

EFFECTIVENESS OF NON-PHARMACOLOGICAL INTERVENTIONS ON QUALITY OF LIFE IN ADULTS WITH ADHD

Prepared by: Fernanda Mira, OT (f.mira@alumni.ubc.ca)

Date: March 2015

Review Date: March 2017

CLINICAL SCENARIO:

Adults with attention deficit disorder with hyperactivity (ADHD) can experience impaired quality of life in academics, relationships, and employment (APA, 2013). They may also have a higher risk for further mental health concerns and lower socioeconomic status (Gjervan, Torgersen, Rasmussen, & Nordahl, 2014). Empirical data support the use of medication as treatment to decrease inattentiveness, hyperactivity and/or impulsivity (Nuwwareh, S, Cimon, K, Ford, C & Weiss, 2011).

Concerns arise when medication is either not possible, or offers an incomplete solution. Non-pharmacological interventions, therefore, could prove essential in improving quality of life by further reducing a client's symptoms and/or improve skills and function.

Occupational therapy (OT) practitioners and educators provide recommendations to improve occupational and academic performance for post-secondary student clients with ADHD. These recommendations are often non-pharmacological treatment recommendations, such as relaxation techniques, social skills training, and organizational training. However, to ensure that the best recommendations are being provided, therapists must understand the research outlining the effectiveness and limitations of approaches encompassing these techniques.

FOCUSED CLINICAL QUESTION:

In adults with ADHD, do non-pharmacological interventions improve quality of life?

SUMMARY of Search, 'Best' Evidence' Appraised, and Key Findings

Five studies met eligibility criteria: four randomized control trials (RCTs) and one before after case design.

Common eligibility trends in all five studies included: adults over 18 years, formal ADHD diagnosis, stable medication treatments if used, and possible co-morbid stable mental health diagnoses. The clients' ADHD symptom severity, measured by differing scales, varied across the studies. Moreover, there were differences in the treatment settings, the interventions and the delivery of interventions. Despite the differences in intervention approaches, many covered similar topics, including: psychoeducation, planning, problem solving, attention and relaxation.

The differences in criteria and methodologies of the studies decreased comparability of results between studies. Generalizability from all studies was difficult; all were small sample size pilots and all authors indicated the need for further research.

Although the studies reported varying degrees of symptom reduction or functional improvement, only one study reported statistically significant improvements in measured symptom and quality of life outcomes (Fleming et al., 2014). This study used a dialectical behavior therapy (DBT) intervention approach.

CLINICAL BOTTOM LINE

Studies on non-pharmacological interventions, especially DBT, show promise to enhance quality of life for adults with ADHD, but further research with larger sample sizes and rigorous designs are required.

Limitation of this CAT: This critically appraised topic was prepared for a graduate course assignment and has been peer-reviewed by Ms. P. Mortenson, an instructor.

SEARCH STRATEGY:

Terms used to guide Search Strategy:

- **P**atient/Client Group: Adults with ADHD
- **I**ntervention (or Assessment): Non-pharmacological
- **C**omparison: None
- **O**utcome(s): Quality of Life

Databases and Sites Searched	Searched Terms	Limits Used
<p>Ovid MEDLINE(R) In-Process & Other Non -Indexed Citations and Ovid MEDLINE(R) 1946 to Present</p> <p>Cochrane Database of Systematic Reviews</p> <p>CINAHL</p> <p>PsycINFO</p> <p>EMBASE</p> <p>OTseeker</p> <p>Pubmed</p> <p>Evidence Updates from BMJ</p> <p>PubMed Clinical Trials</p> <p>Natural Medicines</p>	<p><u>MeSH:</u> Attention deficit disorder with hyperactivity</p> <p><u>Keywords:</u> ADHD, ADDH, AD/HD</p> <p style="text-align: center;">AND</p> <p><u>MeSH:</u> Behavior Therapy, Psychotherapy, Relaxation Therapy, Cognitive Therapy, Occupational Therapy</p> <p><u>Keywords:</u> Biofeedback, Mindfulness, Dialectical Behavior Therapy, CBT, DBT, Neurotherapy, , Psychosocial Therapy, Non- pharmacological, Nonpharmacological, Metacognitive, Social skills</p> <p><u>Truncated words:</u> therap*, behavio\$, treatment*</p> <p style="text-align: center;">AND</p> <p><u>MeSH:</u> Quality of Life</p> <p><u>Keywords:</u> Success, Life satisfaction, achievement</p>	<p>-Quantitative study -Published in peer reviewed journal -Written in English -Ages 18 + years -2008-2015</p>

INCLUSION and EXCLUSION CRITERIA

- Inclusion:
 - Diagnosis of ADHD
 - 18 years or older
 - Outcome measures with valid rating scales
 - Outcome measures assessing quality of life and/or the severity or incidence of ADHD's main symptoms
 - Group or Individual non-pharmacological interventions
 - Absent or Stable medication management

- Exclusion:
 - Studies including participants younger than 18 years
 - Studies with co-intervention of unstable medication management

RESULTS OF SEARCH

5 relevant studies were located and categorized as shown in Table 1

Table 1: Summary of Study Designs of Articles Retrieved

Study Design/ Methodology of Articles Retrieved	Level*	Number Located	Author (Year)
Random control trial	1b	4	Fleming et al. (2014)
			Vidal et al. (2013)
			Virta et al. (2010)
			Safren et al. (2010)
Case Series	4	1	Lindstedt, H. and Umb-Carlsson, O. (2013)
Clinical Guideline		1	NICE, (2008)

*Based on Oxford Centre for Evidence-Based Medicine 2009 Levels of Evidence (Phillips et al. 2009)

BEST EVIDENCE

The study by Fleming and colleagues (2014) meets the following criteria as the 'best evidence':

- a) addresses all the PICO aspects.

- b) is a randomized control trial in which both interventions are non-pharmacological; thus, examination of outcome data, within and between both groups, for quality of life is applicable.
- c) uses 2 outcome measures assessing quality of life.
- d) has a follow-up period for both groups.
- e) uses a blinded outcome interviewer.
- f) is the most recent RCT that addresses the clinical question.
- g) the outcomes apply to a real life environment, a particular value to OT practice.

SUMMARY OF BEST EVIDENCE

Table 2: Description and appraisal of “Pilot randomized controlled trial of dialectical behavior therapy group skills training for ADHD among college students” by Fleming et al. (2014).

Aim/Objective of the Study/Systematic Review:

The aim was to offer an initial evaluation of the efficacy, acceptability, and feasibility of a dialectical behavior therapy (DBT) skills training group targeted to reduce symptoms and impairment associated with ADHD among college students.

Study Design:

The study was a RCT. Following stratification on a median split on ADHD inattentive symptoms, participants were randomly assigned to either a DBT skills training group or self-guided skills training handout (SH) group. The study did not indicate blinding in participant assignment to groups. The interviewer completing the outcome assessment at pre-treatment, post-treatment and 3-month follow-up data collection was blinded.

Setting:

The treatment sessions for DBT were provided at an on-campus outpatient psychology clinic, in a large city in the Pacific Northwest.

Participants:

Recruitment took place at three universities (one public, two private). Eligible participants needed to meet DSM V diagnostic criteria for adult ADHD, be seeking treatment, enrolled in under graduate studies and be between the ages of 18-24. Seventy-three recruits were screened and thirty-eight excluded (28 didn't meet inclusion criteria and 10 declined participation). Exclusion criteria included current substance abuse/dependence, active suicidality, major depressive episode, history of psychotic disorder, bipolar disorder, or pervasive developmental disorder,

and those on psychotropic medications for ADHD must have maintained a stable medication and dose for one month before enrollment.

Thirty-five participants were randomized into the two groups. Randomization of nineteen occurred into the DBT group and sixteen into the SH group. The number of participants in the SH group remained consistent for the entire study. The final number of participants in the DBT group was seventeen; two participants dropped due to scheduling constraints.

No differences were found between the groups on demographic data, on any variable, at baseline (all p values >.10).

Intervention/Phenomenon Investigated:

The authors outlined the interventions provided for both groups.

The DBT group intervention included:

- 1-15 minute individual pre-group meeting focused on motivation enhancement
- 8 weekly-90 minute group sessions on skills acquisition with each session's focus outlined within the article in a diagram format (Psychoeducation, mindfulness, daily planner use, chunking, prioritization, structuring environment using social support, managing sleep, eating, and exercise, generalizing and troubleshooting skills, emotional regulation, skill review and planning for high demand, skill review and skill maintenance)
- 7 weekly-10 to 15 minute individual coaching phone calls focused on generalization
- 1-90 minute booster group session on skill maintenance held in week 9
- Treatment was provided by a group leader and co-leader; both advanced graduate students with intensive training in DBT. A licensed psychologist with experience in assessment and treatment of college students with ADHD provided supervision.

The SH group intervention included:

- Provision of 34 pages of skill handouts drawn from a referenced manual for treatment of adults with ADHD and designed to reflect publicly available self-help materials for ADHD.
- Topics included psychoeducation on ADHD and executive functioning, organization, planning, time management, structuring environment, and stress management.

Topics in both groups have general similarities.

Outcome Measures/Qualitative Methods

The authors used 7 outcome measures and described each for purpose, score, validity and reliability. Two specifically assessed quality of life and the symptoms of ADHD relevant to the PICO.

The Quality of Life-ADHD Questionnaire (AAQoI), a self-report questionnaire, assessed functioning and quality of life in four domains: life productivity, psychological health, relationships, and life outlook. Information and referencing was presented on the measures internal consistency and construct validity.

The Barkley Adult ADHD Rating Scale-IV (BAARS-IV), also a self-report questionnaire, assessed the DSM-V criteria for ADHD derived from population based norms. Referencing was provided for internal consistency, test-retest reliability, strong construct validity and discriminant validity.

Both measures were completed pre-treatment, post-treatment and at follow-up.

Main Findings:

Statistical analysis of the primary outcomes included the use of ANOVAs with the greenhouse-geisser correction, and an intent to treat analysis to decrease the chance of Type 1 errors. The pre-treatment versus post-treatment mean change effect sizes on four measures inclusive of quality of life ranged from moderate to large ($d=0.47-0.94$).

- 1) Both DBT and SH decreased inattentive symptoms that were statistically significant measured by the BARRS, pretreatment vs post treatment. However, DBT did not significantly outperform SH at post treatment.
- 2) Both DBT and SH significantly decreased inattentive symptoms equally from pretreatment to follow up measured by the BARRS. The difference made by DBT however, had greater statistical significance than that of SH.
- 3) Only DBT produced a statistically significant response in improving quality of life measured by AAQoL, pretreatment vs post treatment, and the difference made was significant compared to SH.
- 4) Only DBT produced a significant response in improving quality of life measured by AAQoL at follow up, but it did not significantly outperform SH at follow up.

Tables 2a-2c. Results of Primary Outcome Measures

Table 2a

Outcome Measure (OM)	Group	Pre-treatment M (SD)	Post-treatment M (SD)	Follow-up M (SD)
BARRS	DBT	26.59 (3.71)	18.94 (4.94)	18.06 (4.92)
	SH	26.25 (2.74)	20.94 (5.08)	21.06 (4.12)
AAQoL	DBT	54.56 (12.58)	67.09 (11.24)	61.71 (15.26)
	SH	51.35 (12.99)	52.80 (12.60)	55.50 (15.19)

Table 2b

Pre vs. Post Treatment						
OM-Group	Mean Difference ^a		Effect sizes ^{ab}			
	Within Group	Vs. Control	Within Group	Significance ^d	Vs Control	Significance ^e
BARRS-DBT	7.65	2.33	1.75	***	0.55	
-SH	5.31		1.30	***		
AAQoL-DBT	12.53	11.07	1.05	**	0.90	*
-SH	1.45		0.11			

a Mean differences and effect sizes calculated such that positive values represent improvements in all variables

b Effect sizes calculated with pooled standard standard deviation from pre-treatment and post-treatment

d Significance value for T2 versus T1 or T3 versus T1 planned contrasts within groups RM ANOVA

e Significance value for DBT versus SH planned contrast in between-groups RM ANOVA

*p<.05 **p<.01 ***p<.001

Table 2c

Pre vs Follow-up Treatment						
OM-Group	Mean Difference ^a		Effect sizes ^{ac}			
	Within Group	Vs. Control	Within Group	Significance ^d	Vs Control	Significance ^e
BARRS-DBT	8.53	3.34	1.96	***	0.84	*
-SH	5.19		1.48	***		
AAQoL-DBT	7.15	3.00	0.51	*	0.21	
-SH	4.15		0.29			

a Mean differences and effect sizes calculated such that positive values represent improvements in all variables

c Effect sizes calculated with pooled standard deviation from pre-treatment and follow-up

d Significance value for T2 versus T1 or T3 versus T1 planned contrasts within groups RM ANOVA

e Significance value for DBT versus SH planned contrast in between-groups RM ANOVA

* $p < .05$ ** $p < .01$ *** $p < .001$

Original Authors' Conclusions

DBT group skills training may be a useful intervention for college students with ADHD, improving participants' ADHD symptoms, and quality of life more so than skills training done through self-guided handouts.

Critical Appraisal:

Based upon Law et al. (1998) "Guidelines for critical review form".

Study Purpose: The purpose was clearly stated.

Literature: Relevant literature on adult ADHD, previous interventions and research gaps were identified. The authors justified the need to study the effect of DBT based on the lack of intervention research.

Design: The RCT design chosen was appropriate for an intervention study.

Validity

The CAT reviewer determined a PEDro score for the article of 7/10. Lack of subject and therapist blinding, and no allocation concealment resulted in point deductions.

Sample Bias:

The method of randomization was not provided.

Volunteer Bias:

Volunteer participants may have had increased motivation affecting outcome results positively.

Attention Bias:

The SH group was self-guided. They received 14 hours less of attention compared to those in the DBT group. The study may have benefited from a 'sham' group treatment as a control.

Measurement Bias:

There were 7 outcome measures chosen, increasing the risk of a Type 1 error with a small sample. Self-rated measures increased recall bias. Positively, interviews pre, post and follow-up were done by a blinded

evaluator.

Intervention Bias:

Co-intervention bias of outside support from family, faculty or peers, or past therapy strategies may have occurred.

There was no information on how thoroughly the SH handouts were completed or confirmed.

It was unclear if the same two clinicians led the DBT group each week.

Sample:

There were no details on how sample allocation occurred. The sample size and flow of participants through the study was clearly identified in a flow diagram. There was no power calculation completed. Inclusion and exclusion criteria were clearly articulated. The study was approved by a review board and informed consent was attained. An intent to treat analysis was done to account for dropped participants.

Outcomes:

The outcomes of the study were clearly presented along with the methods and psychometric properties of the measures utilized to achieve the data. The outcome data was analyzed using appropriate statistical computations.

Intervention:

Reproduction of the study would require contacting the authors for specific details of each session for DBT intervention and the exact manual pages used for the SH intervention. The intervention methodology between groups lacked control for frequency of intervention, attention or setting.

Interpretation of the Results

The study appropriately presented results in terms of statistical significance. A difference in quality of life was significant at post treatment but not at follow-up indicating no lasting benefits, yet symptom reduction was not significant at post treatment but was at follow-up. These results are confounding. The authors indicate the study's weakness was the small sample size, which lacked the statistical power needed to detect small to moderate effect sizes. There was however, no pre-power calculation presented increasing the possibility of type II errors in result findings. The ability to utilize results for clinical practice is limited without further support.

Summary/Conclusion

Although DBT may be a good intervention, and some significant results were seen in this first study, further research is needed. The study's biases and lack of statistical power prevented a conclusive finding for the use of DBT, a non-pharmacological intervention, to improve quality of life in adults with ADHD.

IMPLICATIONS FOR PRACTICE, EDUCATION AND FUTURE RESEARCH

Overall, the studies reviewed demonstrated potential effectiveness of non-pharmacological interventions to decrease ADHD symptoms. However, all studies lacked adequate power to draw definitive conclusions. With a lack of definitive findings, OTs must clinically judge the appropriateness of a non-pharmacological intervention for improved quality of life on a case by case basis. Student or client advisements should inform them of clinical guideline suggestions, medication and traditional CBT (NICE, 2008), while offering additional information on non-pharmacological interventions pertinent to their situation. OTs practicing with adolescents with ADHD should consider the exploration of pre-vocational and pre-college readiness skills focusing on topic trends identified in the studies.

In 2010, only three RCTs of psychosocial interventions for adults with ADHD were reported (Safren et al.). Five years later, there is still a need for rigorous studies of non-pharmacological interventions independently and in conjunction with medications. Future studies using non-pharmacological interventions should examine their impact on both quality of life and function in real-life contexts most affected by ADHD symptoms (academics, work, personal relationships) to make findings more practical and applicable. Additionally, occupational therapists' training in cognitive and cognitive behavioral theories and group dynamics may present opportunities for therapists to run programs specifically for adults with ADHD. This type of healthcare expansion may be more cost-effective, offer more access to programs in community settings, and or allow greater empowerment through self-guided programs than current approaches.

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