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POSTER AS-UEG-2026-01997

Barcelona 2026
ueg week

Madrigal

Fira Gran Via
October 17 – 20, 2026

Real-world assessment of comorbidities and treatment patterns in patients with metabolic dysfunction-associated steatohepatitis in Germany

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Introduction: Metabolic dysfunction-associated steatohepatitis (MASH) is a chronic, progressive liver disease affecting an estimated 4.4% of the German population and a key driver of advanced fibrosis, cirrhosis and hepatocellular carcinoma[1]. Current pharmacotherapy primarily targets cardiometabolic risk factors, including obesity and type 2 diabetes mellitus T2DM), while liver-directed therapies are emerging. Real-world evidence on disease burden and management across fibrosis stages remains limited.

Objective: To characterize cardiometabolic risk factors and real-world treatment patterns in patients with MASH across fibrosis stages in Germany.

Methods:
Study design: Data were drawn from the Adelphi Real World MASH Disease Specific Programme (DSP)™, a cross-sectional survey, with retrospective data collection of physicians and their patients with MASH in Germany. Data collection occurred between January and May 2024. The DSP methodology has been described, validated, and demonstrated to be representative and consistent over time[2, 3, 4, 5].
Inclusion and exclusion criteria:

- Physicians were eligible to participate if they were a primary care physician or specialist* who was personally responsible for the clinical management of patients with MASH and saw a minimum of five (primary care physicians) or ten (specialists) patients per month.
- Patients were eligible if they were ≥18 years old, were being managed for MASH, did not have another form of liver disease** and were not participating in a clinical trial for MASH at the time of data collection.
- Physicians reported patient demographics, fibrosis severity, prevalence of cardiometabolic risk factors (obesity, T2DM, dyslipidaemia, and arterial hypertension) and pharmacological treatment patterns.

Data analysis: Fibrosis severity was physician-stated based upon recent tests and assessments (e.g. lab tests [blood or urine], liver composite tests [LCTs], liver imaging scans and/or liver biopsy). Patients were grouped by physician-stated fibrosis severity at data collection into F0-F1, F2-F3 and F4. Cardiometabolic risk factors (CMRFs) included: obesity, T2DM, dyslipidaemia, and arterial hypertension.

* Gastroenterologists, internal medicine specialists or endocrinologists/diabetologists
** For example, alcohol-related liver disease, primary biliary cholangitis, viral hepatitis and autoimmune hepatitis, Wilson's disease, alpha-1- antitrypsin deficiency or hemochromatosis

ABBREVIATIONS:
BMI: body mass index; CCI: Charlson Comorbidity Index; DSP: Disease Specific Programme; GLP-1; Glucagon-like peptide-1 (GLP-1) receptor agonists: LCT: liver composite test; MASH: Metabolic dysfunction-associated steatohepatitis; SD: Standard Deviation; T2DM: Type 2 Diabetes Mellitus

DISCLOSURES AND ACKNOWLEDGEMENTS:
- HW and JJ are all employees of Adelphi Real World
- YK, MD, MI and PB are all employees of Madrigal Pharmaceuticals
- MM reports travel expenses from Abbvie, Boehringer Ingelheim, Gilead Sciences, Ipsen, Mirum, and Novo Nordisk. Speaker honorarium from Abbvie, AstraZeneca, Boehringer Ingelheim, Cogitando, coliquio, Daiichi Sankyo, Gilead Sciences, GSK, Ipsen, Novo Nordisk, and StreamedUp. Consultancy honorarium from Boehringer Ingelheim, Ipsen, and Madrigal Pharmaceuticals. Stock options: SPOTIC GmbH.

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1. Le P, et al. JAMA Netw Open. 2025;8(1):e2454707.; **2.** Mittal N, et al. Aliment Pharmacol Ther. 2024;59(12):1571-1578; **3.** Younossi, ZM et al., Clin Gastroenterol Hepatol. 2026;24(4):1016-1034; **4.** Anderson Pet al. Curr Med Res Opin. Nov 2008;24(11):3063-72. doi:10.1185/03007990802457040; **5.** Anderson, P et al. Curr Med Res Opin 2023:39(12);1707–1715; **6.** Babineaux, SM et al. BMJ Open 2016:6(8);e010352; **7.** Higgins, V et al. Diabetes Metab Syndr Obes 2016:9;371-380,

Results:
Survey population: Overall, data were collected from 65 physicians reporting data on 587 patients with MASH. Patients with MASH were grouped by physician stated fibrosis severity at the time of data collection as F0-F1 (n=344), F2-F3 (n=236), and F4 (n=7).
Demographics: For F0-F1, F2-F3 and F4, respectively: mean age (± standard deviation [SD]) was 54.7±10.2, 55.8±10.2 and 61.7±7.4 years. The proportions of females was 40.7%, 36.4% and 28.6%. The mean body mass index (BMI) was 32.1±4.0kg/m2, 32.3±4.1kg/m2 and 29.2±5.5kg/m2 – **Table 1.**

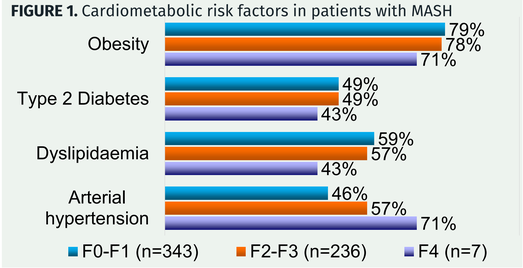
TABLE 1. Demographic and clinical characteristics of patients with F0-F1, F2-F3 and F4 MASH.

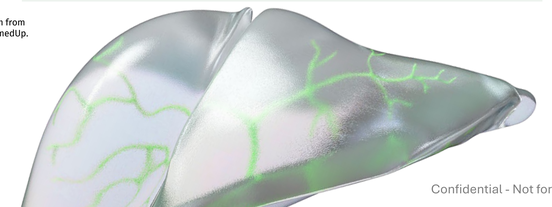
	F0-F1	F2-F3	F4
Overall, **n**	**344**	**236**	**7**
Patient age, years, mean±SD	54.7±10.2	55.8±10.2	61.7±7.4
Patient sex, male, n (%)	204 (59.3)	150 (63.6)	5 (71.4)
Patient BMI, kg/m^2, mean±SD	32.1±4.0	32.3±4.1	29.2±5.5
n	**324**	**193**	**7**
Number of days since MASH diagnosis, mean±SD	482.1± 569.3	526.6± 697.0	1135.1± 981.9
n	**337**	**231**	**7**
Hospitalisations in last 12 months, mean±SD	0.1±0.0	0.2±0.0	0.4±0.0
n	**316**	**216**	**6**
Number of comorbidities, mean±SD	3.1±1.7	3.5±2.0	4.7±1.6
n	**343**	**236**	**7**
Charlson Comorbidity Index (CCI), mean±SD	2.1±0.3	4.2±0.7	4.7±0.8
Physician-perceived cardiovascular risk, n (%)	**342**	**226**	**6**
Low risk	182 (53.2)	64 (28.3)	0 (0.0)
Moderate/High risk	152 (44.4)	137 (60.6)	6 (100.0)
Established CV event	8 (2.3)	25 (11.1)	0 (0.0)

Cardiometabolic risk factors:

- Cardiometabolic risk factors were highly prevalent: 78% of patients had obesity, 49% had T2DM, and 42% had both conditions. Across fibrosis stages, obesity and T2DM showed similar distributions – **Figure 1.**

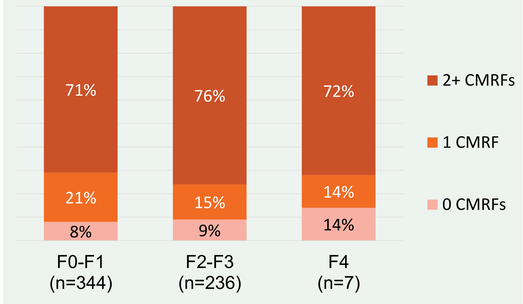
FIGURE 1. Cardiometabolic risk factors in patients with MASH





- Overall, 73% of patients had ≥2 cardiometabolic risk factors, increasing to 76% in F2/F3 – **Figure 2.**

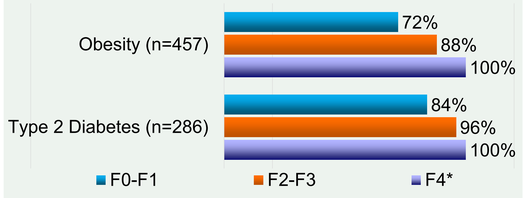
FIGURE 2. Number of cardiometabolic risk factors (CRMF) in patients with MASH.



Treatment for cardiometabolic risk factors

- Pharmacological treatment rates were high, particularly in advanced fibrosis: approximately 90% of patients with T2D and 80% of patients with obesity received therapy – **Figure 3.**

FIGURE 3. Proportion of patients with MASH on treatment for cardiometabolic risk factors



- Metformin, statins, other cardiovascular medications, and GLP-1 receptor agonists (GLP-1s) were the most commonly prescribed treatments. – **Figure 4.**
- Usage of GLP-1s was concentrated in patients presenting with both obesity and T2D, with highest use in patients with F2/F3 MASH (24%), while remaining infrequent in patients with obesity without diabetes – **Figure 5.**

FIGURE 4. Treatment prescribed for cardiometabolic risk factors

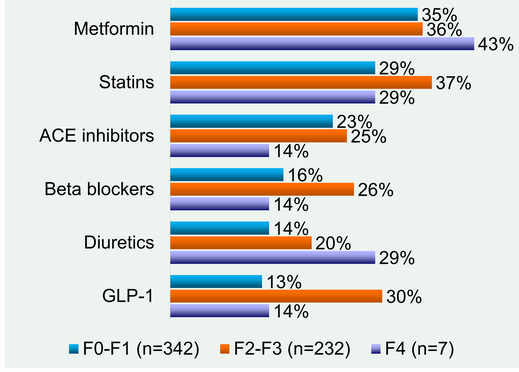
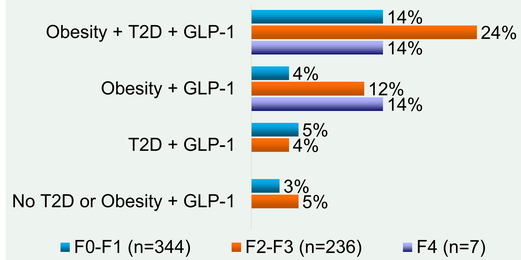


FIGURE 5. GLP-1 and cardiometabolic risk factor subgroups



All data labels for data that is ≤3% are hidden

Conclusion:

- **Physicians reported a high prevalence of cardiometabolic risk factors among patients with MASH in Germany, particularly obesity and T2DM which frequently coexist and increase with fibrosis severity.**
- **While these patients are being treated for their comorbidities MASH still persists highlighting the need for liver directed therapies among patients with F2/F3 MASH in Germany.**

Limitations

- While minimal inclusion criteria governed selection of participating physicians, participation was influenced by willingness to complete the survey.
- Physicians provided data for a consecutive series of patients to avoid selection bias, however patients who visited their physician more frequently had a higher likelihood of being included in the survey which limits generalisability of the results to all patients with MASH.
- Recall bias, a common limitation of surveys, may have affected physician responses. However, physicians had access to patient medical records reducing this risk.

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