

Better Knowledge and Improved Relationships Among Adults with ADHD and Their Significant Others: A Pilot Study of Psychoeducational Groups

Else Waaler,¹ Jussi Jokinen,² Sven Bölte,³ and Tatja Hirvikoski,^{1, 3,4}

ABSTRACT

Objective: To pilot the effectiveness of a manualized psychoeducational group program for adults with ADHD and their significant others. **Method:** In an outpatient tertiary psychiatric clinic, 17 adults with ADHD and 20 significant others were allocated to eight psychoeducational sessions. **Results:** The psychoeducational program was judged to be an adequate treatment option for 94.5% of the adults diagnosed with ADHD. Compliance was good for the participants with ADHD and acceptable for their significant others. Knowledge of ADHD as well as the quality of the relationship between ADHD participants and their significant others increased, while the experienced burden of the significant others decreased from pre- to post-intervention. Effects remained stable at the 6-month follow-up. **Conclusion:** Our findings support the value of psychoeducation for adults with ADHD and their significant others as a feasible and effective intervention. Randomized controlled trials are needed to corroborate the evidence base of the current program.

Keywords

ADHD, adult, significant others, psychoeducation, treatment

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a childhood onset neurodevelopmental condition persisting into adulthood in at least 50% of cases (Rasmussen & Gillberg, 2000). The prevalence of ADHD among adults is estimated to be 1.2–7.3% (Fayyad et al., 2007). Symptoms of ADHD have a negative impact on the functional adaptation and quality of life (Barkley, 2002; Brod, Johnston, Able, & Swindle, 2006) of both the affected persons and people around them. Therefore, it is of pivotal importance to develop treatment methods for adult ADHD which also address the needs of significant others such as relatives, spouses, and close friends. Moreover, ADHD is often not diagnosed before adulthood, which may be challenging for the individual and lead to depressive rumination without the support of comprehensive information and conveyance strategies to cope with the diagnosis (Young, Bramham, Gray, & Rose, 2008).

For general management of ADHD in adults, clinical guidelines endorse integrating pharmacological and psychosocial interventions (CADDRA 2011; Ebert, Krause, & Roth-Sackenheim, 2003; NICE, 2009; Practice_Parameters, 1997). Psychotherapy based on cognitive behavioral principles has been evaluated in a few randomized controlled studies (Emilsson et al., 2011; Hirvikoski et al., 2011; Safren et al., 2010; Solanto et al., 2010; Stevenson, Whitmont, Bornholt, Livesey, & Stevenson, 2002). However, psychotherapy may be too demanding as an initial treatment after an established diagnosis for many adults with ADHD presenting at psychiatric clinics (Hirvikoski et al., 2011). Psychoeducation is often described as a less demanding, cost-effective treatment option.

Psychoeducation is a novel treatment paradigm including information about the diagnosis and its treatment, aid to develop coping skills and problem-solving strategies, and provision of emotional support and empowerment for patients and related persons (Montoya, Colom, & Ferrin, 2011). Psychoeducation is considered to be a well-established, evidence-based

intervention for several psychiatric disorders in adulthood (Dixon et al., 2001). Moreover, patients' outcomes, such as recovery from mental illness, improve when the needs of family members for information, clinical guidance, and support are met (ibid).

Psychoeducation for ADHD has been evaluated mostly in children and adolescents and their families (Montoya et al., 2011). Positive effects have been observed in patient's behavior, the quality of parent-child interaction, and knowledge of ADHD, as well as improved adherence to medication (Montoya et al., 2011). To the best of our knowledge, only one study has been published on psychoeducation for adults with ADHD (Wiggins, Singh, Getz, & Hutchins, 1999). The findings were multifaceted and indicated positive effects on executive functions, but also potentially negative effects on self-esteem. Family members were not included in the psychoeducational concept. In conclusion, psychoeducation for adults with ADHD has not been well studied, although it is routinely recommended in treatment guidelines for ADHD (CADDRA, 2011; NICE, 2009).

The aim of the current pilot study was to conduct a preliminary evaluation of the feasibility and effectiveness of a novel manualized psychoeducative intervention for adults with ADHD and their significant others in a psychiatric outpatient setting.

METHODS

The intervention was conducted as part of the clinical routine at the Neuropsychiatric Unit Karolinska, Psychiatry Northwest, Stockholm County Council, an outpatient tertiary psychiatric clinic for the assessment and treatment of adults with neurodevelopmental disorders. The study was approved by the Regional Ethics Committee of Stockholm, (2009/824-31/3).

Psychoeducational Program

The program examined in the current study is a structured manualized (Hirvikoski & Waaler, *in press*) psychoeducational intervention for adults with ADHD and their significant others.

The overarching aim of the treatment is to increase knowledge of ADHD, including information on different strategies, treatments, and support that may facilitate management of ADHD. Further aims are to improve the quality of the relationship between the individual with ADHD and his/her significant other(s), to reduce the burden of the significant others, to create a forum for mutual support between people in a comparable situation, to increase acceptance of the ADHD diagnosis, and to promote belief in finding relief and improving the quality of life and self-esteem of the participants with ADHD.

The program includes 8 monthly sessions in a closed group including both participants with ADHD and their significant others. The sessions last 2½ hours, including a 30-minute break with coffee or tea and sandwiches. A senior clinical psychologist follows the group from the recruitment to the follow-up measures and coordinates the intervention. Different lecturers, all with long-standing experience in ADHD, are invited to inform on specific themes (Table 1). The lecturers are informed both orally and in writing about the general goals and principles of the intervention by the coordinating senior psychologist who actively strives to keep the intervention in line with the intended general principles. Thus, the focus on psychoeducation (not family counseling or psychotherapy) is stressed to the lecturers. Moreover, the lecturers are instructed to treat all topics in a general way rather than focus on individual problem solving. Common ADHD-related problems such as school failure or past substance abuse should be empathically validated while avoiding rumination around negative experiences. The lecturers are instructed to give their lectures in a constructive spirit, highlighting possibilities for change rather than disability and morbidity, giving hope, as well as pointing out common strengths in individuals with ADHD and thus applying techniques of

acceptance. The lecturers are also instructed to apply different pedagogical techniques to create ADHD-friendly lectures. For example, participants are activated through brief pre-planned discussions in small groups, stimulating and interest-evoking lecture material, etc.

To facilitate the psychoeducational process, all participants received a folder to collect and organize information and hand-outs given during sessions. The folder served as a workbook and compendium to make the course material available at home between the sessions and after completing the course.

Participants

The participants were recruited from the Neuropsychiatric Department Karolinska, Psychiatry Northwest, Stockholm County. The ADHD diagnostic assessment was based on multiple sources of information combined to constitute a consensus between two experienced clinicians; a clinical interview based on the DSM-IV criteria (American Psychiatric Association, 1994) was conducted in all cases. In addition, patients completed standardized self-rating questionnaires such as the Wender Utah Rating Scale (WURS) (Ward, Wender, & Reimherr, 1993) for the assessment of childhood ADHD symptoms, and the Adult AD/HD Self-Report Scale (ASRS) (Adler et al., 2006) for the assessment of AD/HD symptoms in adulthood. Whenever possible, collateral information (clinical interview and/or questionnaires) was gathered from the participants' significant others in order to obtain multi-perspective diagnostic information on each individual. When available, additional information was obtained from records from child and adolescent psychiatry and school health services, as well as adult psychiatry. The assessment also included neuropsychological testing, such as estimations of general cognitive capacity (Wechsler, 1997) and urinary drug screening.

The inclusion criteria of the study were rather liberal in order to include a naturalistic ADHD sample: ADHD as the primary (neurodevelopmental) diagnosis; age of 18 years or

older; possibility to participate together with at least one adult significant other. The exclusion criteria were: current substance abuse (during the last 3 months); mental retardation ($IQ \leq 70$); organic brain injury; autism spectrum disorder; suicidality; any other severe psychiatric disorders (e.g. psychosis) or adverse psychosocial circumstances (e.g. being homeless), thus making successful participation unlikely or impossible. Ongoing pharmacological treatment was not a reason for exclusion.

Recruitment Process and Enrollment of Participants

The first contact with the ADHD participants was established by sending out study information letters. Thereafter, they were invited to visit the clinic in small groups for further information and for judging the inclusion criteria individually. All participants gave their written informed consent, after which they completed the questionnaires. An experienced clinical psychologist conducted individual interviews and studied case files in order to further assess eligibility. Participants with ADHD were instructed to participate with significant other(s) with whom they had a relationship in their everyday lives. The significant others completed the questionnaires at home after having received a written rationale and instructions.

Measures

Background and Demographic Data

Case histories and sociodemographical data on participants with ADHD were extracted from their clinical files. Moreover, they completed a questionnaire surveying demographic information and current stressors within different areas of life (Hirvikoski, Lindholm, Nordenstrom, Nordstrom, & Lajic, 2009). A modified version of this questionnaire was used for the assessment of the background and demographic data of the significant others.

Outcome Measures

The main assessments regarded feasibility and efficacy. The efficacy measures included self-rating questionnaires and were conducted at baseline 1–2 weeks before the intervention started (T1), at post-treatment 1–2 weeks after the last session (T2), and at follow-up 6 months after the intervention ended (T3).

Feasibility

Three criteria were used to evaluate feasibility: (1) the psychoeducative program should be regarded as a suitable intervention for at least 90% of all individuals assessed with ADHD, as judged by one of the clinical psychologists involved in the project; (2) a drop-out rate of < 25% (i.e. a clear majority should complete the program); and (3) the participants should attend a clear majority, i.e. at least 75% of the sessions. *Treatment satisfaction* was evaluated using the Session Evaluation Form (SEF) (Bramham et al., 2009) modified for the current study. The SEF was completed anonymously at the end of each session and it comprised five items scored on a Likert scale ranging from 0 (“Not at all”) to 4 (“Yes, absolutely”). A total session evaluation score was calculated using the mean of all five items. To evaluate satisfaction with the entire psychoeducational program, a modified version of the Patient Evaluation Form (Hesslinger, Philipsen, & Richter, 2004, 2010; Hesslinger et al., 2002; Hirvikoski et al., 2011; Philipsen et al., 2007), scored on a Likert scale ranging from 0 (“I disagree”) to 4 (“I strongly agree”), was completed anonymously at the end of the last session.

Adverse events (AEs) were defined in the Case Report Forms as “any inconvenience that participants reported” and *serious adverse events* (SAEs) as “anything that has required inpatient hospitalization.”

Efficacy-Related Measures

The primary outcome measure for *all participants* was the ADHD 20 Questions, a knowledge quiz with 20 binarily scored items (true/false), measuring knowledge about ADHD and modified for this study from a corresponding scale (Bramham et al., 2009). The secondary outcome measure for all participants was Questions about Family Members, (Hansson & Jarbin, 1997), a dyadic self-report questionnaire that measures aspects of the quality of relationships between an adult with ADHD and a significant other. Based on factor analysis, the instrument comprises four subscales: (1) Critical Comments (critical remarks directed at the other person); (2) (the respondent's) Emotional Overinvolvement; (3) Perceived Criticism from the other person; and (4) perceived Emotional Involvement from the other person in the relationship. The QAFM comprises 30 items that are scored on a 5-point Likert scale from 1 ("almost never") to 5 ("almost always"). On the first three subscales low scores are indicative of a good relationship quality; while in the last subscale (Emotional Involvement), high scores indicate the same. The instrument has been shown to have good psychometric properties (Hansson & Jarbin, 1997).

Symptoms of depression were measured using the Beck Depression Inventory (BDI) (Beck, Steer, & Garbin, 1988; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), symptoms of anxiety using the Beck Anxiety Inventory (BAI) (Beck, Epstein, Brown, & Steer, 1988), and subjective stress using the Swedish version of the Perceived Stress Scale (PSS) (S. Cohen, Kamarck, & Mermelstein, 1983; Eskin & Parr, 1996).

In significant others, we also assessed the burden of care using the Burden Assessment Scale (BAS) (Reinhard, Gubman, Horwitz, & Minsky, 1994), which has two subscales (1) Subjective Burden, such as caregiver's emotional responses, and (2) Objective Burden, such as financial problems. The scale consists of 19 items scored on a 4-point Likert scale from 1 ("Not at all") to 4 ("A lot") and the instrument has good psychometric properties (ibid).

Self-esteem was investigated in *participants with ADHD* using Rosenberg's Self-Esteem (RSE) scale (Rosenberg, 1965), and quality of life using the Adult Attention-Deficit/Hyperactivity Disorder Quality-of-Life (AAQoL) scale (Brod et al., 2006). The 29 items of the AAQoL are scored on a 5-point Likert scale from 1 ("Not at all/Never") to 5 ("Extremely/Very often") and summarized to give an overall score and four subscale scores: (1) Life Productivity, (2) Psychological Health, (3) Relationships, and (4) Life Outlook. Finally, a visual analog scale ranging from 0 (worst) to 10 (best) was used to measure general well-being among participants with ADHD (Hesslinger et al., 2002).

Statistical Analysis

Due to clerical error, baseline data for the study's main outcome measure, the ADHD 20 Questions knowledge quiz, was missing in 5 cases and Treatment Mean Imputation (TMI) (Crowe, Lipkovich, & Wang, 2010) was used to replace these data. Most continuous scales used to assess outcome were normally distributed. However, the BDI and the BAI showed positively skewed distributions due to many low scores (especially among significant others), which were expected results for these clinical scales. The results were similar using non-parametric versus parametric statistical methods and, for the sake of brevity, we chose to report results from the parametric methods only. Outliers were screened for using boxplots and only one extreme outlier was detected in one outcome measure (one participant showed extremely low scores on the ADHD 20 Questions quiz at T3). The analyses with and without this outlier showed comparable results. The main statistical analyses were performed on all participants allocated to the intervention using intention-to-treat (ITT) analyses with a procedure of last observation carried forward (LOCF). The efficacy-related measures were analysed using a series of repeated measures ANOVAs (rmANOVAs), with a baseline score (T1), post-intervention score (T2), and a 6-month follow-up score (T3) as a within-subjects

repeated measure factor, and group (ADHD versus significant other) as a between-subjects factor. In this way we also analyzed whether the two groups responded differently to the intervention, as would be indicated by group-by-time interaction effects. When indicated by the Mauchly's test, the rmANOVAs were corrected for violation against an assumption of sphericity using the Huyn-Feldt correction. The effect size was expressed as partial eta squared (η^2) for efficacy measures and was interpreted using the guidelines proposed by Cohen: 0.01 = small effect size, 0.06 = moderate effect size, and 0.14 = large effect size (J. Cohen, 1988). The alpha levels were set at $p \leq 0.05$ for significance, and at $p \leq 0.10$ for a trend. The statistical trends are reported to avoid type II errors due to small sample size and, consequently, low statistical power.

RESULTS

Demographic and Background Data

During 2004–2008, 144 individuals were diagnosed at the Neuropsychiatric Unit Karolinska with ADHD as their main neurodevelopmental diagnosis (Flowchart, Figure 1). The participants' demographic and background data are presented in Table 2 (participants with ADHD) and Table 3 (significant others).

Outcome Measures

Feasibility

The psychoeducational program was estimated to be a suitable intervention for 94.5% of all candidates (136 of the 144). Thus, 8 individuals (5.5%) were considered to be unstable to a degree that made participation impossible.

The drop-out rate was calculated for individuals who joined the program but later terminated participation prematurely (2 out of the 15 = 13% of those with an ADHD

diagnosis; 5 out of 18 = 28% of significant others). Participants with ADHD (who started the course, $n = 15$) attended 76% of the sessions, which meets our criteria for a clear majority (at least 75%) of the sessions. The participating significant others ($n = 18$) attended as a group 61% of the sessions and thus did not meet our criteria for a clear majority. The sessions were attended on average by 11 (range 8–14) adults diagnosed with ADHD in adulthood and by 11 (range 4–16) significant others, which gives a total average of 22 (range 12–30) participants at each session.

There were no significant differences in treatment satisfaction between the individuals with ADHD and their significant others, as indicated by a series of Student's *t*-tests on the Session Evaluation Form scores (all *p* values ≥ 0.10). The program's session 5 on "Living with ADHD" received somewhat higher ratings than the other sessions. Otherwise, the different sessions were equally appreciated by the participants (Figure 1).

The analysis of the modified patient evaluation forms (Hesslinger et al., 2004; Hesslinger et al., 2002; Philipsen et al., 2007; Hirvikoski et al., 2011) showed that participants rated the course as clearly addressing ADHD-related topics, increasing their knowledge of ADHD, and providing opportunities to share personal experiences. On a 4-point Likert scale ranging from 0 ("I disagree") to 4 ("I strongly agree"), all items were scored from $M = 2.8 (\pm 1.21 \text{ SD})$ to $M = 3.8 (\pm 0.44 \text{ SD})$ by participants with ADHD and from $M = 3.1 (\pm 1.28 \text{ SD})$ to $M = 3.6 (\pm 1.28 \text{ SD})$ by significant others. On the item "Would you attend a similar course again", 79% of the participants with ADHD and 73% of the significant others scored "Agree" or "Strongly agree."

No *adverse or serious adverse events* were reported.

Efficacy-Related Measures

Measures including all participants, mean scores, and standard deviations, as well as statistics from the main analyses (effect on the repeated measure) of efficacy measures, are shown in Table 4. The repeated measures ANOVA (rmANOVA) of the ADHD 20 Questions showed a significant general increase in knowledge from pre- to post-intervention ($p = 0.007$) and from pre-intervention to the 6-month follow-up ($p = 0.005$) (Figure 3; Table 4). Participants with ADHD and their significant others did not differ in the extent of knowledge gain, as indicated by the absence of significant group-by-time interaction effects. Independently of the knowledge gain, the between-subjects analysis showed a trend toward a better general knowledge of ADHD among the participants with ADHD compared to the significant others ($p = 0.083$).

Regarding the quality of relationships as assessed by the QAFM, an overall reduction in mutual “Critical Comments” was observed on a trend level ($p = 0.09$) (see Table 4 for M, SD, and statistics) at post-intervention and as a statistically significant main effect of time when analyzed from pre-intervention to the 6-month follow-up ($p = 0.02$). There was no significant group-by-time interaction effect at post-intervention or at the 6-month follow-up (both p values > 0.10) (Figure 4). For the subscales “Perceived Criticism and Perceived Emotional Involvement”, there were no significant effects at post-intervention or at the 6-month follow-up with all p values > 0.10 . For the subscale “Emotional Overinvolvement”, there were no significant effects at post-intervention ($p = 0.15$), but a trend at the 6-month follow-up ($p = 0.10$).

Symptoms of depression (BDI), anxiety (BAI), or stress (PSS) did not generally change in response to the program (all p values > 0.10 , although the reduction on the BDI was approaching a statistical trend, $p = 0.11$) or in a specific group (group-by-time effects, all p values > 0.10). As expected, between-subjects effects were significant, indicating more

symptoms of depression, anxiety, and stress in the participants with ADHD than in their significant others (all p values < 0.001).

Measures including the significant others only. The significant others reported a trend toward reduction of the subjective burden at post-intervention ($p = 0.08$) and a significant reduction from pre-intervention to the 6-month follow-up ($F_{(1.32, 25.08)} = 4.54, p = 0.04, \eta^2 = 0.19$). No effects on the objective burden were reported (both p values > 0.10) (Figure 5).

Measures including participants with ADHD only. There were no changes in self-esteem (RSE) or quality of life (AAQoL) at post-intervention or at the 6-month follow-up (all p values > 0.10). The increase in general well-being (VAS) was approaching a statistical trend at the 6-month follow-up ($p = 0.14$).

DISCUSSION

This pilot study evaluated the feasibility and preliminary effectiveness of a new manualized psychoeducative group intervention for adults with ADHD and their significant others. To the best of our knowledge, no such intervention has been described in the literature. We found that the intervention was a suitable treatment option for more than 90% of the individuals diagnosed with ADHD in an outpatient psychiatric context. Treatment completion and attendance at the sessions was judged to be good for individuals with ADHD and acceptable for their significant others. Satisfaction with the intervention was good in both the diagnosed individuals and the significant others. Knowledge of ADHD (the primary outcome measure) increased significantly from pre- to post-intervention in both groups. We observed an overall reduction in critical comments between the individual with ADHD and his/her participating significant other from pre-intervention to post-intervention follow-ups. The significant others reported a reduction in their subjective burden, such as guilt and worry, during the time of the study. It is noteworthy that these improvements in the quality of the relationship and the

subjective burden increased from post-intervention to the 6-months follow-up. There were no statistically significant changes in self-perceived stress, depression, anxiety, self-esteem, or quality of life.

In this pilot study several methodological issues affect the interpretation of the results. Despite a large effect size in change from baseline to post-intervention follow-ups in the knowledge pertaining to ADHD, the high scores already at baseline may indicate ceiling effects in the ADHD 20 Questions. All participants with ADHD were previously diagnosed according to a comprehensive diagnostic assessment model providing both the individuals with ADHD and their significant others with information on the diagnosis and treatment options. Eighty percent of the significant others had participated in the diagnostic assessment.

The instrument used to measure relationship quality, Questions About Family Members (QAFM), was originally developed for measuring expressed emotions in individuals with schizophrenia (Hansson et al., 1997). However, QAFM has also been used to evaluate effects of skills training on family members of suicide attempters (Rajalin, Wickholm-Pethrus, Hursti, & Jokinen, 2009) and, as in our study, the instrument was especially sensitive to changes on the subscale Critical Comments. Likewise, the instrument to assess caregiver burden, Burden Assessment Scale (BAS), was originally developed for families with a seriously mentally ill family member (Reinhard et al., 1994), but it has been shown to be sensitive to changes in other groups as well (Rajalin et al., 2009).

The positive findings in this study are partly in line with some of the effects reported in studies on psychoeducation for children and adolescents with ADHD as well as their parents and teachers, which have shown beneficial effects on knowledge pertaining to ADHD among parents and teachers, parent-child conflicts, parent-child satisfaction, maternal well-being, and parenting skills and confidence, as well as ADHD symptoms, externalizing behavior and problem behavior at home, academic performance, and adherence to medical

recommendations (Montoya et al., 2011). Thus, psychoeducation is a promising method for improving various functional domains in individuals with ADHD together with their parents/caregivers and significant others. However, increased insight through psychoeducation may not be entirely positive if it does not supply coping skills and empower the participants (Wiggins et al., 1999).

An important goal of this study was wide inclusion. This resulted in a very heterogeneous ADHD group regarding, e.g. comorbidity, age (from young adults to higher middle age), IQ range (77–124), formal education (less than nine-year compulsory school to college/university), employment status, and years since being diagnosed with ADHD (0–6 years). Also the significant others were a heterogeneous group regarding age, education, and employment status. To cope with the diverse characteristics of the participants, the sessions had a wide and general focus, accepting that information was perceived and processed differently by the participants. We think that the group composition reflects the normal heterogeneity within the ADHD population and thus strengthens the generalizability of the intervention. Another aspect of this heterogeneity of the ADHD population was that most of the participants (82%) had one or more comorbid psychiatric disorders according to DSM-IV, which is an expected result in clinically referred adults with ADHD (Sobanski et al., 2007; Torgersen, Gjervan, & Rasmussen, 2006). Psychiatric or neurodevelopmental diagnoses among the significant others were not assessed for integrity reasons. However, their scores on the BDI and BAI indicate low levels of symptoms of depression and anxiety.

The group of significant others comprised a diversity of relations to the ADHD participants (family members, ex-partners, and friends). An effect of this might be that the attendance rate among the significant others was lower and the drop-out rate higher compared to those with AD/HD. Some relations may not have been close enough to motivate engagement in the intervention.

Limitations

Being a pilot study, there are several limitations and the preliminary results are non-conclusive. First, the study lacks a randomly assigned control group and therefore we could not control for the non-specific effects of time or expectancy for change elicited by being offered some type of treatment. Second, our study is limited by small sample sizes among both participants with ADHD and significant others, which results in low power in the statistical analyses. Moreover, instruments measuring symptoms of depression and anxiety were not appropriate to capture the phenomena and changes we wanted to study (for example, in the BDI, the baseline scores were generally very low at baseline in the group of significant others).

Bearing in mind these limitations, the results of this pilot study indicate preliminarily the usefulness of this kind of psychoeducational program for both adults with ADHD and their significant others as seen in improvements reported in both groups. Moreover, individuals with ADHD and their significant others were equally satisfied with the sessions and the intervention as a whole. The results also showed continued improvement from post-treatment measurements to the six-month follow-up, i.e. after the participants returned to their everyday lives and no longer received support from the group.

These preliminary results indicate that psychoeducation for adults with ADHD and their significant others is a feasible, well-tolerated and effective intervention. Further evaluation of manualized and evidence-based methods is needed to offer psychoeducation as a central treatment method for adults with ADHD and their significant others.

Declaration of interest

All authors declare that they have no conflicts of interest related to this work.

Contributions

TH initiated the study and designed the treatment method. TH and EW developed the content of the method with the help of several clinicians (see Acknowledgments), designed the study and performed the statistical analysis. TH drew the Figures. EW wrote the first draft. All authors read and commented on the final manuscript.

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Table 1. The themes and content of the sessions.

1	<i>Introduction to ADHD in Adulthood</i> gives the participants basic knowledge about the neurobiological basis of ADHD, as well as about the core symptoms and consequences of the disability in adult life. Promotion of a shared insight into ADHD among the significant others and the participants with ADHD is a central aim of this session.
2	<i>Pharmacological and Psychological Treatment</i> is a session presenting different treatment strategies for ADHD in adults. An important aspect of the session is to open the way for discussion of the participants' personal thoughts regarding different treatments.
3	<i>Health Issues: Sleep, Stress, Diet, and Exercise</i> is a session about general health and well-being with a particular focus on the important connection between health habits and symptom severity in ADHD. Changing problem behaviors may be easier if supported within the relations.
4	<i>Structures and Strategies in Everyday Life</i> aims at informing about strategies that can compensate for the executive difficulties in ADHD. It is assumed that the significant others can support the individuals with ADHD in, for example, planning and organizing.
5	<i>Living with ADHD – Acceptance and Change</i> is a session during which an individual diagnosed with ADHD in adulthood tells about his/her life with ADHD. This session has its primary value in sharing experiences and being validated by another person's similar story. For the significant others, this session can widen their understanding of their relatives' experiences.
6	<i>ADHD in the Relationship</i> is a session that focuses on how ADHD symptoms like inattention and impulsivity affect social behaviors and close relationships. Promoting an understanding for both perspectives is essential.
7	<i>ADHD at Work</i> is a two-part session focusing on how to find and keep a job. First the typical "ADHD traps", such as distractibility and difficulties managing time, are described, and different strategies to adjust the workplace to these dysfunctions are suggested and discussed. Secondly, persons representing the local employment office describe how the local authority can help people with ADHD to find and keep a job.
8	<i>Service and Support Provided by the Community</i> . Representatives from the local authorities describes what kinds of service and support they provide for adults with AD HD. The participants are informed about their legal rights to receive support, as well as their obligations.

Table 2. The characteristics of the participants with ADHD (n = 17).

Age	M = 36.65, SD = 9.78 Range: 22–55
Gender	9 males (53%)
ADHD subtype ¹	ADHD-C: 14 ADHD-A: 3
Years diagnosed with ADHD	M = 2.46, SD = 1.66 Range: 0–6 years
Pharmacological treatment of ADHD	N = 10 (58%)
Any psychoactive drug	N = 12 (70%)
At least one comorbid DSM-IV diagnosis	N = 14 (82%)
Documented life time substance abuse	N = 9 (53%)
Employment	Full-time work or studying: 10 Part-time work: 3 Unemployed or vocational training: 0 Long-term sick leave or disability pension: 4
Education	College/university: 5 Upper secondary school: 9 Nine-year compulsory school or less: 3
Full-scale IQ	M = 95.88, SD = 13.56 Range: 77–124
WURS-25 score	M = 58.29, SD = 14.16
ASRS ²	M = 50.75, SD = 14.86

Note: ^a ADHD-C = ADHD combined type, ADHD-A = predominantly inattentive type
Defined as overconsumption of alcohol, abuse, or dependency on alcohol or illegal drugs.

² Data missing for three individuals.

³ Data missing for five individuals.

Table 3. Characteristics of the significant others (n = 20).

Age	M = 47.8, SD = 14.24 Range: 21–72
Gender	7 males (35%)
Employment	Full-time work or studying: 15 Part-time work: 1 Retired: 2 Unemployed or vocational training: 1 Long-term sick leave or disability pension: 1
Education	College/university: 5 Upper secondary: 12 Nine-year compulsory school or less: 3
Relation to the participant with ADHD	Parent: 8 Married/cohabitant: 7 Close friend: 2 Sibling: 3
Living together with the participant with ADHD	Yes: 11 (55%)
Involved in the diagnostic assessment of the participants with ADHD	Yes: 16 (80%)
Member of any ADHD advocacy organization or pressure group	Yes: 2 (10%)

Table 4. Means and standard deviations as well as statistics from the main analyses including participants with ADHD and their significant others (overall effect within group on the repeated measures ANOVA).

Outcome measures	Baseline (T1) Mean (SD)	Post- intervention (T2) Mean (SD)	Six- month follow-up (T3) Mean (SD)	Baseline (T1) to post- intervention (T2)	Baseline (T1) to 6-month follow-up (T3)
ADHD-20 Questions					
Significant others	N = 20 14.15(2.54)	N = 15 15.35(2.80)	N = 14 15.55(2.06)	$F(1,34) = 8.26,$ $p = 0.007,$ $\eta^2 = 0.196$	$F(1,68) = 5.65,$ $p = 0.005,$ $\eta^2 = .14$
ADHD	N = 12 15.75(2.42)	N = 10 16.33(1.92)	N = 12 15.58(3.29)		
QAFM Perceived Criticism					
Significant others	N = 20 1.89(0.59)	N = 17 1.86(0.72)	N = 16 1.78(0.57)	$F(1,35) = 0.13,$ $p = 0.72,$ $\eta^2 = 0.004$	$F(2,70) = 0.60,$ $p = 0.55,$ $\eta^2 = 0.02$
ADHD	N = 17 2.00(0.78)	N = 11 2.08(0.61)	N = 13 2.01(0.55)		
QAFM Perceived Emotional Involvement					
Significant others	N = 20 2.92(0.67)	N = 17 3.03(0.66)	N = 16 2.93(0.75)	$F(1,35) = 1.19,$ $p = 0.28,$ $\eta^2 = 0.03$	$F(2,70) = 1.43,$ $p = 0.25,$ $\eta^2 = 0.04$
ADHD	N = 17 3.12(0.75)	N = 11 3.22(0.73)	N = 13 3.49(0.69)		
QAFM Critical Comments					
Significant others	N = 17 2.12(0.57)	N = 16 2.04(0.47)	N = 16 1.97(0.52)	$F(1,32) = 3.07,$ $p = 0.09,$ $\eta^2 = 0.09$	$F(1.697,54.288) = 4.58,$ $p = 0.02,$ $\eta^2 = 0.13$
ADHD	N = 17 2.18(0.84)	N = 11 2.02(0.63)	N = 13 1.84(0.49)		
QAFM Emotional Overinvolvement					
Significant others	N = 17 2.89(0.65)	N = 16 2.61(0.60)	N = 16 2.69(0.64)	$F(1,32) = 2.16,$ $p = 0.15,$ $\eta^2 = 0.06$	$F(1.664, 53.234) = 2.55,$ $p = 0.10,$ $\eta^2 = 0.08$
ADHD	N = 17 2.36(0.71)	N = 11 2.38(0.64)	N = 13 2.15(0.77)		

Beck Depression Inventory					
Significant others	N = 20	N = 15	N = 15		
	7.80(6.75)	8.10(7.08)	7.30(6.65)	$F(1,35) = 0.03,$	$F(2,70) = 2.28,$
				$p = 0.87,$	$p = 0.11,$
ADHD	N = 17	N = 12	N = 13	$\eta^2 = 0.001$	$\eta^2 = 0.06$
	19.06(10.53)	18.35(10.78)	15.18(10.00)		
Beck Anxiety Inventory					
Significant others	N = 19	N = 15	N = 13		
	6.26(6.50)	6.11(4.83)	6.05(5.66)	$F(1,34) = 0.34,$	$F(1,706, 58,006) =$
				$p = 0.57,$	$0.65,$
AD/HD	N = 17	N = 12	N = 13	$\eta^2 = 0.01$	$p = 0.53,$
	13.24(9.01)	14.24(9.30)	12.24(8.76)		$\eta^2 = 0.02$
Perceived Stress Scale					
Significant others	N = 20	N = 14	N = 14		
	23.28(6.53)	20.94(8.16)	21.22(7.14)	$F(1,33) = 1.51,$	$F(2,66) = 0.92,$
				$p = 0.23,$	$p = 0.40,$
ADHD	N = 17	N = 12	N = 13	$\eta^2 = 0.04$	$\eta^2 = 0.03$
	34.71(8.64)	33.71(7.02)	34.71(8.28)		

Note: The number of individuals indicates individuals assessed at T1, T2, and T3, respectively. The ITT analyses were performed using the last observation carried forward procedure.

Figure 1. Flow chart.

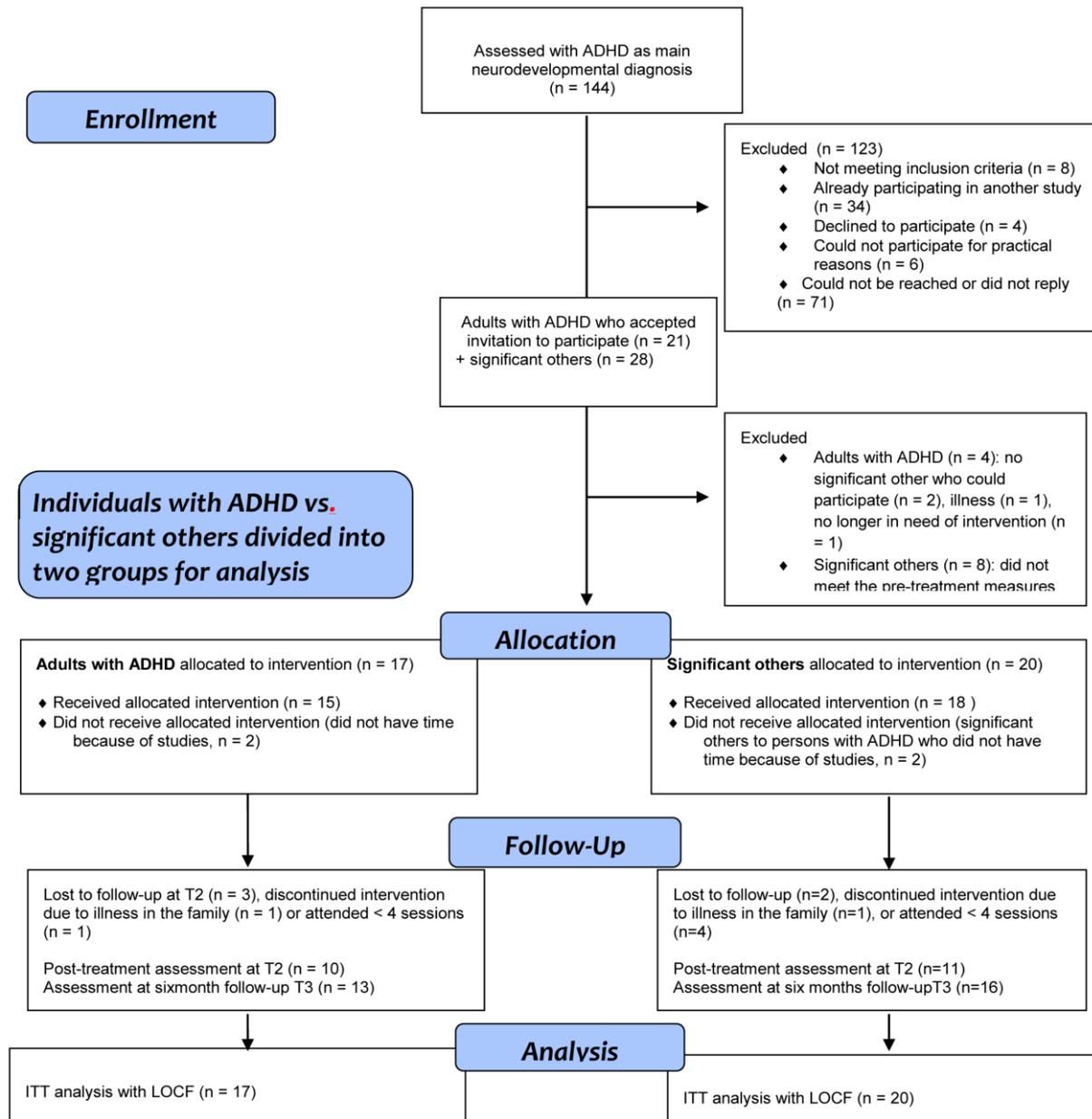


Figure 2. Participants with ADHD as well as the significant others were satisfied with the intervention.

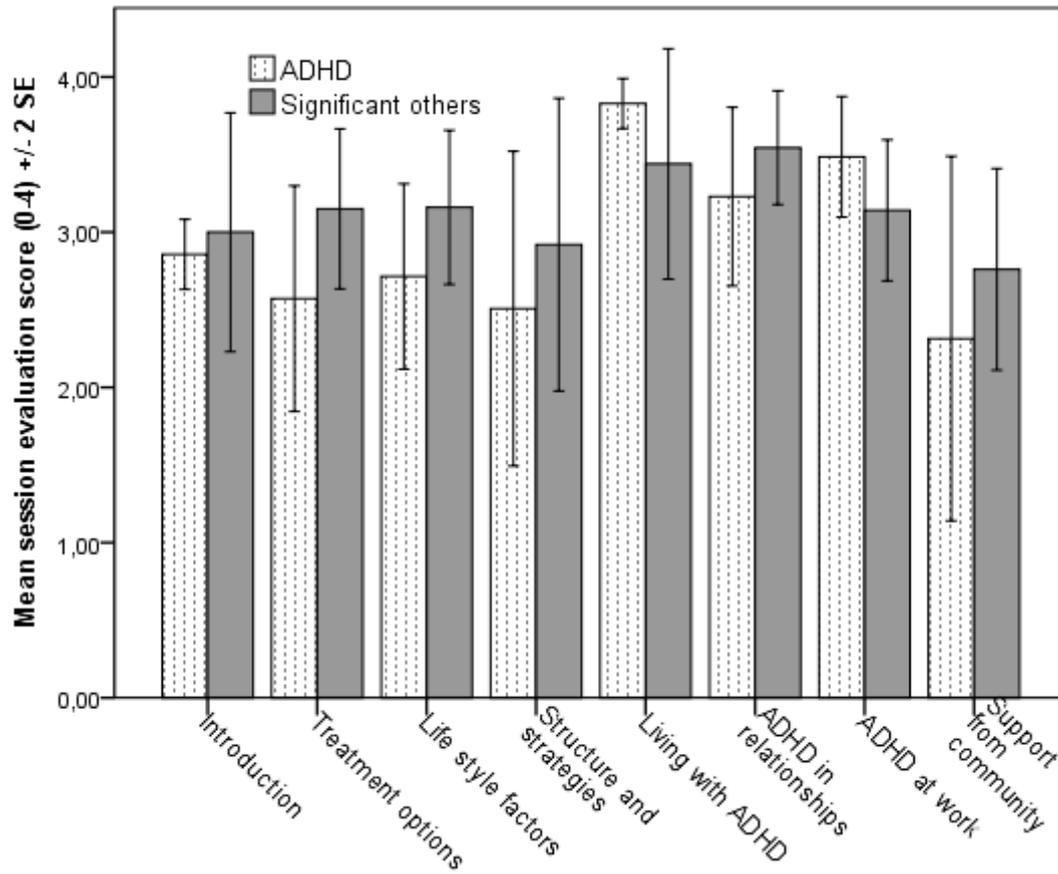


Figure 3. The scores on the ADHD 20 Questions knowledge quiz showed a significant general increase in knowledge of ADHD from pre-intervention (T1) to the 6-month follow-up (T3) ($p = 0.005$).

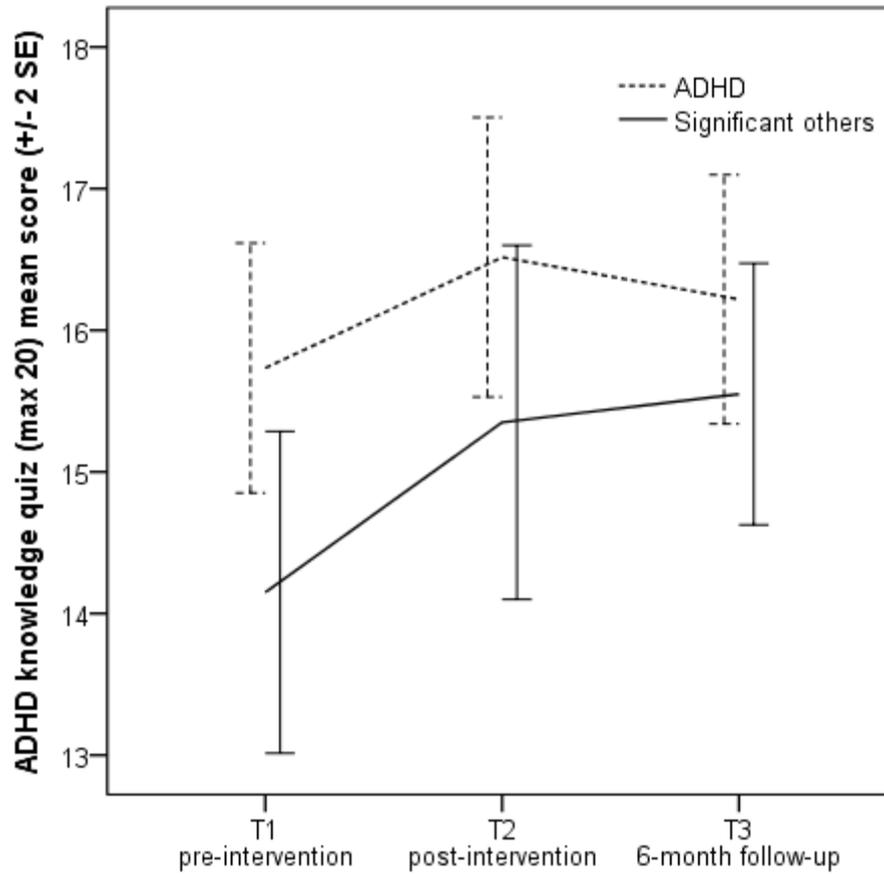


Figure 4. The participants' self-perceived degree of critical attitudes (Critical Comments) toward their co-participating significant others was reduced significantly from pre-intervention (T1) to the 6-month follow-up (T3) ($p = 0.02$).

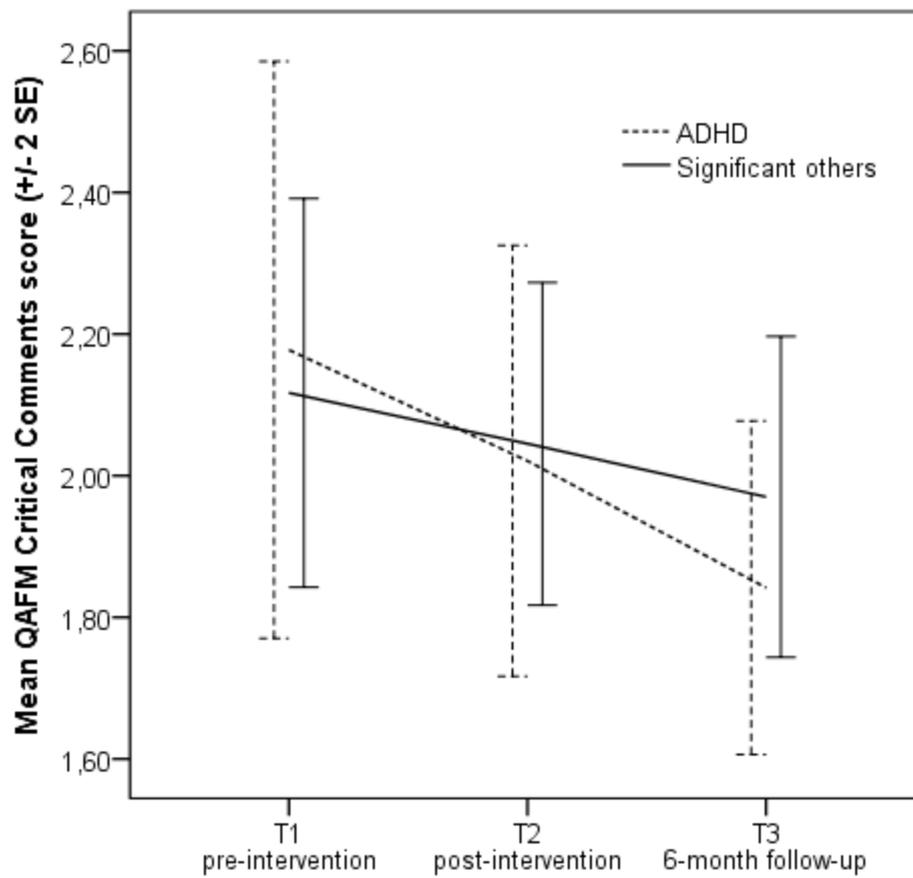


Figure 5. The Burden Assessment Scale (BAS) was completed by the significant others (n = 20). The self-perceived or subjective burden was significantly reduced from pre-intervention (T1) to the 6-month follow-up (T3) ($p = 0.04$), while the objective burden remained unchanged during the study period.

