SKOGLI
helse og rehabilitering
Lillehammer, Norway

A quality management report

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Does rehabilitation improve CFS/ME-patients recovery during the first year after treatment?

Background
Chronic fatigue syndrome/Myalgic encephalomyelitis (CFS/ME) are serious, debilitating conditions affecting millions of people around the world, most commonly in developed nations. This condition can cause significant impairment and disability. Despite substantial effort by researchers to get a better understanding of CFS/ME, there is no consensus about effective treatment. However, several studies on Cognitive Behavioural Therapy (CBT), Graded Exercise Therapy (GET) and activity management have shown positive and statistically significant results for patients the past decade. Diagnosis remains a challenge, and patients often struggle with their illness for years before getting diagnosed.

Method
Participants: Adult patients with persistent CFS/ME attending rehabilitation periods from 2014 through 2019. Mean age was 41.4 years (SD: 11.4), and 88 percent were women.

Program: Patients attended an in-house and group-based rehabilitation over a period of four weeks at Skogli Helse- og Rehabiliteringssenter AS. Emphasis was placed on interdisciplinary follow-up and patients attended actively in tutorial- and activity-sessions during the four weeks stay. The rehabilitation program consisted of a six hours course, based on methods from CBT and ACT. All patients received a few hours of individual cognitive therapy. The rehabilitation program consisted of up to 14 hours of group-training activities with focus on mobility, relaxation/mindfulness, body-awareness, activity- and stress management. The patients participated in conversation-groups two hours a week. Peer support was offered during the stay. A six hours monthly event was arranged for family members, including children. This, to give them a better understanding of the challenges of living with CFS/ME, and how to deal with the disorder as a relative. A follow-up week a few months after the main period, was available for eligible participants. On average, 41 percent attended the follow-up week.

Instruments: Questionnaire on arrival *(T1)*, at discharge *(T2)* and at follow-up after 3- *(T3)* and 12 months *(T4)*. Chalder Fatigue Scale – 11 items *(0-33)*. Chalder Fatigue Scale – Bi-modal scoring *(0-11)*.

Results
Mean change - Paired Samples T-test:

T1-T2 (n_1=263 and n_2=399)
1. Chalder score – 11% improvement - effect size; .4 *(small)* - p <.05 *(significant)*
2. Chalder Bi-modal score – 14% improvement - effect size; .4 *(small)* - p <.05 *(significant)*

T1-T3 (n_1=85 and n_2=136)
1. Chalder score – 16% improvement - effect size; .6 *(moderate)* - p <.05 *(significant)*
2. Chalder Bi-modal score – 21% improvement - effect size; .5 *(moderate)* - p <.05 *(significant)*

T1-T4 (n_1=56 and n_2=102)
1. Chalder score – 12% improvement - effect size; .4 *(small)* - p <.05 *(significant)*
2. Chalder Bi-modal score – 19% improvement - effect size; .5 *(moderate)* - p <.05 *(significant)*

Numbers needed to treat (NNT):
NNT for crossing over from a rating of "Severe fatigue" to just "Fatigue" or less.
(Bi-modal score 6 or more, to 5 or less (n_{T1-T2}=335, n_{T1-T3}=118, n_{T1-T2}=78)

T1-T2: NNT=4.0 *(84% of the T2-population were rated as having "Severe fatigue" at T1)*
T1-T3: NNT=3.6 *(87% of the T3-population were rated as having "Severe fatigue" at T1)*
T1-T4: NNT=3.2 *(77% of the T4-population were rated as having "Severe fatigue" at T1)*

## Conclusion / Implication
An interdisciplinary rehabilitation period, with a combination of theory and active approach for patients with CFS/ME, shows preliminary results indicating statistically significant mean improvements of perceived fatigue – both at discharge and at 3- and 12 months after discharge. Effect-sizes range from .32 to .64 (small to moderate), and highest at 3 months. NNT for declining from a rating of "Severe fatigue" to just "Fatigue" or less, range from 4.0 to 3.2, with the lowest number at 12 months.
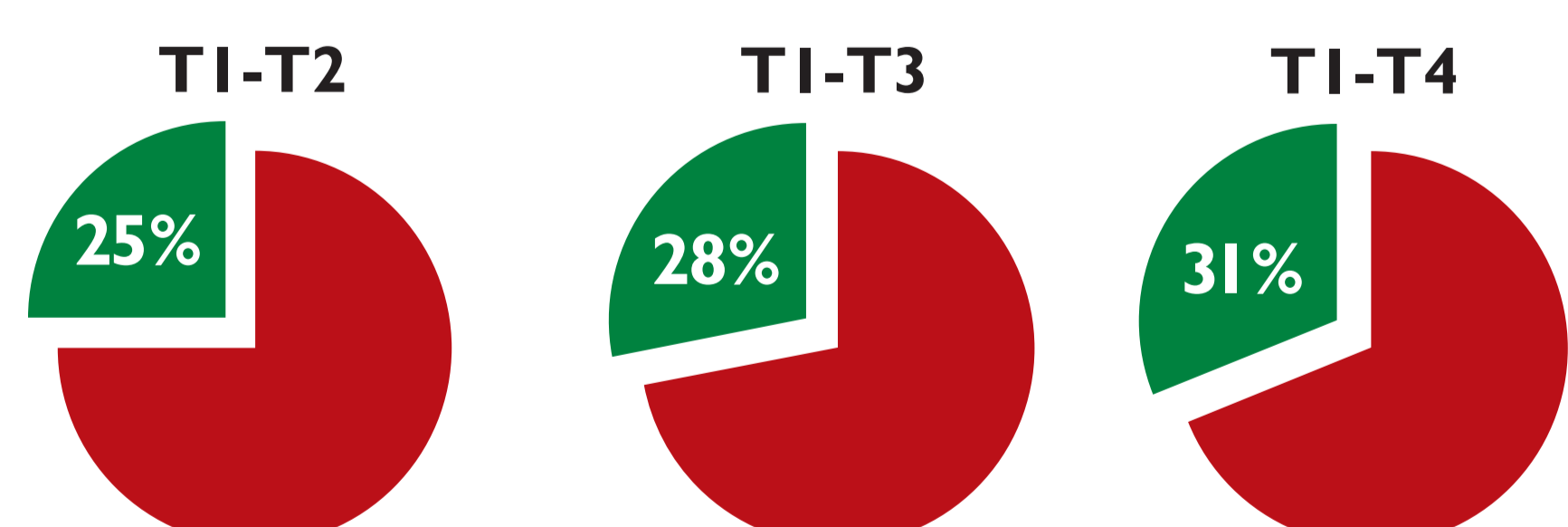
The results indicate there is a rehabilitation-effect on CFS/ME-patients in our program. However, the effect seems to be "delayed"; the best results are to be found in the months – and up to a year after discharge - both on an average level and on individual severity-level decline.

Scientific research on short- and long-term outcome is needed to evaluate the effect of interventions in the field of CFS/ME-rehabilitation.
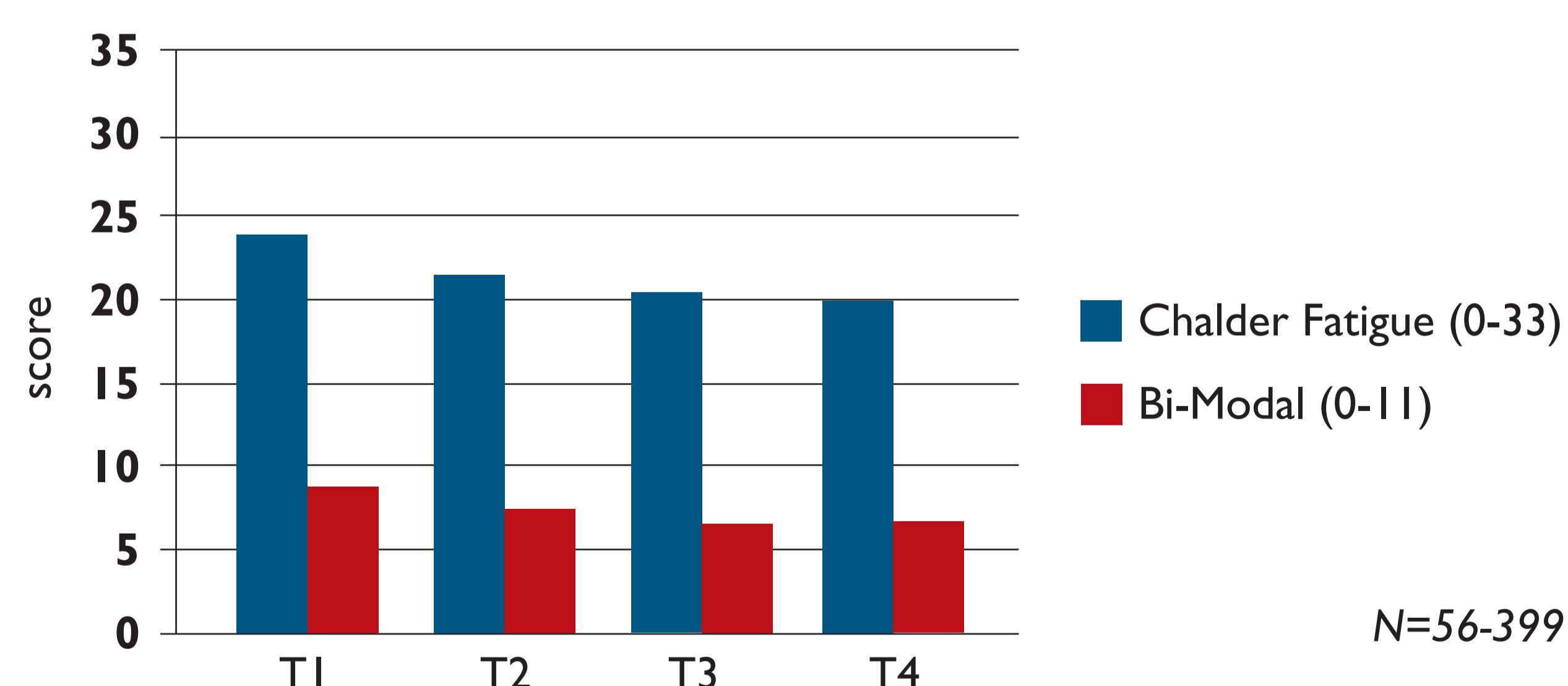
Part of responders declining from a fatigue-level of "Severe fatigue" to just "Fatigue" or less

| T1-T2 | T1-T3 | T1-T4 |
| 25% | 28% | 31% |

Fatigue-score

N=56-399

Legend: ■ Chalder Fatigue (0-33) ■ Bi-Modal (0-11)

Baseline levels and outcome results at discharge, and at 3- and 12-months follow-up

Chalder Fatigue Scale	T1 mean (with paired populations)			T2				T3				T4			
	T1 (T2)	T1 (T3)	T1 (T4)	mean	T1-T2 % change	p value	effect size	mean	T1-T3 % change	p value	effect size	mean	T1-T4 % change	p value	effect size
Total score (0-33)	24.1	24.5	22.9	21.5	11%	<.001	small .40	20.4	16%	<.001	moderate .64	20.1	12%	<.05	small .42
N:	263	85	56	263				85				56			
Bi-modal (0-11)	8.6	9.0	8.9	7.4	14%	<.001	small .36	7.1	21%	<.001	moderate .54	7.2	19%	<.001	moderate .50
N:	399	136	102	399				136				102			