EXECUTIVE SUMMARY

Introduction: After COVID-19, many people experience "long COVID", a condition with ongoing symptoms that affect the functional status (such as fatigue and exercise intolerance) and problems with nutrition (such as malnutrition after hospitalisation, digestive issues, or loss of smell and taste). There is a need for multidisciplinary rehabilitation, but there is little evidence of its effectiveness. The main goal of this study was to assess the feasibility of a personalised multimodal treatment (PMT), and to prepare for a large-scale study to test the effectiveness of the PMT.

Methods: Universitair Ziekenhuis Brussel (UZ Brussel) conducted the study: "*Faster functional performance recovery after individualised nutrition therapy combined with a patient-tailored physical rehabilitation programme versus standard physiotherapy in patients with long COVID: a pilot study for a randomised, controlled single centre trial*" (*UNLOCK: Nutrition and LOComotoric rehabilitation in long COVID*), KCE-trials number: LCOV21-1306). Participants were randomly assigned to an intervention group receiving the PMT or to a control group receiving standard physiotherapy. The PMT included weekly individualised nutritional advice from a dietitian and an exercise programme with a trained physiotherapist over 12 weeks. The study focused on participant's study burden, recruitment rate and attrition rate (how many participants ended their participation before the end of the intervention period), to evaluate the feasibility of the trial. The main measure of effectiveness was the difference in functional performance, measured by the 1-minute sit-to-stand test (1-MSTS, how many times the participants can stand up starting of a sitting position in 1 minute), after 12 weeks of intervention.

Results: For this study, 65 participants with long COVID living in Belgium were recruited. Their mean age was 43 years, 64.6% were female, and had a mean BMI of 25.8 kg/m². Most participants had a mild COVID-19 infection and a mean length of long COVID symptoms of 78 weeks. Recruitment took longer than expected (16 months instead of 10 months) and the attrition was higher than expected (24.6% instead of 20%). The (expected) study burden was an important limiting factor in both recruitment and attrition. On the other hand, participants who completed the trial indicated that although the study burden was high, they were satisfied with their trial experience. The intervention-specific procedures were highly feasible: participants received a mean of 10 consultations with the dietitians and 15 physiotherapy sessions in 12 weeks. The study participants had a low functional performance at the beginning of the study, as participants performed 24 ± 8 sit-to-stand repetitions. After 12 weeks of intervention, participants in the intervention group performed an additional 4 repetitions [95% Confidence interval: 2, 5] repetitions, and the control group an additional 3 repetition [95% CI: 0, 5] in the control group. A change of 3 additional repetitions is considered clinically important. This indicates that the functional performance improved in both groups. However, the mean difference between intervention and control group was 1 [95% CI: -2, 4], so no treatment effect was observed. Based on the effects we found in this pilot study between the intervention and control group and considering a 24.6% attrition rate, we calculated a sample size of 142 individuals with long COVID for the large-scale study to assess the effectiveness of the PMT.

Discussion: The study burden was high but acceptable as indicated by the participants who completed the trial. The personalised treatment programme was feasible in the long COVID population. As this was a pilot and feasibility trial, a randomized controlled trial in a larger sample size is necessary to assess treatment efficacy. More information: unlock@uzbrussel.be