

Improving aftercare by modern technologies for severe anorexia nervosa after intensive inpatient treatment: a RCT with a therapist-guided smartphone app
(project no. 78-17)

Authors

Sandra Schlegl, Ulrich Voderholzer

Introduction

Studies regarding the effectiveness of inpatient treatment for adolescent and adult patients with anorexia nervosa (AN) show medium to large effect sizes regarding weight gain and symptom change. However, studies also show that half of the patients do not achieve a Body-Mass-Index (BMI) of at least 17.5 kg/m² at discharge (Goddard et al., 2013; Schlegl et al., 2016; Schlegl, Quadflieg, Löwe, Cuntz, & Voderholzer, 2014; Wales et al., 2016). Furthermore, it seems to be quite difficult for patients to sustain improvements after discharge, as relapse rates reach up to 41% for patients with AN (Carter et al., 2012). Transferring achieved improvements into the patients' home fails frequently for the following reasons: 1) considerable waiting times for outpatient treatment 2) a lack of therapists in the outpatient setting who are specialized in the treatment of eating disorders (EDs) 3) insufficient dovetailing of therapeutic content of inpatient treatment and outpatient follow-up treatment.

Technology-based interventions (TBIs) provide new and exciting opportunities to bridge this gap. The newest approach to TBIs for mental disorders amongst other disorders, are "therapy" apps for smartphones. The app "Recovery Record" is currently the world's leading app for EDs in terms of downloads, user rating and evidence-base (it includes elements of cognitive behavioral therapy, dialectical-behavioral therapy, acceptance and commitment therapy as well as motivation enhancement).

In our randomized controlled pilot study (N=40) to investigate the feasibility, acceptability and preliminary efficacy of a guided smartphone-based aftercare intervention following inpatient treatment of patients with AN, patients showed a high level of adherence and reported a very high acceptance of the app and the aftercare intervention (Neumayr, Voderholzer, Tregarthen, & Schlegl, 2019). Furthermore, at postintervention we found small to moderate between-group effect sizes favoring the intervention group (IG) regarding BMI and ED symptoms. At 6-month follow-up, effects wore off and no significant differences between the IG and the control group (CG) were evident.

Objectives

The aim of this project was to conduct a randomized controlled trial (RCT) to further evaluate the efficacy of a guided smartphone-based aftercare intervention as an add-on element to treatment as usual (TAU) in inpatients with AN.

Our primary hypothesis was that at the end of the aftercare intervention, the IG showed a significantly lower overall ED symptomatology than TAU. Secondary hypotheses included a significantly lower overall ED symptomatology at 6-month follow-up, a higher BMI, a lower frequency of binge eating and purging, a higher reduction regarding depression, a higher stage of change, a higher self-efficacy as well as a lower rehospitalization rate compared to TAU.

Methods

Patients were recruited at Schoen Clinic Roseneck in Prien, Germany. All patients who met inclusion criteria and gave informed written consent were randomized to the intervention group (IG) or control group (CG).

Patients randomized to IG received a therapist-guided smartphone-based aftercare intervention for a period of 16 weeks. The patients were invited to download for free the German version of "Recovery Record" to their smartphone and to link with the aftercare therapist. After discharge, patients were instructed to monitor their meals, emotions, cognitions, and symptoms over the subsequent 16 weeks. The aftercare therapist also set the patients clinical post-discharge goals and made coping skill suggestions. Individual therapist feedback was provided in-app twice per week in weeks 1–4, once per week in weeks 5–8, every other week in weeks 9–12, and once in week 16.

Patients randomized to CG received treatment as usual (TAU) i.e. patients and their physicians or therapists decided on post-discharge treatment which was documented.

Assessment points were as follows: at hospital discharge (=baseline, T0), after 16 weeks (end of the aftercare intervention, T1) and at 6-month follow-up (T2) after hospital discharge.

At all assessment points, a trained assessor conducted a structured interview (Eating Disorder Examination, EDE) to assess ED-specific psychopathology. Furthermore, the patients filled out online questionnaires: Eating Disorder Examination-Questionnaire (EDE-Q), Beck Depression Inventory (BDI-II), Stages of Change Questionnaire for Eating Disorders (SOCQ-ED). BMI was assessed by the general practitioner. Patients qualitatively evaluated the smartphone app and the intervention and health care utilization after discharge was reported.

Results

One hundred and eighty-six patients gave informed written consent and were randomized to one of the two study conditions: 93 were randomized to the IG and 93 to the CG. Out of 93 patients who were randomized to the IG, 72% completed the 16 weeks of intervention. The EDE total score remained stable in both groups, there was no significant interaction effect (group*time). But we found a significant main effect of time in EDE Eating Concern, EDE Shape Concern and EDE Restraint: EDE Eating Concerns and EDE Restraint increased over time, while EDE Shape Concern decreased. However, again we found no significant interaction effect (group*time). Patients in the IG rated being linked with a clinician most helpful, followed by logging meals and logging thoughts. Furthermore, they were satisfied with the aftercare therapist and the frequency of feedback in the first 2 months. Regarding the post discharge health care utilization more than 90% received additional outpatient therapy.

Conclusions

This RCT is the first to evaluate the efficacy of a guided smartphone-based aftercare intervention in a clinical sample of patients with AN. In doing so, the authors respond to the call of O'Leary & Torous (2022) for translational research on smartphone apps for eating disorders. The acceptability of our aftercare intervention was very good. Especially linking with the clinician was considered helpful. Our patients stated that the intervention helped them, especially when they were unsure about how to plan their meals at home. Furthermore, our completion rate was good which underlines the high acceptability. However, no superior add-effect of "Recovery Record" versus TAU emerged in the analyses done so far. Regarding this result, it must be noted that our intervention is an add-on treatment, which means that patients of both groups received outpatient treatment, creating a rather ambitious study design.

Incorporating TBIs into routine care may become of increasing relevance in the future, as the age of onset in AN is getting lower (Gilsbach et al., 2022). This development is alarming because child-onset is linked with more severe AN, greater life difficulties as well as greater lifetime psychiatric comorbidity (Grilo & Udo, 2021). Since younger generations are very familiar to using their smartphones, it could be very helpful to include smartphone-based interventions in routine care. Therefore, we are highly interested in evaluating the app in other contexts of inpatient treatment (e.g., during waiting time for inpatient treatment, during inpatient treatment). Against the background of increasing prevalence of AN and the associated longer waiting times for inpatient and outpatient therapy places, this could make an important contribution to the care of patients with AN.

References

- Carter, J. C., Mercer-Lynn, K. B., Norwood, S. J., Bewell-Weiss, C. V., Crosby, R. D., Woodside, D. B., & Olmsted, M. P. (2012). A prospective study of predictors of relapse in anorexia nervosa: implications for relapse prevention. *Psychiatry Research*, 200(2-3), 518-523. doi:10.1016/j.psychres.2012.04.037
- Gilsbach, S., Plana, M. T., Castro-Fornieles, J., Gatta, M., Karlsson, G. P., Flamarique, I., . . . Herpertz-Dahlmann, B. (2022). Increase in admission rates and symptom severity of childhood and adolescent anorexia nervosa in Europe during the COVID-19 pandemic: data from specialized eating disorder units in different European countries. *Child Adolesc Psychiatry Ment Health*, 16(1), 46. doi:10.1186/s13034-022-00482-x
- Goddard, E., Hibbs, R., Raenker, S., Salerno, L., Arcelus, J., Boughton, N., . . . Treasure, J. (2013). A multi-centre cohort study of short term outcomes of hospital treatment for anorexia nervosa in the UK. *BMC Psychiatry*, 13(1), 287. doi:10.1186/1471-244X-13-287
- Grilo, C. M., & Udo, T. (2021). Examining the significance of age of onset in persons with lifetime anorexia nervosa: Comparing child, adolescent, and emerging adult onsets in nationally representative U.S. study. *Int J Eat Disord*, 54(9), 1632-1640. doi:10.1002/eat.23580
- Neumayr, C., Voderholzer, U., Tregarthen, J., & Schlegl, S. (2019). Improving aftercare with technology for anorexia nervosa after intensive inpatient treatment: A pilot randomized controlled trial with a therapist-guided smartphone app. *Int J Eat Disord*, 52(10), 1191-1201. doi:10.1002/eat.23152
- O'Leary, T., & Torous, J. (2022). Smartphone apps for eating disorders: An overview of the marketplace and research trends. *Int J Eat Disord*, 55(5), 625-632. doi:10.1002/eat.23690
- Schlegl, S., Diedrich, A., Neumayr, C., Fumi, M., Naab, S., & Voderholzer, U. (2016). Inpatient Treatment for Adolescents with Anorexia Nervosa: Clinical Significance and Predictors of Treatment Outcome. *European Eating Disorders Review*, 24(3), 214-222. doi:10.1002/erv.2416
- Schlegl, S., Quadflieg, N., Löwe, B., Cuntz, U., & Voderholzer, U. (2014). Specialized inpatient treatment of adult anorexia nervosa: effectiveness and clinical significance of changes. *BMC Psychiatry*, 14(1), 258. doi:10.1186/s12888-014-0258-z
- Wales, J., Brewin, N., Cashmore, R., Haycraft, E., Baggott, J., Cooper, A., & Arcelus, J. (2016). Predictors of Positive Treatment Outcome in People With Anorexia Nervosa Treated in a Specialized Inpatient Unit: The Role of Early Response to Treatment. *European Eating Disorders Review*, 24(5), 417-424. doi:10.1002/erv.2443

The project was funded by the Swiss Anorexia Nervosa Foundation.