



Characterizing Obesity in Norwegian Linked Health Registry Data: Current Capture and Future Opportunities

Obesity is a major public health challenge. It can be identified in real-world data using diagnostic codes, anthropometric measurements, lifestyle information, and obesity-related procedures. The aim of this DARWIN EU® study was to assess the availability of obesity and obesity-related variables across European health data sources. Here, we report results from Norway.

Study overview

- **Design:** Descriptive cohort study using routinely collected health data from 25 data sources across 16 European countries.
- **Population:** All individuals in Norway (2010–2023) aged ≥ 2 years, (N ~ 5.5 million).
- **Obesity identification:**
 - Obesity diagnosis records
 - BMI ≥ 30 kg/m² in adults
 - Sex-specific BMI-for-age z-score ≥ 2 SD in children and adolescents
- **Variables assessed:** Obesity-related conditions (e.g., sleep apnea) and BMI, weight, height, waist circumference, cholesterol levels, diet, physical activity, smoking, and bariatric surgery.
- **Co-morbidity & co-medication:** 16 diagnoses and 4 medication types.

Obesity-related data capture in Norway

- Norwegian Linked Health Registry (NLHR) data captured only 5 out of 21 obesity-related domains in both children/adolescents and adults, based on data covering primary and secondary care: i) obesity diagnoses, ii) BMI, iii) smoking, iv) diet, and v) physical activity.
- BMI-based obesity was only available for pregnant women via the Medical Birth Registry.

Obesity prevalence and cohort characteristics

- Overall, 2.1% of children/adolescents and 8.5% of adults had an obesity diagnosis (vs. 0.1–8.7% and 1.2–23.9% across European data sources).
- Adults with an obesity diagnosis had a median age of 46 years (IQR: 35–57); 62.0% were female.
- Pregnant women with BMI-based obesity had a median age of 30 years (IQR: 26–34).

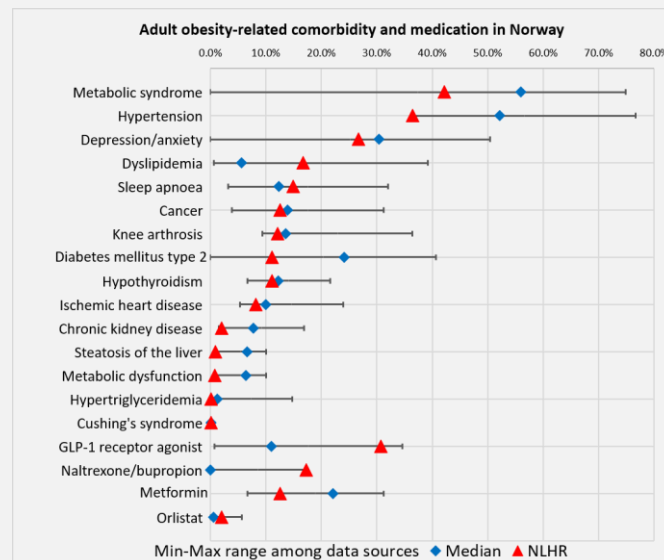


Fig.: Adults with obesity in Norway had a high level of cardiometabolic disease, with prevalence estimates largely comparable to the median of data sources.

Data & Methods notes

- Obesity prevalence was likely underestimated because obesity was identified only through diagnostic codes.
- Differences in comorbidity prevalence compared with other European data sources may reflect full care coverage (increasing estimates) and incomplete code capture (decreasing estimates).
- Due to data minimization, 172 of 800 diagnostic codes were only available in primary care. These missing codes accounted for 4.3% of all relevant diagnosis given in Norwegian hospitals, and may have led to underestimation, particularly for diet, physical activity, and sleep apnea, for which fewer diagnostic codes were available.

How was this useful?

Obesity is currently under captured in Norwegian linked health registry data because identification relies mainly on diagnostic codes. Future work should strengthen obesity phenotypes by incorporating additional obesity-related diagnoses and procedures from secondary care to improve case ascertainment. Despite this limitation, adults with recorded obesity showed a substantial burden of cardiometabolic disease. BMI-based measures are particularly important for pregnancy and maternal health research.

Access to the full report

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