Variation in obesity burden, multimorbidity, and healthcare costs across obesity class, sex, and race/ethnicity in the United States

EPH216

To download the poster and its supplement, please scan the Quick Response (QR) codes. Copies of this poster and its supplement obtained through the QR codes are for personal use only and may not be reproduced without permission from the authors of this poster

Plotkin M[1], Ó Hartaigh B[1], Cardel MI[1,2], Mountain G[3], Holloway S[3], Pearson-Stuttard J[3]

[1]Kailera Therapeutics Inc., Waltham, MA, USA; [2]Center for Integrative Cardiovascular & Metabolic Disease, University of Florida, Gainesville, FL, USA; [3]Lane Clark & Peacock LLP, London, UK

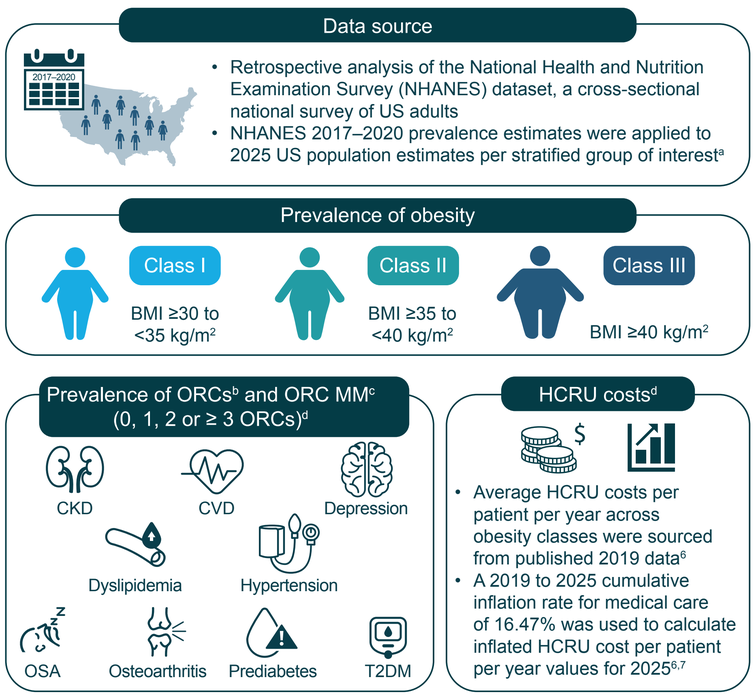
Objective

- To quantify disparities in obesity burden, obesity-related complications (ORCs), and healthcare resource utilization (HCRU) costs by obesity class, sex, and race/ethnicity among US adults.

Introduction

- Obesity is a chronic, complex disease with a growing prevalence and economic burden for both healthcare systems and payers.
- Globally, it is estimated that over 10% of adults living with higher levels of obesity (body mass index [BMI] ≥35 kg/m^2) will require medical intervention during their lifetime.[1]
- Individuals living with overweight or obesity are at higher risk of developing metabolic and chronic complications, resulting in high long-term HCRU and associated costs:[2,3] in 2019, the annual costs associated with obesity in the US were estimated to exceed $170 billion.[4]
- Real-world evidence demonstrates that the prevalence and economic burden of ORCs increase with higher BMI,[5] but there are limited data on how this burden of disease varies across obesity class, sex, and race/ethnicity.
- As next-generation obesity management medications (OMMs) are developed, a broader assessment of these disparities is required to facilitate more targeted healthcare planning and resource utilization.

Methods



BMI=body mass index; CKD=chronic kidney disease; CVD=cardiovascular disease; HCRU=healthcare resource utilization; MM=multimorbidity; NHANES=National Health and Nutrition Examination Survey; ORC=obesity-related complication; OSA=obstructive sleep apnea; T2DM=type 2 diabetes mellitus.
[a] 2025 population estimates were derived from US Census data.[8,9] [b] ORCs selected represent the nine most reported ORCs in the NHANES dataset. [c] MM describes the co-occurrence of two or more ORCs. [d] All data were evaluated across obesity class, sex, and race/ethnicity.

Results

Prevalence of obesity

- The 2025 US Census reports a total of 269,763,509 adults (**Supplementary Table 1**),[8] of whom 111,789,999 (41.4%) were estimated to be living with obesity (**Table 1**).[9]
  - Respectively, 21.6%, 11.0%, and 8.9% were estimated to be living with class I, class II, and class III obesity (values are subject to rounding).[9]
- The prevalence of class II and III obesity was higher in women than men, with the greatest disparity among those living with class III obesity (11.3% and 6.3%, respectively) (**Supplementary Figure 1**).
- Regarding race/ethnicity, class II and III obesity were most prevalent in non-Hispanic Black individuals (14.0% and 13.9%, respectively) (**Supplementary Figure 2**).
- When assessed by sex and race/ethnicity, non-Hispanic Black women had the highest prevalence of class II and III obesity (16.1% and 18.8%, respectively) (**Supplementary Figure 3**).
- For comparison, data for class I obesity are presented in **Supplementary Figures 1–3**.

Prevalence of ORCs and ORC multimorbidity (MM)

- Across obesity classes, the most prevalent ORCs were dyslipidemia (67.4–72.8%), hypertension (45.0–53.1%), and prediabetes (39.9–41.8%) (**Supplementary Figure 4**).
  - The prevalence of hypertension, type 2 diabetes mellitus (T2DM), osteoarthritis, obstructive sleep apnea (OSA), and depression generally increased with obesity class.

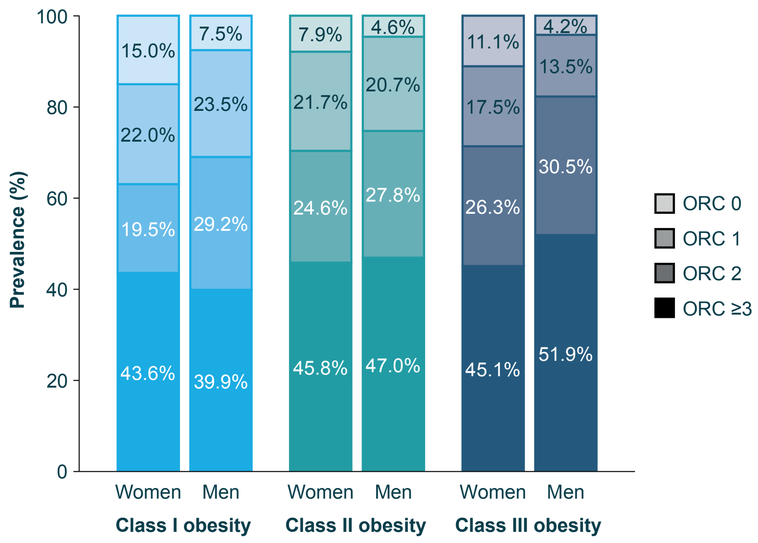
Table 1. Demographics

	Total	Women	Men
Population living with obesity, n	111,789,999	57,091,912	54,670,691
Race/ethnicity, n			
White	63,769,515	31,366,590	32,459,834
Asian	2,797,723	1,320,927	1,487,217
Non-Hispanic Black	16,797,068	10,159,088	6,437,712
Hispanic	23,291,300	11,623,279	11,685,076
Other/multiracial	5,338,173	2,967,066	2,404,396

NHANES=National Health and Nutrition Examination Survey.
NHANES 2017–2020 prevalence estimates were applied to 2025 US population estimates per stratified group of interest.[8,9]
Each value in the table represents the sum of three individually calculated estimates for obesity classes I, II, and III, and each value stands alone.

- The prevalence of dyslipidemia, hypertension, and OSA were higher in men, whereas osteoarthritis was higher in women, irrespective of obesity class; sex differences in the remaining ORCs differed across classes (**Supplementary Figure 5**).
  - Among men, all ORCs were more prevalent in those living with class III versus class I obesity; the largest differences were observed for hypertension (60.0% vs 45.6%) and OSA (30.0% vs 15.7%).
  - Among women, 5 of 9 ORCs were more prevalent in those living with class III versus class I obesity; the largest differences were observed for T2DM (25.8% vs 17.8%) and OSA (14.9% vs 8.3%).
- Among non-Hispanic Black individuals, who had the highest prevalence of class II and III obesity, dyslipidemia was the most prevalent ORC in men in classes II and III (67.5% and 67.9%, respectively), and hypertension was most prevalent in women in classes II and III (55.7% and 60.5%, respectively) (**Supplementary Figure 6**).
- The presence of 2 or ≥3 co-occurring ORCs was generally highest among individuals living with class II and III obesity, and the presence of 0 or 1 ORC was highest in class I, irrespective of sex (**Figure 1**).

Figure 1. Prevalence of ORC MM by obesity class

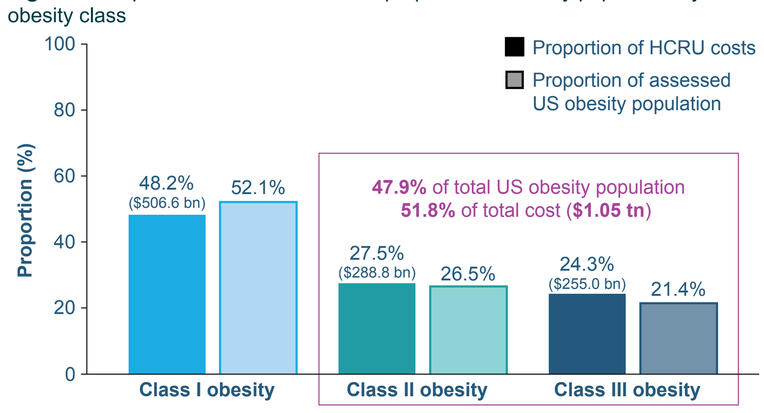


MM=multimorbidity; ORC=obesity-related complication.
Values are subject to rounding.

HCRU costs

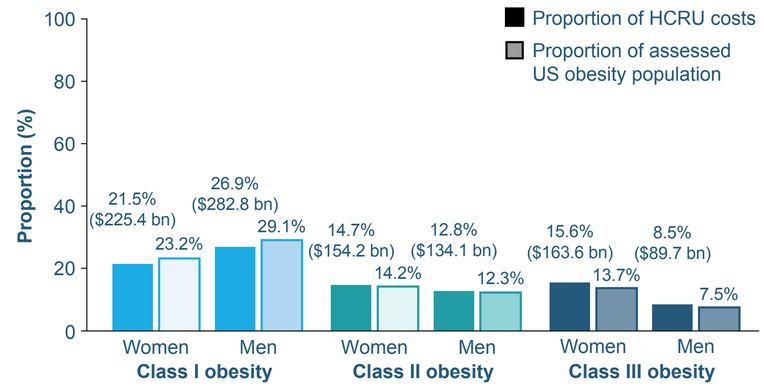
- The total cost of obesity in the US in 2025 was estimated to be $1.05 tn (**Figure 2**).
  - Individuals living with class II and III obesity represented 47.9% of the total US obesity population assessed but accounted for 51.8% of the related total cost.
- The prevalence of class II and III obesity and associated costs were higher among women than men (**Figure 3**).
- The total cost among non-Hispanic Black women living with class III obesity was higher than those living with either class I or II obesity, respectively ($35.5bn vs $34.6bn and $27.7bn) (**Figure 4**).
- Notably, the population of non-Hispanic Black women living with obesity class III was similar in size to class II and 16.2% smaller than class I (**Supplemental Figure 3**).
- Regardless of sex and race/ethnicity, class II and III obesity were associated with disproportionately higher HCRU costs, relative to their prevalence (**Figure 5**).

Figure 2. Proportion of HCRU costs and proportion of obesity population by obesity class



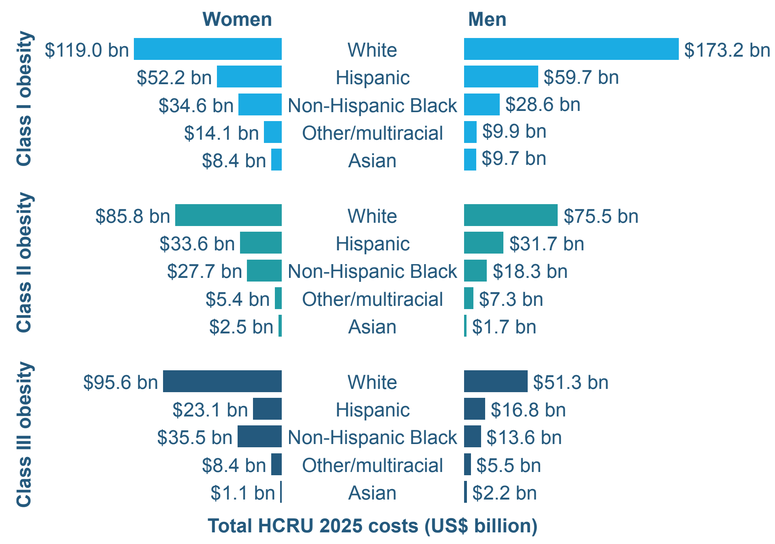
bn=billion; HCRU=healthcare resource utilization; tn=trillion.

Figure 3. Proportion of HCRU costs and proportion of obesity population by obesity class and sex



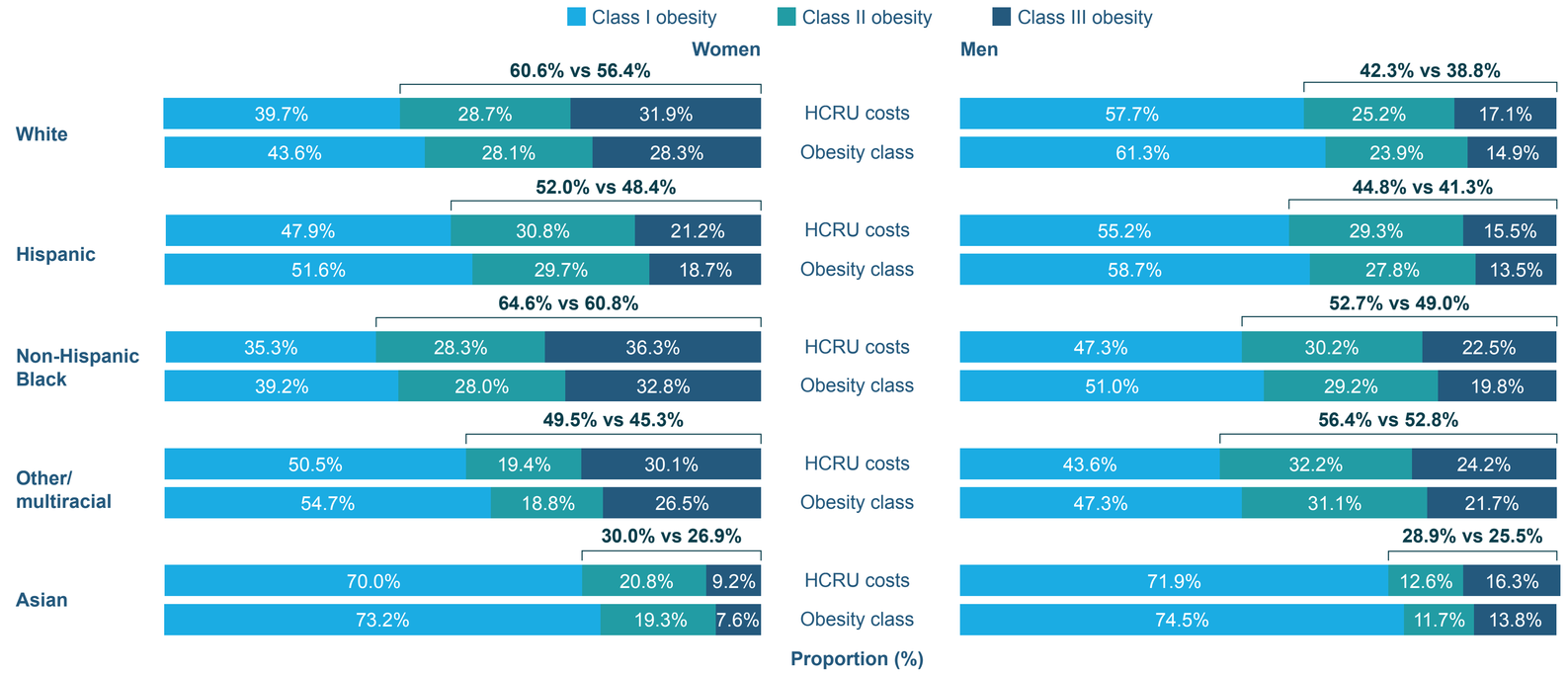
bn=billion; HCRU=healthcare resource utilization.

Figure 4. HCRU costs by obesity class, sex, and race/ethnicity



bn=billion; HCRU=healthcare resource utilization.
Racial/ethnic groups have been ordered from most to least prevalent according to data from men with class I obesity.
Values are subject to rounding.

Figure 5. Proportion of HCRU costs and proportion of obesity population by sex and race/ethnicity



HCRU=healthcare resource utilization.
Proportions are calculated for individual sex and race/ethnicity populations, not the total obesity population. Order of race/ethnicity based on order in **Figure 4**.
Values above the bars represent the combined proportion of HCRU costs for class II and class III obesity versus the corresponding proportion of each sex and race/ethnicity population. Values are subject to rounding.

Conclusions

- Obesity prevalence varied substantially by obesity class, sex, and race/ethnicity.
- Higher levels of obesity were associated with greater ORC burden, MM, and disproportionate HCRU costs, particularly among non-Hispanic Black women.
- These findings highlight the important sociodemographic, clinical, and economic disparities of obesity and may help to inform healthcare planning and resource allocation, particularly as the next generation of high-efficacy OMMs becomes available.

Abbreviations

BMI=body mass index, bn=billion, CKD=chronic kidney disease, CVD=cardiovascular disease, HCRU=healthcare resource utilization, MM=multimorbidity, NHANES=National Health and Nutrition Examination Survey, OMM=obesity-management medication, ORC=obesity-related complication, OSA=obstructive sleep apnea, T2DM=type 2 diabetes mellitus, tn=trillion

References

1. World Obesity. World Obesity Atlas 2025. Published March 2025. Accessed August 24, 2026. https://www.worldobesity.org/resources/resource-library/world-obesity-atlas-2025. **2.** Bae JP *et al. BMC Public Health* 2025;25:273. **3.** Pearson-Stuttard J *et al. Int J Obes (Lond)* 2023;47:1239–46. **4.** Ward ZJ *et al. PLoS One* 2021;16:e0247307. **5.** Pearson-Stuttard J *et al. Diabetes Obes Metab* 2024;26:5036–45. **6.** Evans M *et al. Diabetes Obes Metab* 2023;25:536–44. **7.** Medical Care Price Inflation Since 1935. Medical care price inflation. Updated September 11, 2026. Accessed September 24, 2026. https://www.in2013dollars.com/Medical-care/price-inflation. **8.** United States Census Bureau. National population by characteristics: 2020-2025. Published June 2026. Accessed September 24, 2026. https://www.census.gov/data/datasets/time-series/demo/popest/2020s-national-detail.html. **9.** National Center for Health Statistics. NHANES 2017–March 2020 Pre-Pandemic Data: Brief Overview and Analytic Guidance. Published 2021. Accessed September 24, 2026. https://wwwn.cdc.gov/nchs/nhanes/continuousnhanes/default.aspx?Cycle=2017-2020.

Acknowledgments

The authors thank all the investigators and research staff of the participating institutions.

Medical writing support

The authors thank Eleni Nestoros PhD and Emma Bolton DPhil of Oxford PharmaGenesis, part of the Klick Health family, for providing medical writing support, which was funded by Kailera Therapeutics.

Disclosures

MP and **BÓH**: employees of Kailera Therapeutics and may own stock/options in the company. **MIC**: employee of Kailera Therapeutics and may own stock/options in the company, and shareholder at WW International, Inc. **GM** and **SH**: employees of Lane Clark & Peacock, which received consultancy fees from Kailera Therapeutics to perform this analysis. **JPS**: partner at Lane Clark & Peacock, which received consultancy fees from Kailera Therapeutics to perform this analysis, and reports personal fees from Novo Nordisk outside of the submitted work.

Presented at the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) Europe Annual Meeting, November 8–11, 2026, Vienna, Austria

Study sponsored by Kailera Therapeutics