

THE IMPACT OF COMPLICATIONS ON HEALTHCARE COSTS
IN OBESITY–OUTCOMES OF A PHARMACOECONOMIC
WEIGHT LOSS MODEL



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INTRODUCTION

Obesity pandemic emerges all over the globe logarithmically, not only in adults but also in children and adolescents, regardless of socioeconomic status.

According to the World Health Organisation European Regional Obesity Report, Turkey has the highest rate of overweight and obesity in Europe.(1,2)

OBJECTIVE

This study used a weight loss pharmacoeconomic model to assess the influence of obesity on public health by examining its effects on private health institutions and its financial costs.

METHOD

A micro-costing approach was used to estimate the direct healthcare costs of 10 obesity-related comorbidities from the perspective of private healthcare providers in Turkey (3,4).

A survey was conducted on a representative sample of physicians in Turkey to determine resource utilization rates for comorbidities in expenditures.

The unit costs of each cost item were analysed for type A, B, and C private hospitals. Costs in the different categories were obtained by multiplying the unit costs by the health resource utilisation rate.

RESULTS

The study demonstrates an analysis of the varying costs of obesity-related complications across different segments of private hospitals. It emphasizes the substantial differences in annual expenses, with A-segment private hospitals incurring the highest costs. Specifically, the study details the specific costs associated with different complications, showing that chronic kidney disease (CKD) presents the highest financial burden, while hypertension emerges as the least costly complication. (Figure 2)

Furthermore, the study outlines the distribution of costs across different hospital segments, shedding light on the proportion of total costs attributed to various cost items. Additionally, the study examines the impact of weight loss on reducing the costs of obesity-related complications, with a particular focus on the cost reduction associated with Type 2 Diabetes Mellitus (T2DM) across different age groups and weight loss rates. The findings reveal a notable trend: as patients get younger, T2DM accounts for a larger portion of the costs of obesity-related complications (Table 1, Figure 1).

Overall, the study provides a comprehensive exploration of the economic implications of obesity-related complications, emphasizing the nuanced cost variations across hospital segments and the influence of age and weight loss on these financial considerations.

Table 1. Distribution of Obesity Related Complication Costs According to Age Stratification in Segment A Hospitals (Euro)

Segment A Hospital											
Age Group*	Weight Loss Rate	Asthma	Atrial fibrillation	CKD	Dyslipidaemia	Heart failure	Hypertension	Osteoarthritis	Sleep apnea	T2D	Unstable angina / MI
20-29	5%	164.277	10.183	140.506	546.920	25.634	451.642	42.439	562.304	1.749.156	390
	10%	324.621	15.578	253.378	1.134.076	29.703	901.920	90.177	1.001.067	3.307.377	520
	20%	626.885	17.404	384.373	2.393.047	7.866	1.777.705	188.671	1.585.504	5.844.865	325
30-39	5%	410.647	61.630	731.966	3.191.494	147.678	2.069.594	469.978	2.085.781	7.804.959	7.328
	10%	810.064	97.994	1.303.081	6.644.039	177.511	4.142.865	979.036	3.716.120	14.778.285	9.115
	20%	1.568.706	111.547	1.974.358	14.057.776	77.195	8.192.772	2.045.942	5.919.739	26.216.653	6.971
40-49	5%	5.290	239.096	1.875.536	6.830.893	542.344	3.806.808	1.760.782	3.093.387	15.411.051	33.631
	10%	1.045.846	390.618	3.343.586	14.245.029	696.336	7.640.904	3.683.806	5.510.600	29.256.481	44.234
	20%	2.025.565	461.752	5.101.130	30.271.690	389.215	15.189.516	7.797.427	8.846.952	52.163.428	42.743
50-59	5%	522.562	679.789	4.724.468	8.033.669	1.281.033	3.772.636	3.103.954	2.848.124	18.104.279	68.032
	10%	1.032.331	1.112.312	8.331.766	16.779.452	1.706.666	7.585.500	6.491.612	5.087.398	34.429.391	96.434
	20%	2.009.432	1.329.310	12.808.003	35.850.511	1.050.301	15.133.508	13.802.748	8.204.617	61.645.058	97.660
60-69	5%	356.551	1.237.505	7.756.540	4.753.941	2.316.901	2.293.974	2.713.886	1.434.782	13.552.900	65.703
	10%	701.885	2.041.382	13.780.666	9.953.714	3.076.329	4.619.015	5.677.020	2.567.210	25.791.055	91.868
	20%	1.360.347	2.429.471	21.130.318	21.347.556	1.888.257	9.248.412	12.062.044	4.114.351	46.203.595	88.380

Figure 1. Cost contributors to total healthcare costs across 10 ORCs according to hospital types (%)

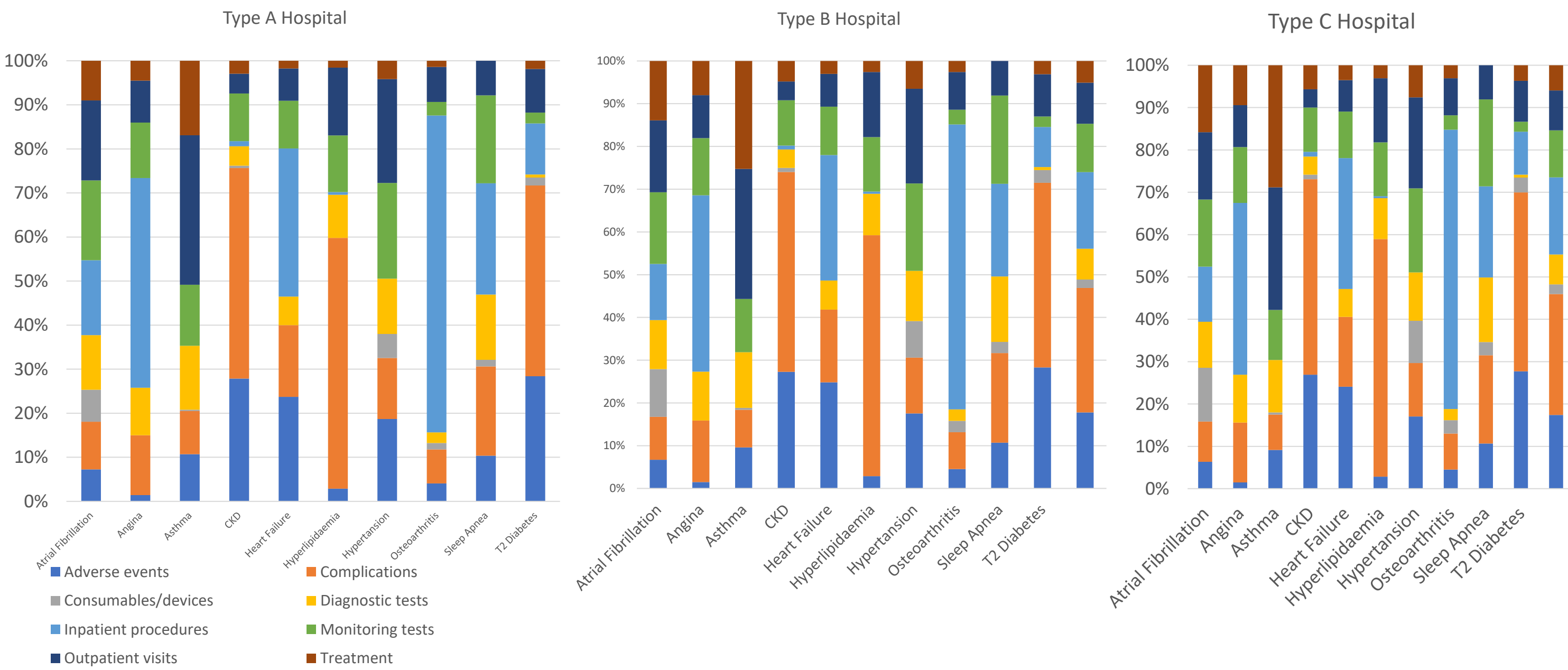
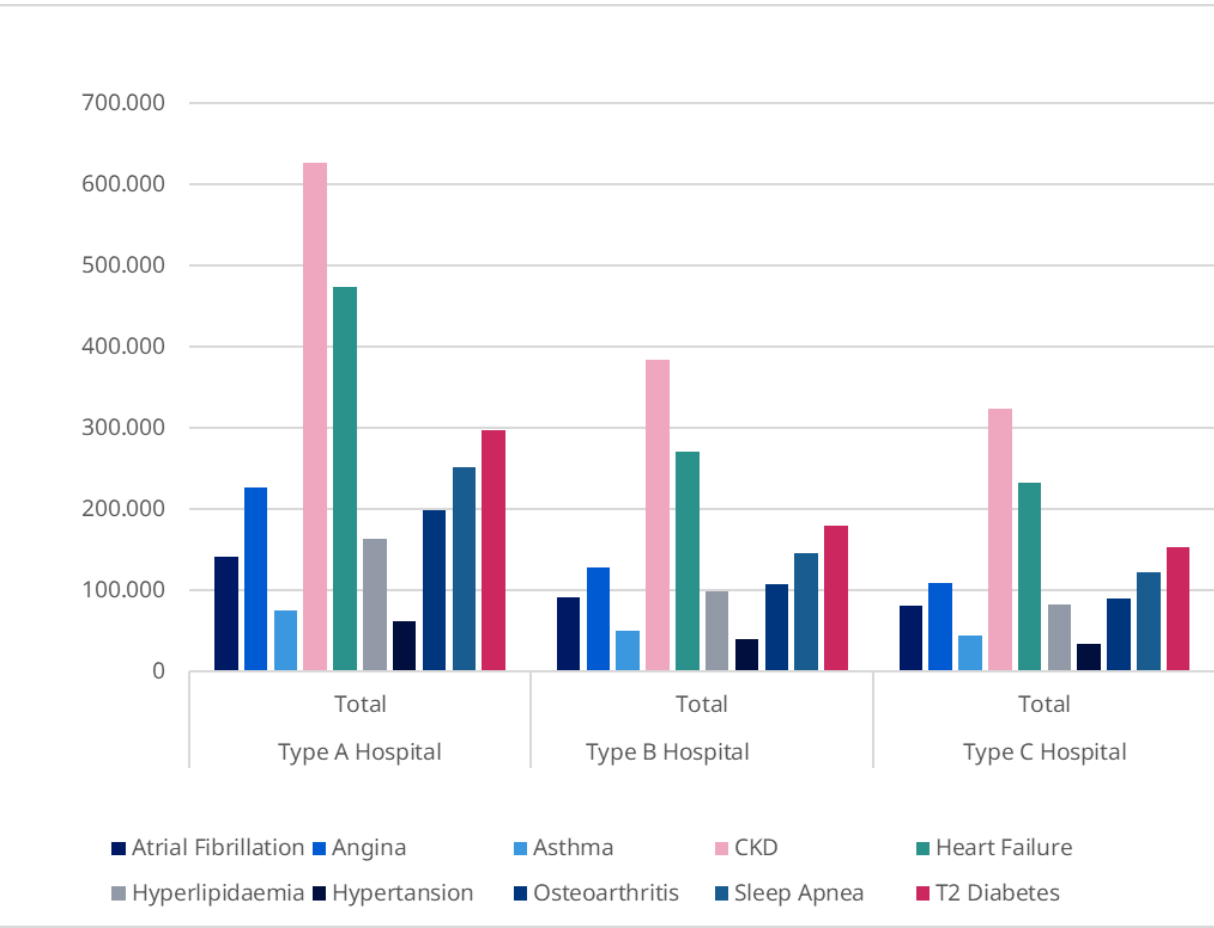


Figure 2. Estimated annual healthcare costs (TRY; 2023) of ORCs in adults with obesity in Turkey According to Hospital Types



CONCLUSIONS

There is no country in the world where obesity is not a significant problem. According to the current pharmacoeconomic model, comorbidities were identified as the primary factors contributing to the costs associated with obesity. Weight loss decreased healthcare expenditures significantly in obese patients, and T2DM was the leading cause in all age groups.

REFERENCES

1. Zhang X, Ha S, Lau HC, Yu J. Excess body weight: Novel insights into its roles in obesity comorbidities. *Semin Cancer Biol.* 2023;92:16-27. doi:10.1016/j.semcancer.2023.03.008

2. World Health Organisation. WHO European Regional Obesity Report 2022. 2022 [cited 2022 Nov 8]; Available from: <https://apps.who.int/iris/handle/10665/353747> 2024;69(8):2741-2753. doi:10.1007/s10620-024-08504-8

3. Haase CL, Lopes S, Olsen AH, Satylganova A, Schnecke V, McEwan P. Weight loss and risk reduction of obesity-related outcomes in 0.5 million people: evidence from a UK primary care database. *Int J Obes (Lond.)* 2021;45(6):1249–58.

4. Yavuz Gogas D, Akhtar O, Low K, et al. The Economic Impact of Obesity in Turkey: A Micro-Costing Analysis. *Clinicoecon Outcomes Res.* 2024;16:123-132. Published 2024 Mar 5. doi:10.2147/CEOR.S446560

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