**Associations between tirzepatide-treatment and bodily pain in people with obesity: post-hoc analysis of SURMOUNT trials**

**Aim:** This post-hoc analysis of SURMOUNT-1, -3, and -4 (SM-1, -3, -4) evaluated change in bodily pain in those with high pain and low pain at baseline measured by SF-36v2 Bodily Pain Domain among participants with obesity.

**Methods:** On-treatment data from randomized participants in SM-1, -3, and -4 trials were used. Pain and interference with normal work was assessed using the SF-36v2 Bodily Pain Domain at baseline and end of treatment [week-72 (SM-1 and -3) or 88 (SM-4), or early treatment discontinuation]. Participants were categorized into the higher pain group (PG) (SF-36 Bodily Pain score at baseline was <25th percentile) and the lower PG (≥25th percentile).

**Results:** At baseline, higher PG of SM-1, -3, and -4 (N=515,128,162) had mean body weight (BW) of 108-113 kg, mean BMI 40 kg/m2, and mean age 48-51 years; Lower PG of SM-1,-3 , and -4 (N=2017,447,508) had mean BW of 104-108 kg, mean BMI 38 kg/m2, and mean age 44-47 years. In SM-1, SF-36v2 Bodily Pain score increased (improved) with tirzepatide-treatment in the high (placebo-adjusted least squares mean (LSM) change from baseline to week-72 = 2.3, 3.0, and 2.5 for 5mg,10mg,15mg, respectively) and low PG (1.1, 1.4, and 2.4), with the degree of increment being numerically higher in the high PG. Body weight reduction with tirzepatide treatment was comparable between the high (placebo-adjusted LSM percent change -13.6%, -19.1%, and -20.7% for 5mg, 10mg, 15mg, respectively) and low PG (-13.6%, -18.9%, and –20.1%)). Results of SM-3 and SM-4 were consistent with those of SM-1.

**Conclusion:** In this post-hoc analysis, tirzepatide-treatment was associated with improvement in bodily pain domain scores, especially in participants with higher baseline bodily pain score. Similar BW reduction with tirzepatide-treatment in those with higher and lower bodily pain score suggests that bodily pain may not be a barrier to effective weight reduction.