

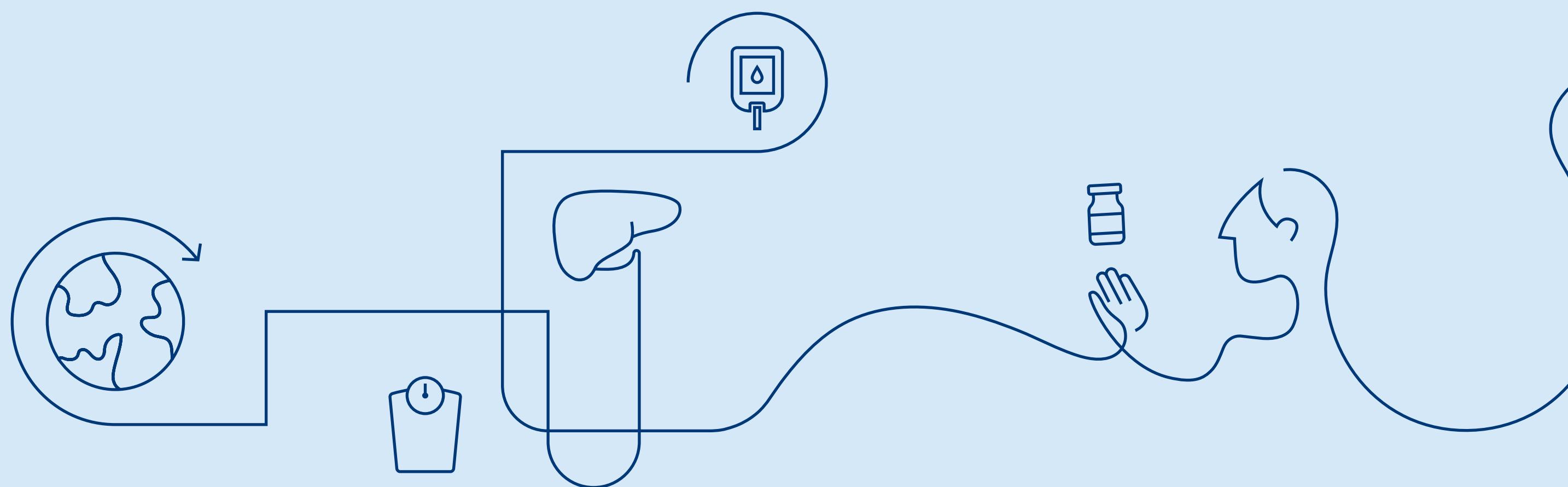
# Prevalence and overlap of overweight/obesity, type 2 diabetes and metabolic dysfunction-associated liver disease in England: a Clinical Practice Research Datalink study

EPH188

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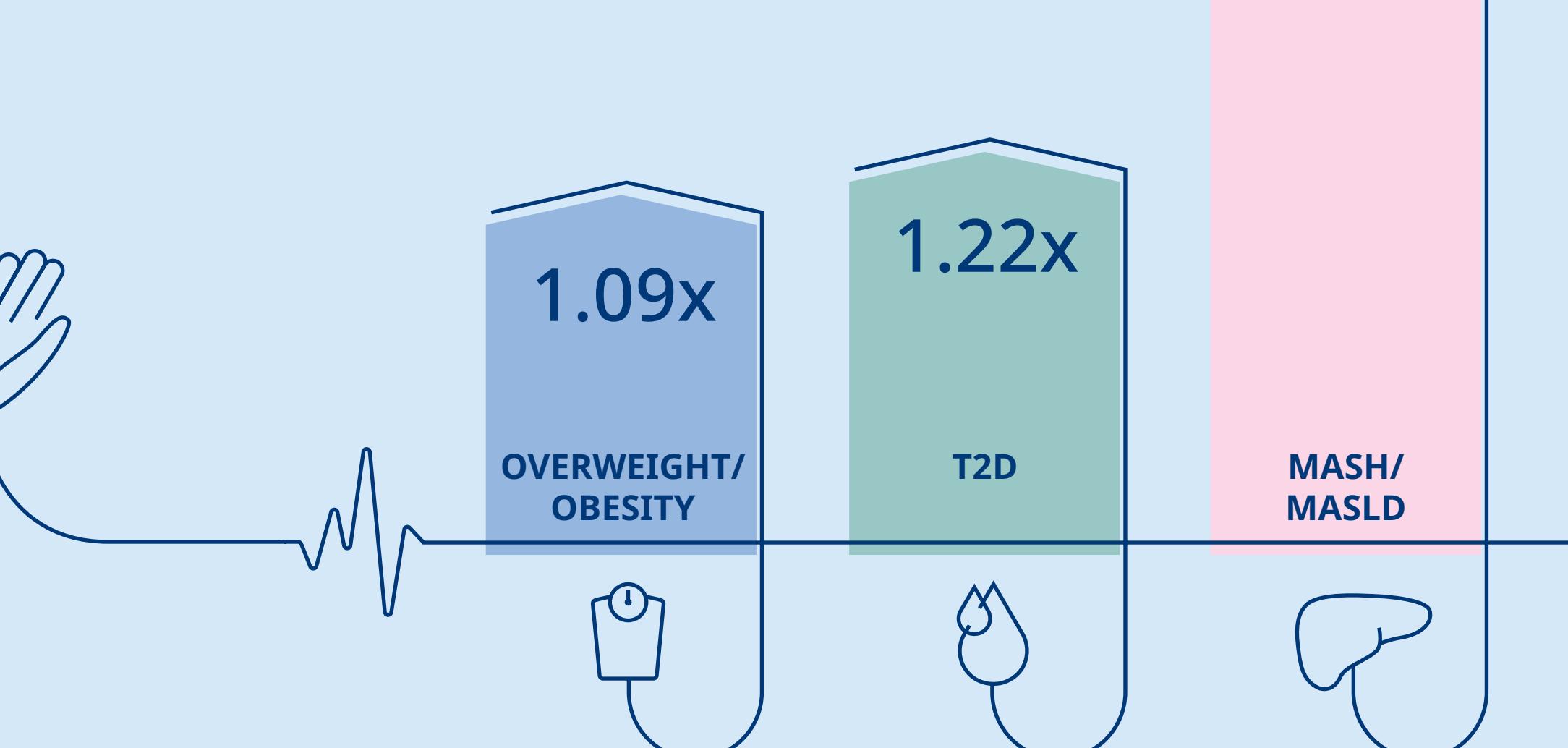
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Despite the growing overlap between conditions, there remains a large number of patients with MASH/MASLD in the absence of reported overweight/obesity or T2D



## Increasing prevalence

Relative change from 2014 to 2020



## Aim

- Metabolic dysfunction-associated steatotic liver disease (MASLD) is a leading cause of liver disease and liver-related mortality, and is closely linked with cardiometabolic risk factors including obesity and type 2 diabetes (T2D)<sup>1</sup>
- Obesity and T2D represent the strongest predictors for the development and progression of MASLD to more severe forms, including metabolic dysfunction-associated steatohepatitis (MASH)<sup>2,3</sup>
- This study aimed to explore the prevalence and multimorbidity overlap of overweight/obesity, T2D, and MASH/MASLD in real-world clinical practice in England

## Methods

- Data from adults aged  $\geq 18$  years were extracted from the Clinical Practice Research Datalink (CPRD) Aurum primary care database with linkage to Hospital Episode Statistics (HES) and to Office of National Statistics (ONS) mortality data
- Eligible patients had  $\geq 365$  days of registration data, sufficient linkage quality as determined by CPRD, a recorded sex, and at least one record of any of the following: obesity, T2D, or MASH (from CPRD and HES), or body mass index (BMI), height and weight, or test for MASH (from CPRD)
- Data were extracted at yearly intervals between 01 January 2014 and 01 January 2020 (due to the COVID-19 pandemic), producing seven index dates
- The prevalence of overweight/obesity (BMI  $\geq 27$  kg/m $^2$ ), T2D, and MASH/MASLD was calculated annually, and the overlap between conditions was evaluated

## Limitations

- The CPRD database is considered broadly representative of UK clinical practice and comprises approximately 16 million patients. For this study, only patients matching the specified criteria were obtained, reducing the cohort to approximately 12.5 million
- Due to limitations in the completeness and accuracy of coding and under diagnosis of MASH/MASLD in routine clinical practice, the prevalence of MASH/MASLD and obesity observed in this study is likely to underestimate the true prevalence in the UK

## Key results

- Of the full cohort of 12.5 million, a total of 9,373,835 to 10,782,480 people were eligible for analysis each year from 2014 to 2020, respectively
- In 2020, patients had a mean age of 53.7 years, 58.9% were female, and the majority were of White ethnicity (80.5%). Mean BMI was 27.1 kg/m $^2$  and mean HbA $_{1c}$  was 6.43% (Table 1)
- The overall prevalence of each condition increased annually between 2014 and 2020, where the proportion of patients with overweight/obesity increased from 40.4% to 44.4%, T2D from 6.5% to 7.9% and MASH/MASLD from 0.7% to 1.7% (Figure 1)
- The proportion of people with overlapping overweight/obesity, T2D and MASH/MASLD more than doubled, from 0.15% in 2014 to 0.40% in 2020 (Figure 1)
- Of those with MASH/MASLD,  $\sim 75\%$  also had overweight/obesity, while the proportion with MASH/MASLD alone (lean MASH/MASLD) decreased from 21.2% in 2014 to 19.3% in 2020 (Figure 1)
- While the absolute number of patients with MASH/MASLD was relatively low, its prevalence increased at a comparably greater rate than that of overweight/obesity or T2D, with a relative change of 2.56 between 2014 and 2020 (compared to a relative change of 1.09 and 1.22 for overweight/obesity and T2D, respectively) (Figure 1)
- Between 2014 and 2020, the overlapping prevalence of MASH/MASLD and overweight/obesity increased from 0.35% to 0.92%, while that between MASH/MASLD and T2D increased from 0.03% to 0.08%, and the overlap between T2D and overweight/obesity increased from 4.37% to 5.15% (Table 2)

FIGURE 1: CHANGE IN PREVALENCE AND OVERLAP OF OVERWEIGHT/OBESITY, T2D AND MASH/MASLD FROM 2014 TO 2020

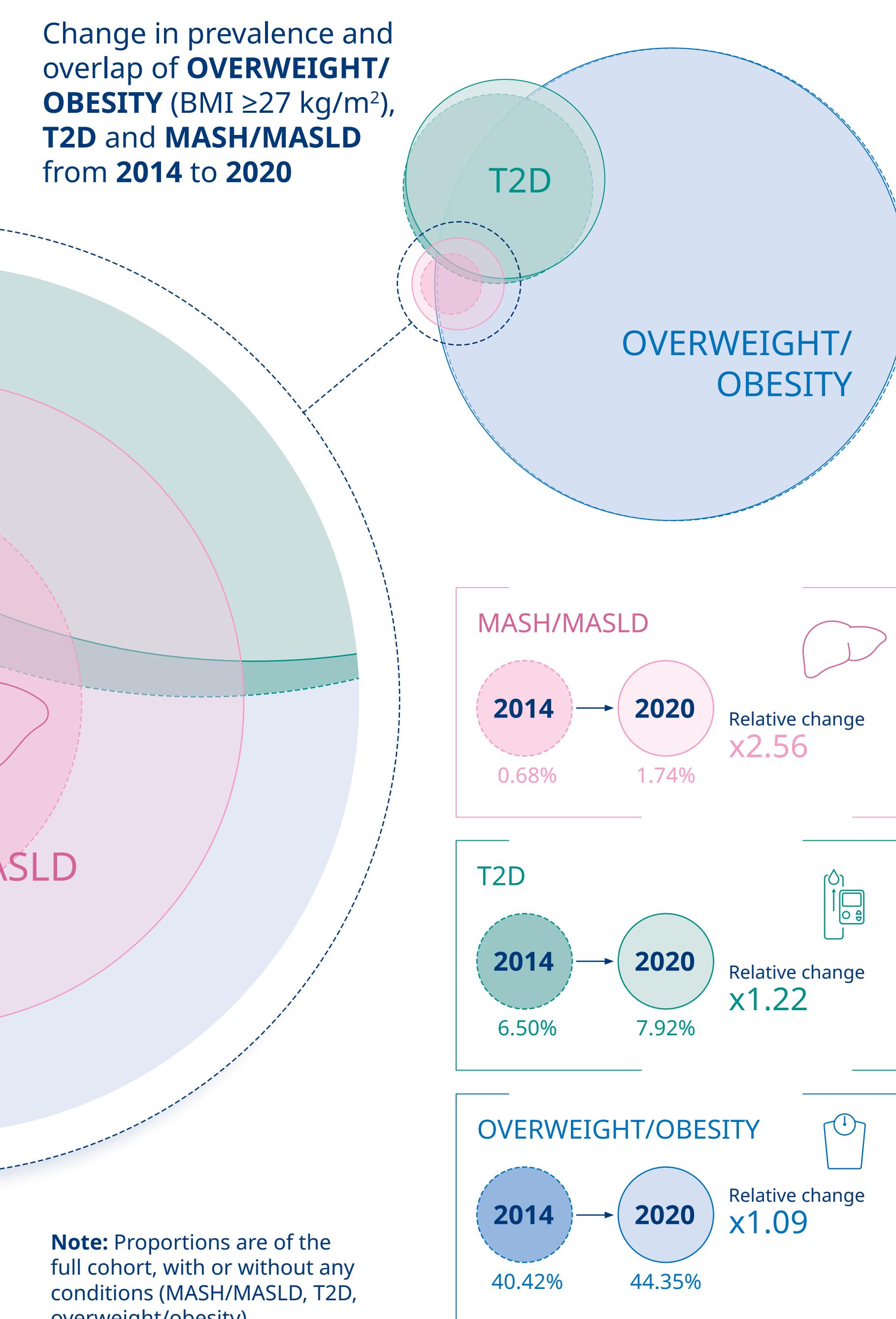


TABLE 1: BASELINE CHARACTERISTICS (2020)

	Overall N = 10,782,480	MASH/MASLD N = 187,413	MASH/MASLD with T2D N = 52,013	MASH/MASLD with obesity N = 142,141
<b>Age (years)</b>	Mean (SD) 53.7 (18.4)	58.7 (14.6)	63.5 (12.7)	58.4 (14.1)
<b>Sex</b>	Female 6,354,065 (58.9%)	94,989 (50.7%)	25,998 (50.0%)	74,106 (52.1%)
	Male 4,428,415 (41.1%)	92,424 (49.3%)	26,015 (50.0%)	68,035 (47.9%)
<b>Ethnicity</b>	Asian 764,082 (7.1%)	20,322 (10.8%)	7,821 (15.0%)	13,029 (9.2%)
	Black 419,970 (3.9%)	6,410 (3.4%)	2,183 (4.2%)	4,973 (3.5%)
	Hispanic 11,125 (0.1%)	330 (0.2%)	64 (0.1%)	261 (0.2%)
	Mixed 84,524 (0.8%)	1,474 (0.8%)	441 (0.8%)	1,069 (0.8%)
	Other 294,252 (2.7%)	5,825 (3.1%)	1,661 (3.2%)	4,281 (3.0%)
	White 8,681,520 (80.5%)	151,621 (80.9%)	39,632 (76.2%)	117,540 (82.7%)
	Missing 527,007 (4.9%)	1,431 (0.8%)	211 (0.4%)	988 (0.7%)
<b>BMI (kg/m<sup>2</sup>)</b>	Mean (SD) 27.1 (6.23)	31.4 (6.82)	32.6 (6.82)	33.8 (5.99)
	Missing 839,041 (7.8%)	21,495 (11.5%)	3,087 (5.9%)	17,529 (12.3%)
<b>HbA<sub>1c</sub> (mmol/mol)</b>	Mean (SD) 40.9 (11.8)	46 (13.7)	58 (16.8)	47 (13.7)
	Missing 5,439,884 (50.5%)	41,665 (22.2%)	646 (1.2%)	28,028 (19.7%)

TABLE 2: PREVALENCE AND OVERLAP OF OVERWEIGHT/OBESITY, T2D AND MASH/MASLD FROM 2014 TO 2020

	MASH/MASLD	T2D	Overweight/obesity	Total N						
				2014	2015	2016	2017	2018	2019	2020
				9,373,835	9,698,355	9,982,306	10,242,851	10,477,178	10,655,703	10,782,480
				14,180 (0.15%)	16,944 (0.17%)	20,785 (0.21%)	25,145 (0.25%)	30,118 (0.29%)	35,943 (0.34%)	42,865 (0.40%)
				409,404 (4.37%)	434,075 (4.48%)	461,714 (4.63%)	486,681 (4.75%)	510,050 (4.87%)	531,909 (4.99%)	555,664 (5.15%)
				33,251 (0.35%)	39,424 (0.41%)	47,291 (0.47%)	57,296 (0.56%)	69,301 (0.66%)	83,150 (0.78%)	99,276 (0.92%)
				3,332,150 (35.55%)	3,484,177 (35.93%)	3,630,626 (36.37%)	3,766,981 (36.78%)	3,894,255 (37.17%)	3,992,347 (37.47%)	4,084,122 (37.88%)
				2,916 (0.03%)	3,499 (0.04%)	4,136 (0.04%)	5,035 (0.05%)	6,113 (0.06%)	7,639 (0.07%)	9,148 (0.08%)
				183,160 (1.95%)	193,635 (2.00%)	202,214 (2.03%)	213,948 (2.09%)	223,983 (2.14%)	236,606 (2.22%)	246,397 (2.29%)
				13,514 (0.14%)	15,759 (0.16%)	18,547 (0.19%)	21,860 (0.21%)	25,889 (0.25%)	30,895 (0.29%)	36,124 (0.34%)
				5,385,260 (57.45%)	5,510,842 (56.82%)	5,596,993 (56.07%)	5,665,905 (55.32%)	5,717,469 (54.57%)	5,737,214 (53.84%)	5,708,884 (52.95%)

## Conclusions

- Between 2014 and 2020, the prevalence of overweight/obesity, T2D, and MASH/MASLD steadily increased along with the concomitant overlap of these conditions
- Due to under-recording in clinical practice, these data may substantially underestimate the true prevalence of overweight/obesity, T2D and MASH/MASLD. This highlights the urgent need for improved disease recognition and documentation to ensure efficient diagnosis and access to therapies
- Without accurate identification, patients may miss opportunities for further support and specialised care