ORACLE Life Sciences

EPH192

Prevalence of Obesity and Co-morbidities Among People With Obesity in China, Japan, and EU5

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Background

According to WHO, amongst the adult (age ≥18) population worldwide, 43% were overweight (BMI ≥25) and 16% were obese (BMI ≥30).[1]

Overtime, a series of multiple comorbidities can be developed among people with obesity (PwO) affecting their physical, mental and social life.[2]

Objective

This study aims to assess the prevalence of obesity and comorbidities among people with obesity (PwO) in China, Japan, and EU5.

Methods

This cross-sectional study used self-reported data from the National Health and Wellness Survey (NHWS) in China 2025 (n=20,001), Japan 2024 (n=30,001), and EU5 2024 (Germany [n=14,997], France [n=14,999], Italy [n=10,000], Spain [n=7,026], UK [n=15,000]).

NHWS has a demographically representative sample, mirroring age and sex distribution of adults in each country; in China NHWS is representative of the urban population.

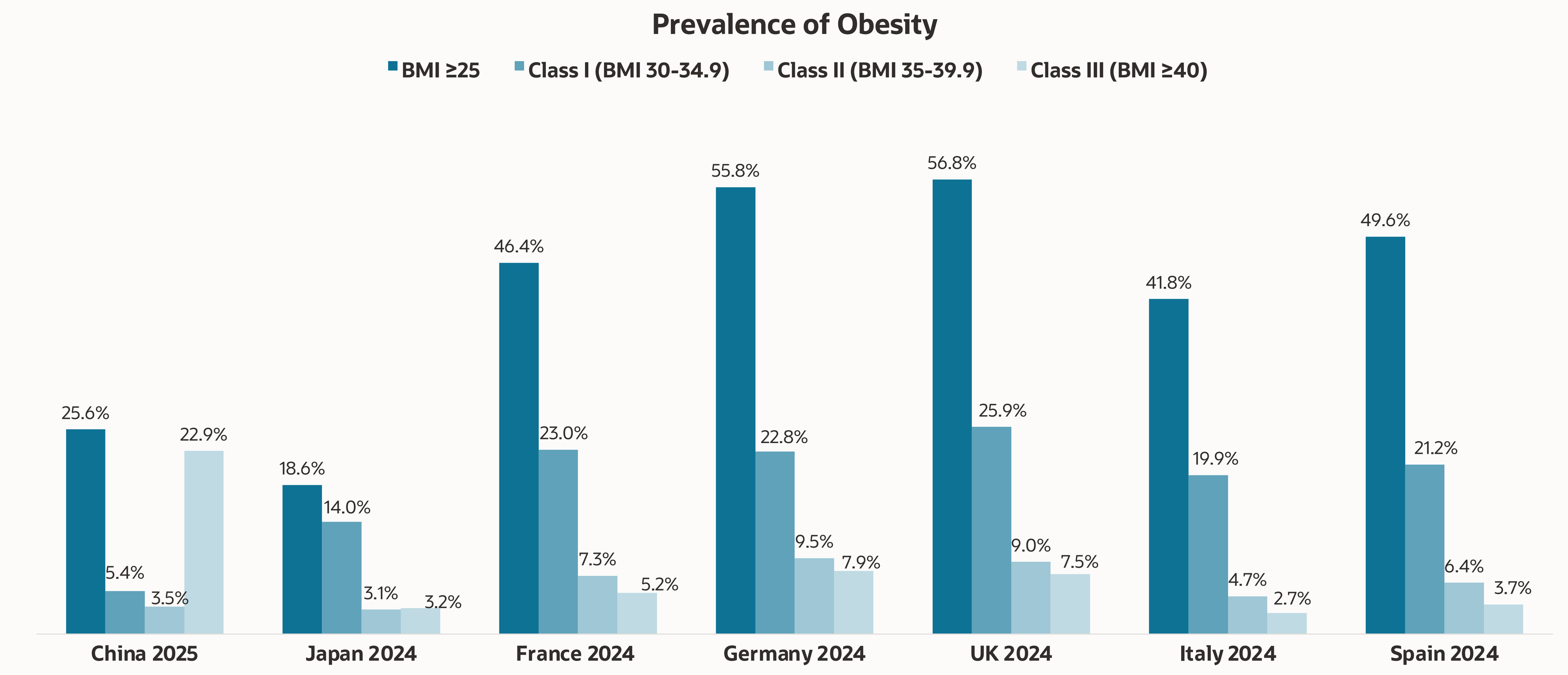
PwO were identified as respondents aged ≥18 years with body mass index (BMI) ≥25 (kg/m²), and further sub-grouped into Class I (BMI 30 - 34.9 kg/m²), Class II (BMI 35 - 39.9 kg/m²), and Class III (BMI ≥ 40 kg/m²).

Data analysis:
Demographic characteristics, obesity and comorbidity prevalence, Charlson Comorbidity Index (CCI)[3] were descriptively reported by country and class.

Results

- Obesity prevalence was higher in the EU5 (min-max: 41.8% - 56.8%) than China (25.6%) and Japan (18.6%), with UK having the highest prevalence (56.8%). Among PwO, Class III obesity prevalence was highest in China (22.9%) compared other countries (3.2% - 7.9%) (Figure 1).

Figure 1. Prevalence rates of obesity



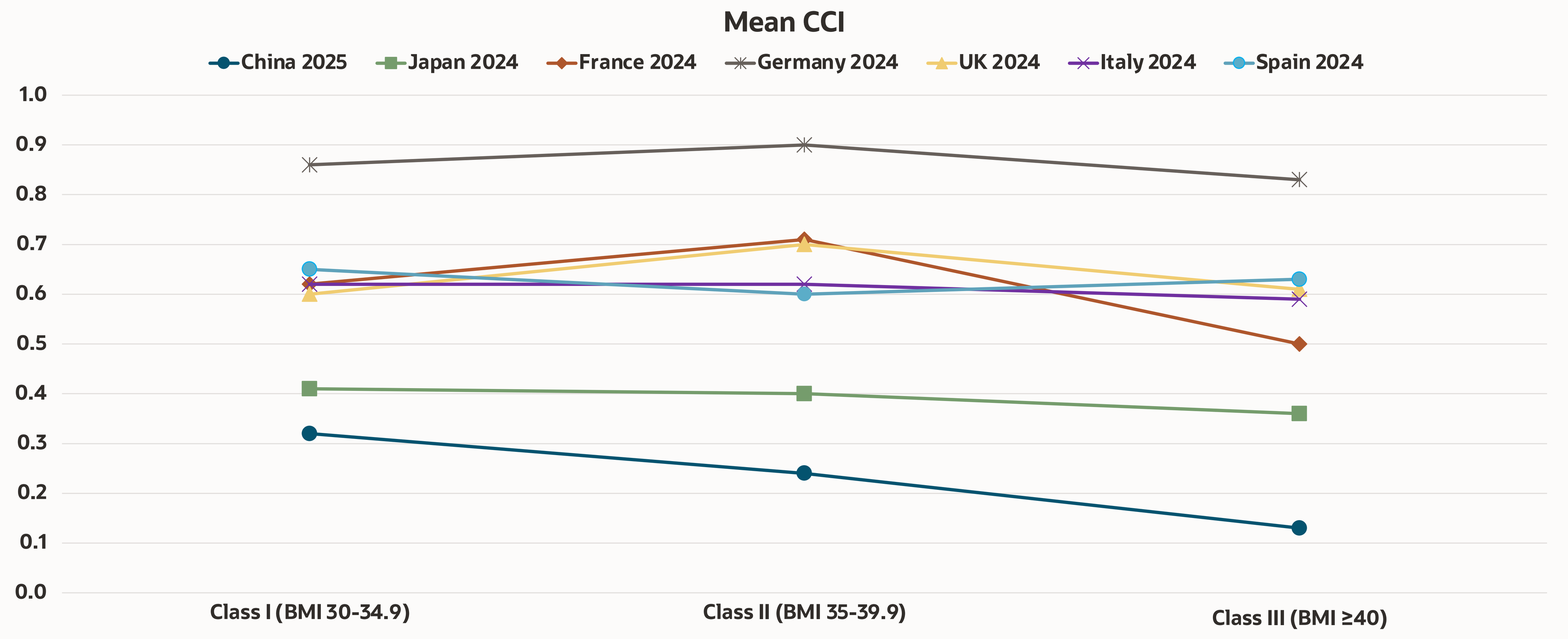
- PwO in Class III were younger than their counterparts across all countries except for China. In terms of education, PwO in Germany had the lowest rate of college graduates (21.7% – 25.0%) whereas China had the highest rate (54.5% - 72.1%).
- Alcohol usage decreased with obesity levels, and it was the lowest amongst PwO in Class III regardless of the regions (China : 63.4% - 49.6% vs. Japan : 54.5% - 44.6% vs. 5EU 80.3% - 56.1%). Use of cigarettes also decreased with obesity levels, Class III had a lower rate of smokers in China (23.3% - 15.4%), Japan (23.2% - 16.9%), France (17.9% - 14.1%) and Italy (20.4% - 15.0%) (Table 1).

Table 1. Demographic and health habit characteristics among adults with BMI Class I (BMI 30-34.9), Class II (BMI 35-39.9) and Class III (BMI≥40)

	CHINA 2025			Japan 2024			5EU 2024 - France			5EU 2024 - Germany			5EU 2024 - UK			5EU 2024 - Italy			5EU 2024 - Spain		
-	Class I (BMI 30-34.9)	Class II (BMI 35-39.9)	Class III (BMI ≥40)	Class I (BMI 30-34.9)	Class II (BMI 35-39.9)	Class III (BMI ≥40)	Class I (BMI 30-34.9)	Class II (BMI 35-39.9)	Class III (BMI ≥40)	Class I (BMI 30-34.9)	Class II (BMI 35-39.9)	Class III (BMI ≥40)	Class I (BMI 30-34.9)	Class II (BMI 35-39.9)	Class III (BMI ≥40)	Class I (BMI 30-34.9)	Class II (BMI 35-39.9)	Class III (BMI ≥40)	Class I (BMI 30-34.9)	Class II (BMI 35-39.9)	Class III (BMI ≥40)
n=	268	172	1,140	723	158	166	1,551	490	348	1,825	759	633	1,740	606	504	802	191	107	719	218	126
Mean (SD) Age	44.8 (16.5)	36.7 (14.4)	48.2 (16.2)	52.2 (15.0)	47.1 (14.2)	46.5 (17.5)	54.8 (14.9)	53.9 (14.8)	47.0 (15.4)	56.3 (14.5)	55.0 (14.00)	48.1 (15.1)	55.2 (15.7)	52.6 (15.3)	45.4 (15.5)	55.2 (14.6)	53.8 (13.3)	52.1 (16.0)	54.6 (13.6)	54.2 (13.2)	49.2 (14.2)
University degree (%)	54.5	72.1	56.1	45.5	35.4	36.1	46.8	40.4	50.6	24.3	21.7	25.0	39.3	40.6	49.2	30.1	26.2	25.2	39.0	33.5	34.1
Currently smoke (%)	22.4	23.3	15.4	23.2	20.3	16.9	17.9	14.5	14.1	26.9	24.2	29.9	10.8	11.7	17.1	20.2	20.4	15.00	21.8	17.0	23.8
Use alcohol (%)	54.9	63.4	49.6	54.5	47.5	44.6	73.8	67.4	66.4	73.5	70.6	68.3	80.3	76.7	69.3	73.7	62.8	56.1	76.2	69.3	64.3
Mean # of days exercised (past month)	5.0 (7.6)	7.7 (8.6)	6.8 (8.2)	4.4 (8.0)	3.2 (6.8)	4.2 (8.3)	7.7 (9.1)	6.7 (8.8)	6.4 (8.4)	5.3 (7.3)	4.8 (7.2)	4.1 (6.6)	6.8 (8.5)	6.3 (8.3)	6.6 (8.3)	6.0 (7.7)	7.0 (9.6)	4.7 (7.5)	8.8 (9.7)	8.8 (9.8)	6.5 (8.5)

- The overall comorbidity burden (Charlson Comorbidity Index, CCI) was lower among PwO in China (0.13-0.32) than Japan (0.36-0.41) and EU5 (0.5-0.9) (Figure 2).

Figure 2. Charlson Comorbidities Index among adults with BMI Class I (BMI 30-34.9), Class II (BMI 35-39.9) and Class III (BMI≥40)



- However, obesity-associated conditions were more prevalent in the EU5 than Japan and China, e.g., hypertension (EU5: 25.6% - 53.0% vs. Japan: 13.9% - 32.4% vs. China: 8.9% - 26.5%), high cholesterol (EU5: 14.9% - 42.7% vs. Japan: 10.2% - 17.8% vs. China: 2.9% - 12.7%), metabolic dysfunction-associated steatotic liver disease (MASLD) (EU5: 2.1% - 14.0% vs. Japan: 0.6% - 2.4% vs. China: 2.5% - 15.7%), metabolic dysfunction-associated steatohepatitis (MASH) (EU5: 0.5% - 3.7% vs. Japan: 0.6% - 2.5% vs. China: 1.5% - 2.2%), and type II diabetes (EU5: 11.1% - 23.9% vs. Japan: 7.2% - 17.7% vs. China: 1.2% - 7.1%). Depression was also higher among PwO in EU5 (19.6% - 49.8%) than in Japan (15.7% - 20.3%) and China (6.1% - 16.3%). Variations in comorbidity burden were observed across obesity classes (Figure 3).

Figure 3. Conditions ever experienced among adults with BMI Class I (BMI 30-34.9), Class II (BMI 35-39.9) and Class III (BMI≥40)

Class I (BMI 30-34.9) / Class II (BMI 35-39.9) / Class III (BMI ≥40)

	China NHWS 2025	Japan NHWS 2024	France NHWS 2024	Germany NHWS 2024	UK NHWS 2024	Italy NHWS 2024	Spain NHWS 2024
Depression	7.1% 16.3% 6.1%	19.4% 20.3% 15.7%	26.4% 29.2% 30.2%	32.4% 38.1% 40.4%	36.0% 41.1% 49.8%	22.2% 22.0% 19.6%	30.3% 40.4% 38.9%
High blood pressure (Hypertension)	26.5% 11.1% 8.9%	32.4% 29.1% 13.9%	26.4% 29.8% 25.6%	47.6% 53.0% 45.7%	35.6% 44.1% 37.1%	35.7% 40.8% 35.5%	34.6% 37.6% 38.1%
High cholesterol	12.7% 2.9% 3.9%	17.8% 14.6% 10.2%	23.0% 19.0% 14.9%	24.9% 26.8% 19.9%	26.8% 27.1% 21.8%	33.4% 30.4% 27.1%	40.6% 42.7% 28.6%
Type 2 Diabetes	7.1% 2.9% 1.2%	13.0% 17.7% 7.2%	15.9% 20.6% 17.5%	21.1% 23.9% 23.2%	13.7% 18.7% 19.1%	11.1% 16.2% 19.6%	12.2% 18.4% 14.3%
Non-Alcoholic Fatty Liver Disease (NAFLD), now called Metabolic Dysfunction–Associated Steatotic Liver Disease (MASLD)	15.7% 4.7% 2.5%	1.4% 0.6% 2.4%	2.1% 4.7% 3.2%	8.2% 9.8% 12.0%	4.1% 7.9% 9.7%	8.4% 5.8% 14.0%	7.0% 12.4% 7.9%
Non-Alcoholic Steatohepatitis (NASH), now called Metabolic Dysfunction–Associated Steatohepatitis (MASH)	2.2% 2.3% 1.5%	2.5% 0.6% 2.4%	1.7% 1.2% 2.0%	1.4% 1.8% 3.6%	0.6% 0.5% 1.4%	2.6% 3.7% 3.7%	0.8% 1.4% 3.2%

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Conclusion

The findings highlighted the distinctive epidemiology of obesity across regions, suggesting the need for regional-specific public health policies to manage obesity. While the comorbidity burden was substantially higher in EU5, followed by Japan, China's high prevalence of Class III obesity among PwO suggests an unmet need, including undiagnosed comorbidities within this population.

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