

Health-related quality of life measured with EQ-5D-5L in the SELECT trial

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Once-weekly semaglutide improved health utility in patients with cardiovascular disease and obesity by 0.018 – equivalent to approximately 7 additional days spent in full health per year

Aims

- Report prespecified analyses of the impact of once-weekly semaglutide on patient-reported health-related quality of life, measured by EuroQol 5-Dimension 5-Level (EQ-5D-5L), at week 104.
- Provide estimates of health utility gain for subsequent health economic analyses.

Introduction

- SELECT was a multicentre, randomised, double-blind, placebo-controlled, event-driven trial that enrolled 17,604 patients.<sup>1</sup>
  - Individuals aged ≥45 years with a body mass index of ≥27 kg/m<sup>2</sup> and established cardiovascular disease (CVD) without diabetes were randomised 1:1 to receive once-weekly dose-escalated subcutaneous semaglutide 2.4 mg or placebo as adjunct to standard of care.<sup>1</sup>
- EQ-5D is an outcome measure widely used for the calculation of quality-adjusted life years by incorporating both quantity (longevity/mortality) and quality of life.<sup>2,3</sup> EQ-5D has two variants for data collection: 3-Level (3L) and 5-Level (5L).<sup>2</sup>

Methods

- Patients self-completed the EQ-5D-5L questionnaire at baseline, after 20 weeks, and yearly thereafter.
- EQ-5D-5L provides two overall scores: health utility and general health.
- The health utility index score (1=perfect health; 0=death) is based on five dimension-specific items (mobility, self-care, usual activities, pain/discomfort, anxiety/depression), each with five response options. The index score is calculated only if responses are available from all five questions.
- The general health score is based on a visual analogue scale (VAS) ranging from 0 to 100, with higher scores indicating better patient-reported health status.

Table 1. Baseline characteristics and demographics

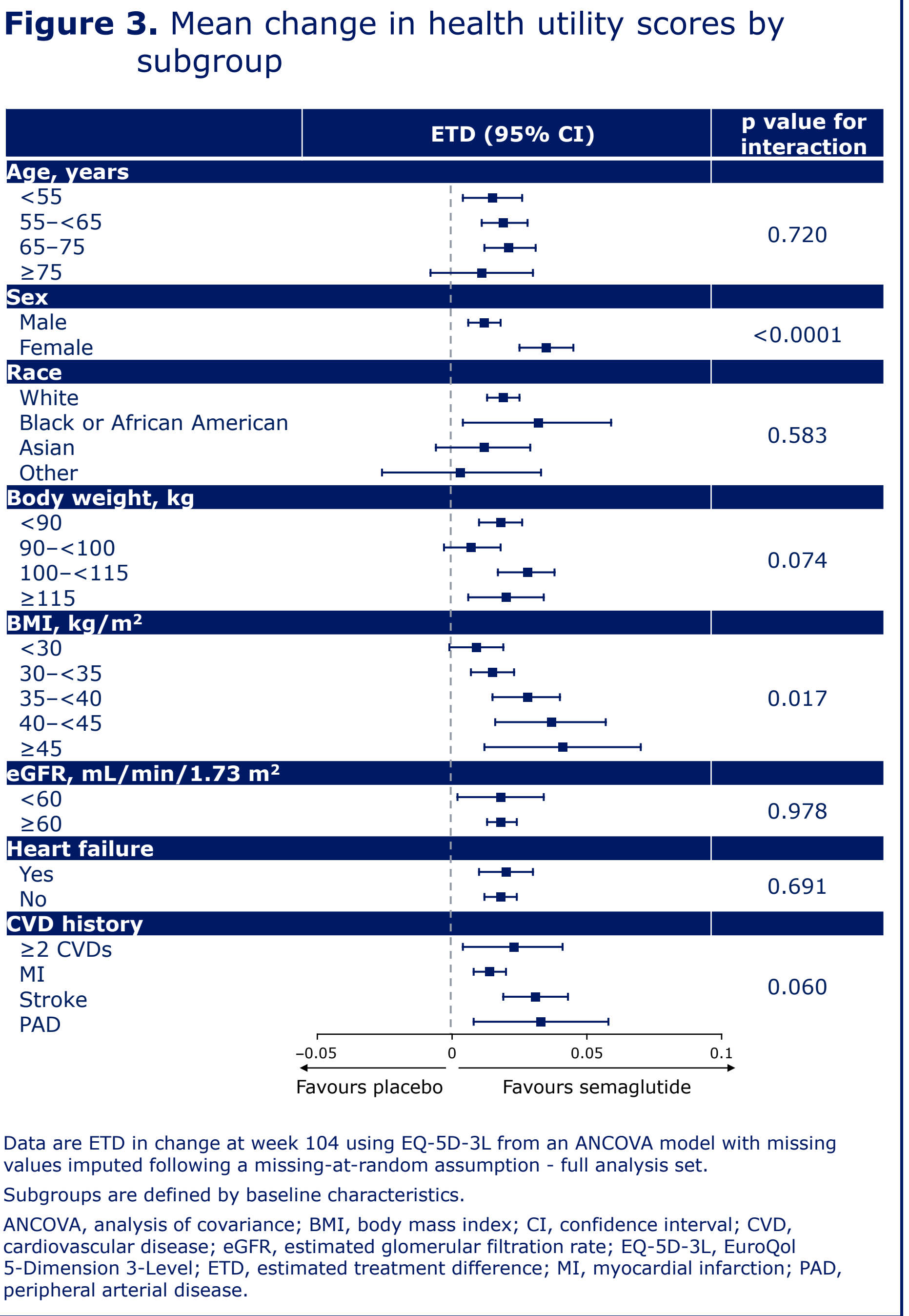
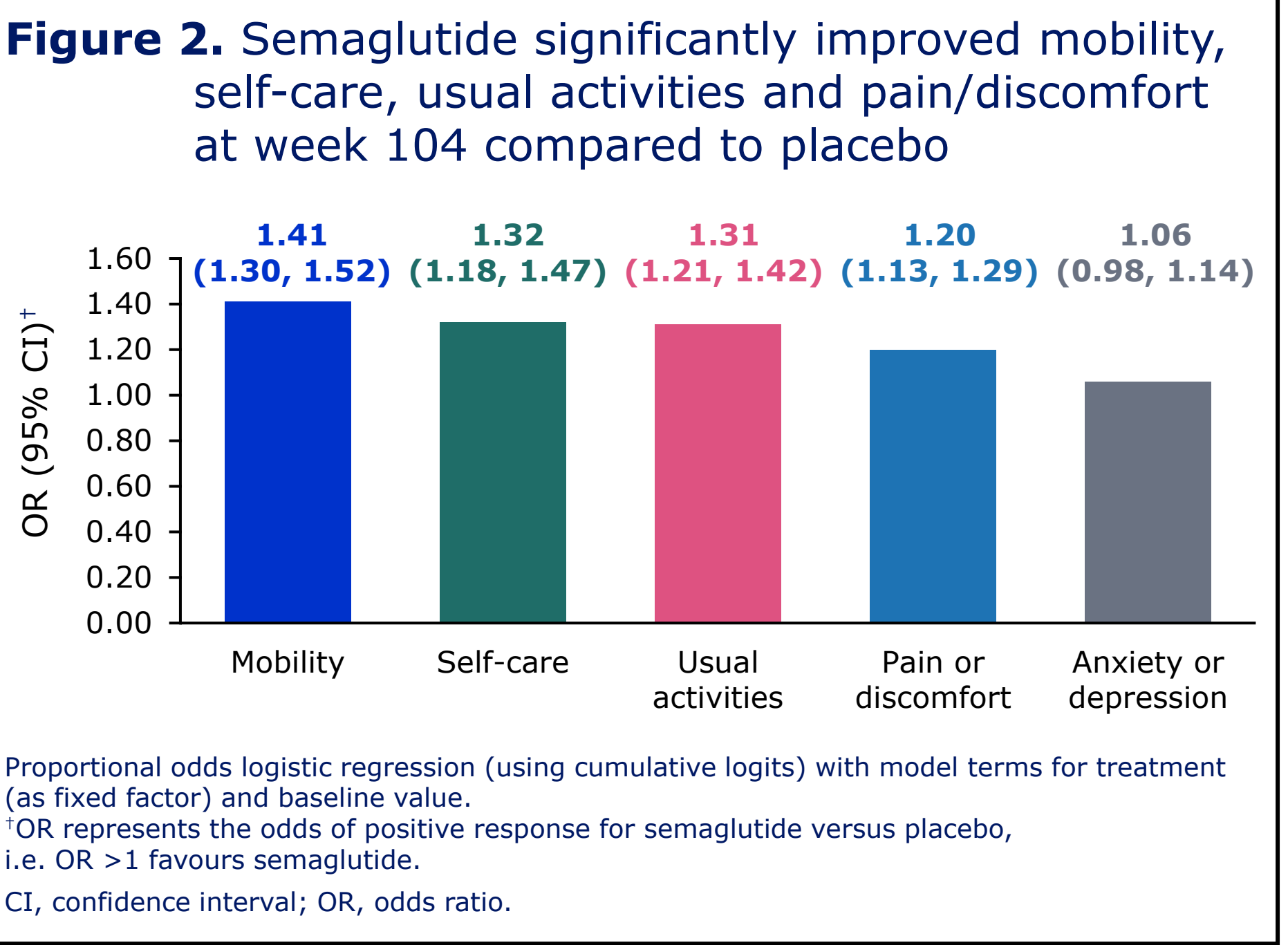
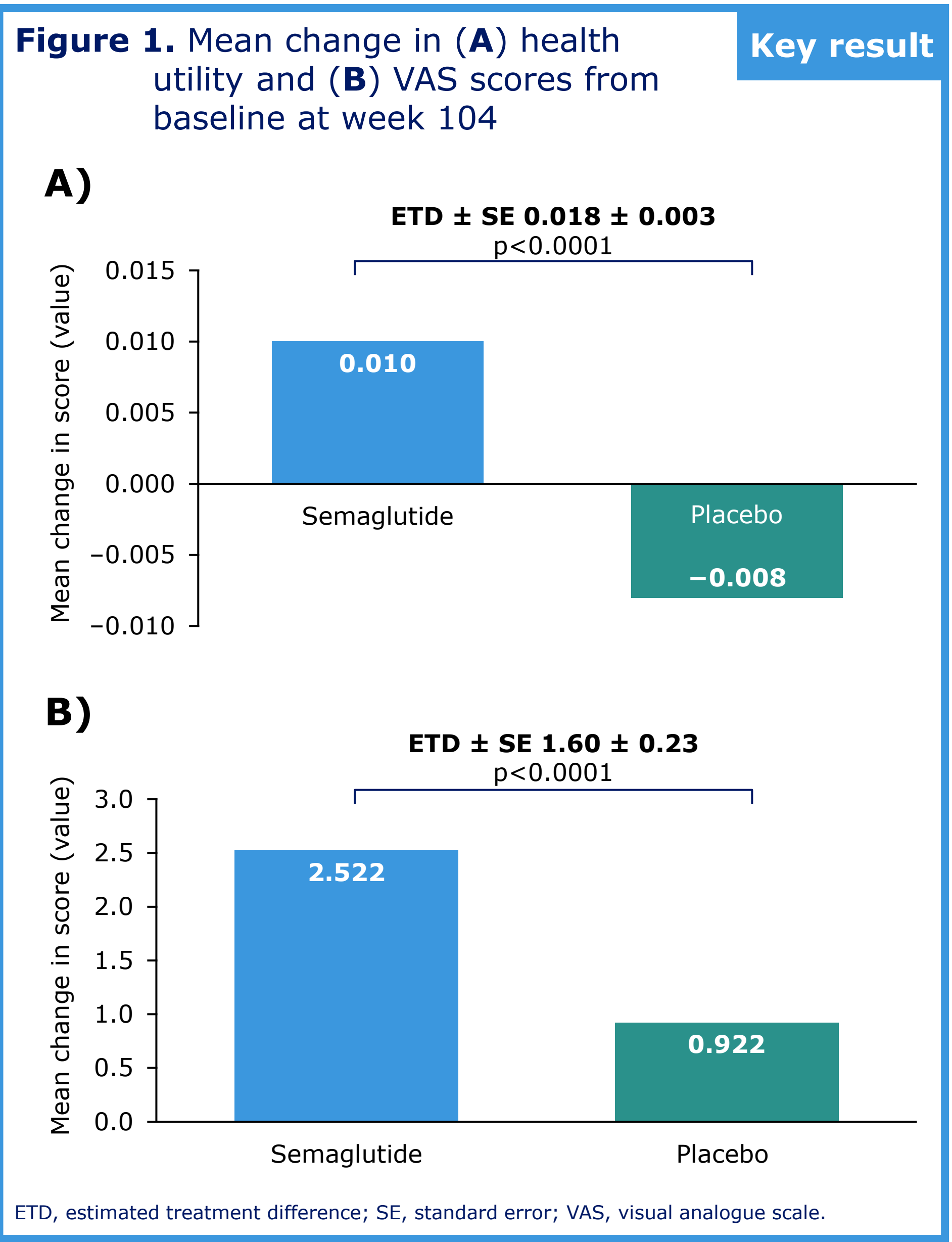
	Semaglutide (n=8803)	Placebo (n=8801)	Overall (N=17,604)
Age, years	61.6 (8.9)	61.6 (8.8)	61.6 (8.9)
Sex, n (%)			
Female	2448 (27.8)	2424 (27.5)	4872 (27.7)
Male	6355 (72.2)	6377 (72.5)	12,732 (72.3)
Race, n (%)			
White	7387 (83.9)	7404 (84.1)	14,791 (84.0)
Asian	720 (8.2)	727 (8.3)	1447 (8.2)
Black/African American	348 (4.0)	323 (3.7)	671 (3.8)
Other <sup>†</sup>	253 (2.9)	273 (3.1)	526 (3.0)
Not reported	95 (1.1)	74 (0.8)	169 (1.0)
Body weight, kg	96.5 (17.5)	96.8 (17.8)	96.7 (17.7)
BMI, kg/m <sup>2</sup>	33.3 (5.0)	33.4 (5.0)	33.3 (5.0)
Waist circumference, cm	111.3 (13.1)	111.4 (13.1)	111.3 (13.1)
EQ-5D index score	0.88 (0.15)	0.88 (0.15)	0.88 (0.15)
EQ-5D-VAS score	77.15 (15.63)	77.15 (15.73)	77.15 (15.68)
eGFR, mL/min/1.73 m <sup>2</sup> distribution, n (%)			
<60	970 (11.1)	938 (10.7)	1908 (10.9)
≥60	7804 (88.9)	7834 (89.3)	15,638 (89.1)
UACR, mg/g <sup>‡</sup> distribution, n (%)			
<30	7377 (86.1)	7471 (87.1)	14,848 (86.6)
≥30 to <300	1027 (12.0)	941 (11.0)	1968 (11.5)
≥300	159 (1.9)	166 (1.9)	325 (1.9)
Concomitant medication, n (%)			
Antihypertensive medication	8217 (93.3)	8167 (92.8)	16,384 (93.1)
ACEi/ARB	6581 (74.8)	6535 (74.3)	13,054 (74.5)

Data are mean (SD) unless stated otherwise.  
<sup>†</sup>Includes patients whose race was recorded as 'American Indian or Alaska Native', 'Native Hawaiian or Pacific Islander' or 'Other'; <sup>‡</sup>To convert UACR from mg/g to mg/mmol, divide the mg/g value by 8.849557522; UACR categories are based on geometric mean UACR.  
ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin II receptor blocker; BMI, body mass index; eGFR, estimated glomerular filtration rate; EQ-5D, EuroQol 5-Dimension; EQ-5D-VAS, EuroQol 5-Dimension visual analogue scale; SD, standard deviation; UACR, urinary albumin-to-creatinine ratio.

- The National Institute for Health and Care Excellence (NICE) has recommended a two-step approach for UK scoring of EQ-5D-5L data:<sup>3</sup>
  - Mapping the 5L descriptive system data onto the 3L.<sup>3</sup>
  - Generating utility scores using UK health preferences for EQ-5D-3L.<sup>4</sup>
- Following NICE recommendations, item responses were combined using UK health preferences for EQ-5D-3L.<sup>3</sup>
- Sensitivity analyses used original UK health preferences for EQ-5D-5L.<sup>5</sup>
- For illustration, utility gain is also presented as healthy days per year ([health utility score] × 365).

Results

- At week 104, questionnaire completion rates were 78% (n=6910) for semaglutide versus 77% (n=6807) for placebo.
- Baseline characteristics were well balanced between treatment arms (**Table 1**).<sup>1</sup>
  - Baseline mean health utility was 0.88 (standard deviation [SD] 0.15) for both the semaglutide and placebo groups (**Table 1**).
  - Baseline mean VAS was 77.15 (SD 15.63) and 77.15 (SD 15.73) for the semaglutide and placebo groups, respectively (**Table 1**).
- Utility scores increased with semaglutide (mean change ± standard error [SE] 0.010 ± 0.002) and reduced in the placebo group (−0.008 ± 0.002), with an estimated treatment difference (ETD) ± SE of 0.018 ± 0.003 (**Figure 1A**). This improvement is equal to approximately 7 healthy days per year.
- VAS scores improved to a greater extent with semaglutide (2.52 ± 0.16) compared with placebo (0.92 ± 0.16); ETD was 1.60 ± 0.23 (**Figure 1B**).
- All dimension-specific scores showed statistically significant improvement with semaglutide, except for anxiety/depression, for which change was not significant (**Figure 2**).
- ETDs in utility scores were consistent irrespective of age, region, race, chronic kidney disease and CVD types at baseline, but larger among women (0.035 ± 0.005) than men (0.012 ± 0.003; p value for interaction <0.0001) (**Figure 3**).
- Sensitivity analyses using the original EQ-5D-5L utility score provided similar results with slightly smaller overall ETD (0.014 ± 0.002).



Discussion

- Baseline EQ-5D scores varied from slightly worse to better than values for the US general population<sup>6</sup> (EQ-5D index 0.88 vs 0.82, EQ-5D VAS 77.15 vs 78.54), suggesting that the study sample had good health utility at baseline.
- The 0.018 improvement in health utility observed with semaglutide compared to placebo is equivalent to approximately 7 additional days spent in full health per year.
- Women showed larger heath utility gain (0.035) compared to placebo than men (0.012). This may be partly explained by a larger weight loss for women.

Conclusions

- In patients with CVD and obesity/overweight, quality of life improved with semaglutide compared to placebo after 2 years of therapy. This adds to the beneficial outcomes from the SELECT trial.
- The estimated health utility gain of 0.018 compared to placebo can be used in subsequent health economic analyses.

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This trial was sponsored by Novo Nordisk and is registered with ClinicalTrials.gov (NCT03574597).  
Editorial support was provided by Roxanna Munir, PhD, of Apollo, OPEN Health Communications, and funded by Novo Nordisk A/S, in accordance with Good Publication Practice (GPP) guidelines (www.ismpp.org/gpp-2022).  
Presented at the ISPOR Europe conference, 17–19 November 2024, Barcelona, Spain.  
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