Case Study 1: An Evidence-Based Practice Review Report

Theme: School (setting) based interventions for children with special educational needs (SEN)

How effective are mindfulness-based interventions for reducing ADHD symptoms in children and young people?

1:Summary

Within the literature, there has been an increase in attention on the role of mindfulness as a treatment for the symptomology of Attention Deficit Hyperactivity Disorder (ADHD) in children. Mindfulness can be understood as having two parts, the first being the self-regulation of attention and the second being open and accepting orientation towards new experiences (Bishop et al., 2004). There has been an emerging interest in investigating the impact of parallel child and parent mindfulness-based interventions on ADHD symptomology in children and young people with ADHD. This systematic literature review aims to investigate

was the dominant approach to treatment, appearing in international guidelines (Bögels et al., 2021). However, medication had been found to reduce symptoms of ADHD in only 70% of children (Shaw et al., 2012). Furthermore, medication has beed[r)7 (e)10 (duc)14 (e)]TJ0 Tc 0 Tw ( )Tj0.007 Tc owever,

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undertaken can be seen in Figure.1.The rationale for one study being rrr 0 Tcw0 Tw 1.598 0 Td(n 0 Td(f)-

Table 2

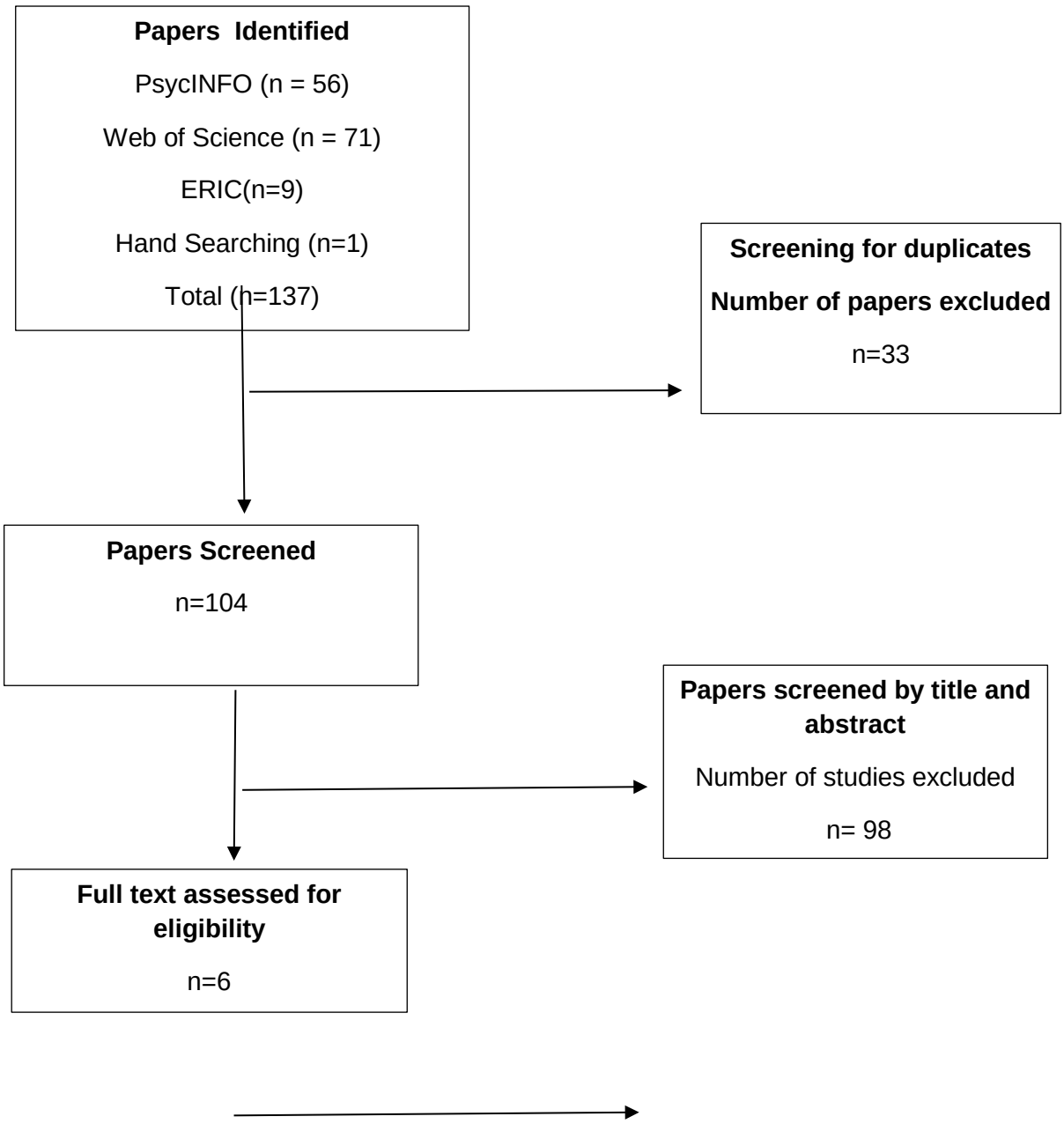
Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion	Rationale
1 Publication Date	Post-2014	Pre 2014	A previous systematic review of mindfulness-based interventions for children and young people with ADHD and their parents
2 Study Design	Studies that follow experimental or quasi-experimental designs	Non-experimental designs	This review is focusing on the causal relationship between intervention and ADHD symptomology
3 Publication Type	Peer-Reviewed Journal	The study was not included in a peer-reviewed journal	Peer journals provide a level of academic rigour
4 Intervention Type	Parallel Mindfulness-		

Criteria

Figure 1

Study Selection Process



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education system and therefore they received a higher

3.23 Intervention

All interventions completed the MYmind programme devised by Bögels et al. (2013). The programme consists of eight weekly 90 minute sessions running simultaneously for adults and children. Four of the studies within the review followed the protocol laid out by the MYmind programme (Bögels et al., 2021; Haydicky et al., 2015; Siebelink et al., 2021; Zhang et al., 2017). This ensured that parent and child sessions ran simultaneously over the 8 weeks, with group facilitators who were trained in the mindfulness intervention and sessions that were 90 minutes long (Bögels et al., 2021; Haydicky et al., 2015; Siebelink et al., 2021; Zhang et al., 2017). Therefore, all four studies received a high rating within this criterion of WoE C in regards to relevance for the review question. Valero et al. (2021) did not deliver this simultaneously to adult and child groups as they were carried out consecutively. Therefore, this received a lower score on this criterion for WoE C.

With regards to the quality of implementation, three of the studies assessed this through(of)Tjeatm100w 1.4 0 Td( )Tj9 simultaneously

3.24 Measures

All studies utilised parent self-report dat nt

3.25 Findings and Effect Sizes

Table 5

Descriptor of Cohen's d effect sizes

Cohen's d	Descriptor
0.2	Small
0.5	Medium
0.8	Large

All studies used Cohen's d to measure their effect size, therefore, for comparison within this review Cohen's d will be used for comparison. Table 5 demonstrates the descriptors for different Cohen's d effect sizes. I extracted the effect sizes for all studies included in this review. These are reported in Table 6 for the outcome measures within the different studies. All studies included in this review measured within- group effect sizes. Between- group effect sizes were recorded for two studies (Valero et al ,2021, Siebelink et al, 2021). Siebelink et al. (2021) used partial eta squared to measure the between-group effects. This was translated into Cohen's d using the online pyshcometrica tool for the transformation of effect sizes (Lenhard, W. & Lenhard, A., 2016).

Table 6

Study findings: within- group and between- group effect sizes and significance of mindfulness intervention on ADHD symptoms

Study	Measure	Post-test and Follow-up	Effect Size (CTw 0.28 0 Td(in)Tj0 Tc 0 Tw 55.e12J3H(ar0.28 0 Td[be)-10 (t)2

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Study	Measure	Post-test and Follow-up	Effect Size (Cohens d) Between-Group	Effect Size (Cohens d) Within- Group	WoE D
	Parent Measures DBDR- parent rated ADHD symptoms- hyperactivity impulsivity/ inattention	Post Test	-	0.48** (Small)	
		Follow-up (8 Week)	-	0.55** (Medium)	
		Follow-up (1 Year)	-	0.81** (Large)	
Valero et al. (2021) Participants n= 30 children aged 7–19 years and their parents	**Child Measures** The inhibition subtest of the NEPSY-II	Post Test	-	0.05 (Small)	
		Follow-up (6 Months)		0.31 (Small)	
	Parent Measures The Connors third edition Inattentiveness	Post Test	0.34 (Small)	0.91 (Large)	High
		Follow-up (6 Months)	0.91 (Large)	1.31	

Study	Measure	Post-test and Follow-up	Effect Size (Cohens d) Between-Group	Effect Size (Cohens d) Within- Group	WoE D
n=55 and one of their parents	hyperactivity	Follow-up (6 month)	0.19 (Minimal)	-	
		Post Test	0.39 (Small)	-	
		Follow-up (3 month)	0.04 (Minimal)	-	
		Follow-up (6 month)	0.		

Outcomes: Within-Group

When considering the studies that investigated within-group effects, there was an effect of the intervention on ADHD symptomology. However, this should be treated with caution as the within- group study design can result in an increased power which could lead the effect size to be

(2017) received a low overall WoE score D, less weight can be ascribed to their findings. Bögels et al. (2021) utilised an even larger sample size and found a significant positive within-group effect of the intervention upon ADHD symptoms; with the questionnaire including specific items to measure attention. As Bögels et al. (2021) met the criteria for a medium rating in their WoE D their findings may receive greater weight.

Furthermore, considering studies with a high WoE A, Valero et al. (2021) measured within- group effect sizes from both the intervention group and the control group. They found a large effect size for the 210 f as e4 ut (T6 m (2 T J0 -T c 0 T6 v 1 39 0 T d (-t.0.004 Tc -0.004

One study utilised teacher outcomes (Siebelink et al., 2021). They found a small within- group effect size of the intervention using the Conner's Teacher Rating on both inattention and hyperactivity/impulsivity. As Siebelink et al. (2021) scored the highest of all studies on WoE overall, this adds further strength to the parent and child outcomes which reported reductions in inattention, hyperactivity and impulsivity.

Outcomes: Between- Groups

In terms of between- group effects, Siebelink et al. (2021) found a small between-group effect of the intervention on parent rated scores hyperactivity and impulsivity.

Similarly, Valero et al. (202i7 n to of et d sum a n 1.39 0 Td5 (0 Td(et)Tj)10 -4 ( )]

medium effect size at 8 week follow-up. Furthermore, at one year follow -up Bögels et al. (2021) found a large within-group effect size. Siebelink et al. (2021) found a within- group effect size increase in teacher outcomes, with teachers reporting a small positive effect of the intervention at follow-up on inattention. However, Haydicky et al. (2015) reported a reduction in effect size for inattention to a low within- group effect size for the intervention group. They also had a low WoE rating for both the methodological quality and relevance of the study design to the question. This resulted in an overall low WoE D. Therefore, perhaps it would be important to give less weight to this finding.

4 Conclusion and Recommendations

4.1 Conclusion

Overall the studies within this review suggest that the MYmind mindfulness intervention is effective in reducing ADHD symptomology in children, an effect that has been found both within- groups (Bögels et al., 2021, Zhang et al., 2017, Haydicky et al., 2015; Valero et al., 2021) and between- groups (Valero et al., 2021 & Siebelink et al., 2021). While the review question focused upon mindfulness-based interventions they all implemented the MYmind intervention ,thus tentative conclusions can only be drawn regarding this intervention. The majority of findings were positive for the effectiveness of the intervention on attention, and hyperactivity/impulsivity at both post-test and follow- up both between- groups and within -groups. However, while there were positive within- group and between- group effects found there was a lack of significant results. Only two studies found significant results (Bögels et al., 2021; Zhang et al., 2017) Further ,Zhang et al.

(2017) received the lowest overall WoE score and therefore these findings should perhaps carry less weight.

Nonetheless, there were still large within- group effect sizes found in two studies (Valero et al, 2021; Bögels et al., 2021). While Bögels et al. (2021) received medium overall WoE rating, their findings are supported by Valero et al. (2021) whom received a high overall WoE. However, Siebelink et al. (2021) who received the highest overall WoE score found a small between- group effect size on both inattention and hyperactivity/impulsivity. While there was no effect size for attention at six months, the small effect size endured for hyperactivity. T2 0 TTc 0 Twtc14 e(p)Tj/T0 0 0 1 Tf(a)0.04(t)T2 c(i

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24(5), 627–643. https://doi.org/10.1177/1087054715625301

Cheetham, J., Sandeep, R., & Robinson, M. (2018). Delivering Effective Services for Children and Young People with ADHD:Good practice guidance for commissioners and service providers across Greater Manchester. Retrieved 15 July 2022, from https://www.england.nhs.uk/north-west/wp-content/uploads/sites/48/2019/03/GM-wide-ADHD-guidance.pdf

Conners C.K., Pitkanen J., Rzepa S.R. (2011) Conners 3rd Edition (Conners 3; Conners 2008). In: Kreutzer J.S., DeLuca J., Caplan B. (Eds) Encyclopedia

238.

Study: Siebelink et al.,2021

EssentialQualityIndicators
Qualityindicatorsfor describingparticipants
Wassufficientinformation providedto determine/confirmwhether the participants demonstratedthe disability(ies)or difficulties
presented?

- **Yes**
- No
- N/A
- Unknown/Unableto Code

Were appropriateproceduresusedto increasethe likeligTw 0.20 Tw.

- N/A
- Unknown/Unable to Code

Quality indicators for outcome Measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the intervention and measures of generalised performance?

- Yes
- No
- N/A
- Unknown/Unable to Code

Were outcomes for capturing the intervention's effect measured at the appropriate times?

- Yes
- No
- N/A
- Unknown/Unable to Code

Quality indicators for data Analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

- Yes
- No
- N/A
- Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

- Yes
- No
- N/A
- Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among intervention samples? Was severe overall attrition documented? If so, is attrition comparable across samples? Is overall attrition less than 30%?

- Yes
- No
- N/A
- Unknown/Unable to Code

- N/A
- Unknown/Unable to Code

Were results presented in a cle.nn/ pid1110 (t)7 e (|)20 (e9)-3 (t1)7 (e0 Tc 0 Tw 3.45 068d ( )Tj 0.005

Appendix B : Weight of Evidence A (WoE A)

WoE A is used to judge the methodological quality of each of the studies to the. As all studies included in the review used a group-based design with a clinical population Gersten's protocol for experimental group designs was utilised. This protocol includes ten questions which are essential criteria and eight questions that measure desirable criteria. Essential criteria includes questions upon these criteria are related to information regarding the participants in the study , the quality of the implementation of the intervention and the description of the comparison group, the quality of outcome measures and data analysis. Desirable criteria focused upon attrition, reliability measures, the fidelity of implementation, the quality of implementation , the inclusion of audio or text exerts from the intervention and the presentation of results .Table 1 shows the classification criteria for WoE A according to Gersten et al'S (2005) criteria. To receive a high rating value the study must meet at least 9 essential criteria and 4 or more desirable criteria. To receive a medium rating value the study must meet 9 essential criteria. In addition they must meet at least 1 but less than 4 of the desirable criteria. To receive a low rating the study would meet less than 9 essential criteria .For each study the essential and desirable criteria were calculated and the study received and overall WoE A rating as shown in Table 2.

Table 1

WoEA rating criteria according to Gersten et al's (2004) protocol

Table 2

Total WoEA rating for studies included in the review

Study	Number of Essential Criteria	Number of Desirable Criteria	Woe A Rating
Haydicky et al. (2015)	8	3	Low

Appendix C :Weight of Evidence B (WoE B)

Methodological relevance to the ques

WoE B Rating	Study Methodology
Low 1	Research collects qualitative data, surveys, non-experimental studies x No control group x Measures taken pre and post intervention x For small number designs there is data collected at less than three time points

Table 2

Total WoE B rating for studies included in the review

Author	WoE B score
Haydicky et al., 2015	1 Low
Zhang et al., 2017	1 Low

Author	WoE B score
Bögels et al., 2021	2 Medium
Verero et al., 2021	3 High
Siebelink et al., 2021	3 High

Study	Participants	Type of Study	Control Group	Mindfulness based Intervention	Country	Pre/Post Test Measures	Who Delivered it	Follow -up
Zhang et al. (2017)	11 Children 11 Parents	Pilot Pre/post intervention study	None	MYmind	Hong Kong	Test of Everyday Attention for Children (TEA-Ch)-attention score The Connors' Continuous Performance Test 3rd Edition (CPT 3)- Omission BRIEF- Behaviour regulation index	Therapists with experience in caring for children with special needs and their families, and in providing mindfulness group interventions.	None
Valero et al. (2021)	60 Children and Parents (treatment)	Randomised Control Trial	60 Children and Parents (Wait List)	MYmind	Spain	Conners- 3rd edition parenting rating scale - CPRS The Inhibition subtest of the NEPSY-II	Professional certified in the MYmind program	6 months follow-up
Siebelink et al. (2021)	55 Children and one of their parents (Intervention)	Randomised control trial	48 children and one of their parents (Care as Uusal)	MYmind	Netherlands	Conner's' Parent Rating Scale -CPRS Conner's Teacher Rating Scale CTRS	Mindfulness teacher and a co-teacher;	3 months and 6 months follow-up

Study	Participants	Type of Study	Control Group	Mindfulness based Intervention	Country	Pre/Post Test Measures	Who Delivered it	Follow -up
Bögels et al. (2021)	167 Children aged 7-19 and both parents	pragmatic quasi-experimental waitlist design	107 children and their parents Wait List and treatment as usual	MYmind	Netherlands			

Appendix F – Excluded studies from Analysis

Table 1

Study excluded from the review

Study	Reason for Exclusion
Behbahani, M., Zargar, F., Assarian, F., & Akbari, H. (2018). Effects of Mindful Parenting Training on Clinical Symptoms in Children with Attention Deficit Hyperactivity Disorder and Parenting Stress: Randomized Controlled Trial. IRANIAN JOURNAL OF MEDICAL SCIENCES, 43(6), 596–604	Does not contain direct measurement of specific symptomology- hyperacuity, impulsivity and inattention – Exclusion reason 7