30–50 kg/m ² Age 20–69 years	1.2 billion USD BMI 25–50 kg/m ² Age 20–69 years	2.2 billion USD BMI 25–50 kg/m ² Age 20–69 years	3.0 billion USD BMI 25–50 kg/m ² Age 20–69 years
10-year cumulative savings	1.8 billion USD	7.0 billion USD	13.0 billion USD	17.4 billion USD

Effect of 10% weight loss on 10-year type 2 diabetes incidence and costs



		Stable weight	10% weight loss		
	2022 costs	2032 costs	2032 costs	Cost savings in 2032	10-year cumulative savings
Australia	0.6 billion USD	1.2 billion USD	1.0 billion USD	0.2 billion USD	1.0 billion USD
South Korea	1.5 billion USD	3.1 billion USD	2.6 billion USD	0.5 billion USD	2.9 billion USD
Thailand	1.7 billion USD	5.9 billion USD	4.7 billion USD	1.2 billion USD	7.3 billion USD
India	3.8 billion USD	7.4 billion USD	6.3 billion USD	1.1 billion USD	6.4 billion USD

Yoong J et al. Oral presentation. APAC Obesity Disease Burden Study and Policy Recommendations. ICO 2022

Conclusions



Direct medical costs of **obesity** and its related comorbidities are **increasing** at an alarming rate in the APAC region, aggravated by the fact that some of the key comorbidities, such as type 2 diabetes, **occur at a lower BMI** in this region. The **economic benefits** of a reduction in the prevalence of obesity are, therefore, **profound**.



The simulation analysis indicated that achieving a **population-level weight loss of 10%** in each of these four APAC countries could **reduce** the predicted incidence in **obesity-related comorbidities**.



The **economic burden** identified in this analysis is **substantial**. However, it is likely that the **true burden** of obesity is being **underestimated** for several reasons.



10% weight loss in individuals in the real world is **achievable**. Transformative healthcare reform and corresponding resource commitments are needed to move towards this aspiration; however, this analysis demonstrates that the **consequences of insufficient action** will be substantial and costly, from both a public health and economic aspect.

The economic model has changed

Obesity care is no longer a single-intervention marketplace.

- GLP-1/GIP therapies have expanded the addressable population—and raised expectations.
- Surgery remains the most durable high-efficacy option for many patients, but now competes and collaborates with pharmacotherapy.
- Value increasingly sits in longitudinal care: diagnosis → treatment selection → intervention → maintenance → rescue.

Old economics vs new economics

The unit of value is shifting from the procedure to the patient journey.

OLD

Referral → operation → postoperative follow-up

Revenue concentrated around a procedural episode.

Success = volume + operating margin.

NEW

Acquisition → phenotype → medication/endoscopy/surgery → maintenance

Revenue distributed across longitudinal services.

Success = outcomes + retention + lifetime value.

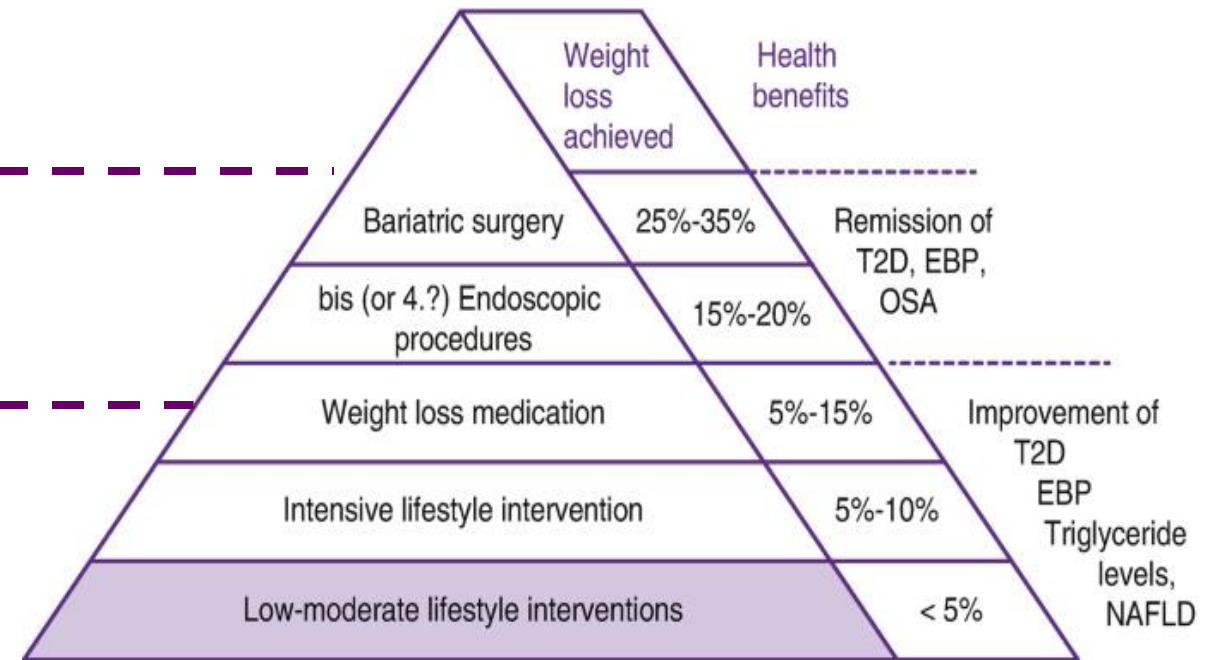
The Multi-Modal Treatment Pyramid (The New Standard of Care)

Synergistic Middle Ground

Utilising medical therapy as a bridge for high-risk pre-operative optimization (reducing liver volume and surgical risk) or as an adjuvant rescue tool to counter long-term post-operative weight regain

Profound, durable weight loss and metabolic resetting. Alters the gut microbiome and immediately downregulates hunger hormones (like Ghrelin) while boosting endogenous GLP-1/PYY production.

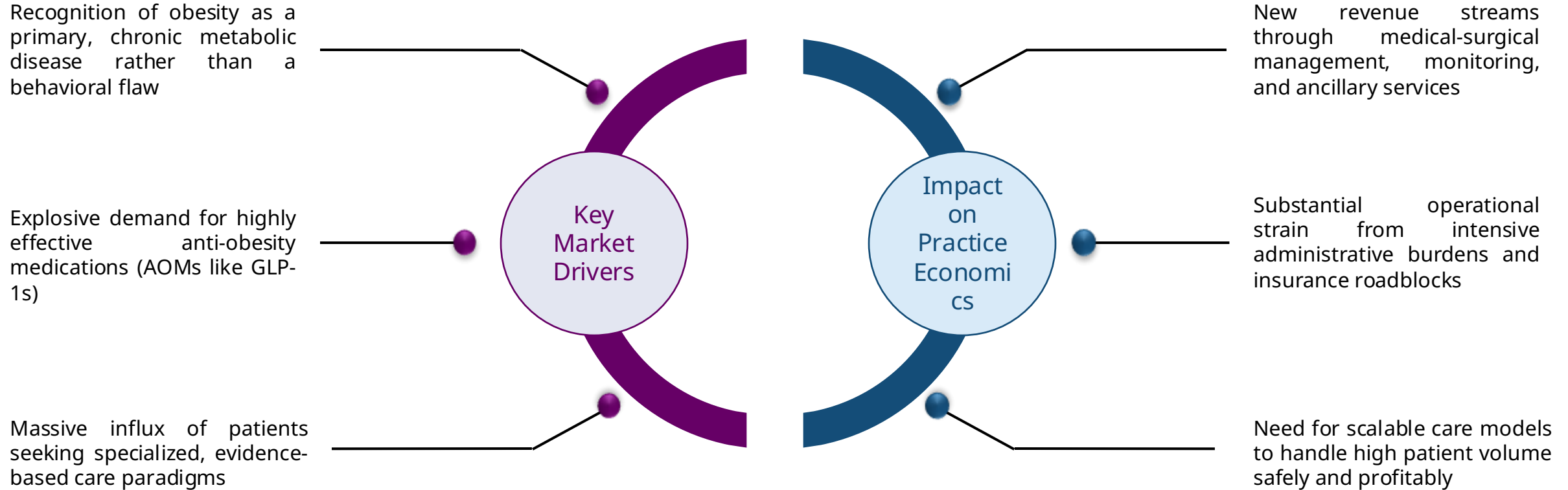
Act on the central nervous system to reset the body's "weight set-point," suppress appetite, and improve peripheral insulin sensitivity.



T2D: T2D type 2 diabetes; EBP: Elevated blood pressure; OSA: Obstructive sleep apnea; NAFLD: Nonalcoholic fatty liver disease.

The New Era of Obesity Management

Shift from behavioral lifestyle counseling to medical-surgical interventions



Surgery + medication is not zero-sum

The most resilient model is modality-agnostic.

- Medication may serve as primary therapy, bridge to surgery, risk reduction before surgery, or treatment of recurrence.
- Endoscopy can occupy the space between lifestyle/pharmacotherapy and surgery.
- Surgery provides high-efficacy durable treatment while creating a long-term follow-up population.
- The winning practice owns clinical decision-making and continuity—not a single procedure.

The APAC message

Obesity treatment is not a cost center; it is a chronic-disease cost-avoidance platform.

- For hospitals: obesity programs feed diabetes, renal, liver, sleep and surgical pathways.
- For payers: the comparator is not “no treatment”; it is diabetes, CKD, dialysis, cirrhosis and lost productivity.
- For patients: integrated care reduces fragmentation and protects long-term health.
- For governments: early treatment is a NCD strategy, not a cosmetic intervention.