School-based interventions for ADHD: state of the evidence

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Overview

• Background
• Qualitative study of educators’ experiences working with children with ADHD
• Systematic review and qualitative comparative analysis (QCA) of school-based non-pharmacological interventions for ADHD
• Delphi survey to gain consensus on outcomes that a school-based intervention should target
• Next steps
Why me?
4 systematic reviews
54 studies evaluating school-based interventions
84 studies of young person, teacher and parent attitudes and experiences

various ways to measure outcomes. Therefore, our conclusions must be considered cautiously. More carefully designed research is needed before we can be clear about what works for whom when trying to support pupils with ADHD in school.

Moderator analyses were not able to clarify which programme features were linked with effectiveness. No studies included economic outcomes, thus the cost-effectiveness of non-pharmacological interventions targeting children with, or at risk of, ADHD cannot be established and compared with other available treatments. The majority of included studies targeted children at elementary school (40/54 studies) and none of the included studies was from the UK. The methodological quality of the trials was generally low. Although overall the evidence indicates the beneficial effects of non-drug intervention, the heterogeneity in effect sizes points to the lack of standardised interventions and shared outcome measures across the included studies.
Conclusions of reviews of ADHD interventions in schools

• Something works but we do not know what
• Short term interventions appear to be more beneficial than long term
• There is very little quantitative or qualitative research into schools' experiences working with children with ADHD in the UK, and school-based interventions for ADHD in the UK
• Poor quality research/reporting
Educators’ experiences of managing students with ADHD: a qualitative study

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Abstract

Background The symptoms of attention deficit/hyperactivity disorder are associated with difficulty coping with the social, behavioural and academic components of school. Compared with medication and other non-pharmacological treatment, there is less evidence relating to school-based interventions to support children with ADHD. There is additionally an absence of any research focused on the experiences and practices of educators in the UK around how they work with children who are inattentive, impulsive and hyperactive.

Methods Forty-two educational practitioners from primary, secondary and alternate provision schools in the UK participated in focus groups or individual interviews that explored (1) their experiences of managing students with ADHD in the classroom and (2) factors that helped and hindered them in this endeavour. Transcripts were analysed using thematic analysis.

Results Analysis identified six themes: broad strategies, student-centred, inclusive strategies, labelling, medication and relationships. Participants’ experiences of managing students with ADHD drew upon a wide range of strategies that typically involved responding to individual needs in an inclusive manner, so individuals with ADHD could access the classroom with their peers. Participants spoke about three factors that helped and hindered managing students with ADHD. Labelling of students continued to be a concern for all participants and often resulted in negative views of students with ADHD.

Keywords ADHD, interventions,
Problems at school

Following sources of distraction (leaving the room to see what the source of a noise is)

Problems listening to instructions

No concentration

Runs across roads

In and out of seat

Problems with friendships

Bullied

Bullying

Distractible

Forgetting books, pencil etc

Can't stay in room

Aggressive
Implications for school-based interventions for ADHD

- Short-term

- Individuality of ADHD

- Multiple strategies/multicomponent

- Flexible
There are multiple studies that support school-based interventions for children with ADHD in improving impairments in classroom functioning (relationships with peers and adults; functioning within group settings such as the classroom; producing academic work) and build competencies in specific functional domains (e.g., note-taking, organizational skills, following school rules). These areas may be also improved through contingency management and organizational skills training interventions.

Possible Adverse Side Effects of School Behavioral Interventions

Linda J. Pfiffner, Ph.D., and George J. DuPaul, Ph.D.
Implications for school-based interventions for ADHD

- Short-term
- Individuality of ADHD
- Multiple strategies/multicomponent
- Flexible

- Contingency management
- Consider adverse effects
- Functional behavioural analysis
- Adaptations informed by ADHD-specific theory
School-based interventions for attention-deficit/hyperactivity disorder: A systematic review with multiple synthesis methods

• What is the effectiveness of school-based interventions for students with ADHD?
• Are some types of school-based interventions for students with ADHD more effective?
• What components of the interventions reviewed are effective for academic outcomes?
Intervention type, outcome and informants categorised

Study quality - adapted Cochrane risk of bias tool

Differences between intervention and control groups on post-test means. Hedge’s effect size (g): standardised mean difference with 95% confidence intervals.

Random effects meta-analysis to pool effect sizes for each intervention-outcome-rater group
Are some types of school-based interventions for students with ADHD more effective?

Teacher rated academic outcomes

- Daily Report Card
  $g = 0.68, 95\% \text{ CI} = 0.17, 1.19$

Teacher rated ADHD (combined) symptoms

- Daily Report Card
- Self-monitoring

  - Neurofeedback
  - Cognitive training

  - Combined
  $g = 0.30, 95\% \text{ CI} = 0.02, 0.61$

  - Study and organisational skills
  $g = 0.05, 95\% \text{ CI} = 0.08, 0.17$
Implications for school-based interventions for ADHD

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<th>Short-term</th>
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Organisation and study skills, cognitive training
What aspects of the interventions reviewed are effective for academic outcomes?

Qualitative Comparative Analysis (QCA)

- set relations and Boolean logic
- finds commonalities between different cases with the same outcome
- The focus of investigation is the different configurations of intervention or contextual conditions that together are responsible for interventions leading (or not) to effective academic outcomes
**Logic model- academic outcomes**

**CONTEXT**

- Children with ADHD
  - ADHD symptoms
  - Individual needs
- Manifestation in classroom
  - Behaviours associated with symptoms in school context e.g. disruptive, not staying in seat, daydreaming
  - Poor engagement with teaching and learning activities
  - Poor study skills
  - Curriculum and knowledge gaps
  - Negative teacher and peer interactions
- Outcomes
  - Inability to organise work and study effectively
  - Lack of progress
  - Poor academic outcomes

**INTERVENTION**

- B: Needs of children with ADHD
  - Personalisation
  - Intensity
- A: Support school-based difficulties
  - Behaviour modification
  - Self-regulation
- C: Regular education
  - Relationships
  - Study skills
- Improved academic outcomes

- Delivered in classroom
- Teacher delivers
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Findings

- Self-regulation
- One-to-one delivery
- No relationships improved
- Effective academic outcomes

- Self-regulation
- One-to-one delivery
- Personalised

In classroom
## Implications for school-based interventions for ADHD

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Delphi survey

What outcomes do key stakeholders believe are important to target in a school-based intervention for ADHD?

Health, behavioural, cognitive, educational, social

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- Parents n=20
- People with ADHD n=14
- School staff n=12
- Researchers n=6
- Clinicians

0 - critically important
1 - very important
2 - important
3 - more important than average
4 - about average
5 - less important than average
6 - much less important than average
7 - very much less important than average
8 - not at all important
Parents

Clinicians and Researchers

People with ADHD

School staff

Round 1
52 outcomes

Consensus by at least one stakeholder group
n=24

Consensus by all four groups
n=2

Consensus not reached by any group
n=26

Assigned weight

Included in toolkit
n=2

Included in round 2
n=15

Dropped
n=35

Narrative evidence summary
Results

Included in toolkit n=2
- Academic skills
- Organisational skills
- Task engagement

Included in round 2 n=15
- Social functioning
- Classroom behaviour
- Conduct problems
- Global functioning

New outcomes to include n=6
- Decrease in intrinsic motivation
- Feeling singled out
- Frustration, anger and disappointment
- Internalising symptoms
- Self-esteem
- Anxiety
- Independence
- Attitude towards school
- Impact of and distress caused by symptoms
- Self-regulation

Are the functional outcomes most important?
Evidence summary

Highly correlated with:

- number of groups who reached consensus
  \[ r = 0.519, p=0.001 \]
- number of groups who reached drop criteria
  \[ r = -0.552, p<0.001 \]

?Is this a good thing or a bad thing?

?Do we include evidence summary in round 2?
Thematic analysis of free text comments

Complexity of ADHD
ADHD as different- for each child and in different contexts
Chain of inter-related outcomes and long term outcomes
Strengths of children with ADHD
Things are hard to recognise and target

School as the right (or wrong) place
Failures of the system
How schools could adapt and what they need to do
Prioritising inclusivity and understanding
School as right or wrong place

Relationships
Awareness of ADHD and it's impact on relationships
How teachers should interact with children with ADHD
Impact of relationships on symptoms and related problems, and vice versa
School-home

Problems with questionnaire
Round 2

• 21 outcomes
• Redefine consensus
• Better explanations

>70% of respondents in a stakeholder group scoring the item 7 or 8, <15% scoring 0-2
Components and considerations for a potentially-effective school-based intervention for ADHD

- Daily Report Card
- Contingency management
- Adapted based on theories of ADHD
- Functional Behavioural Analysis
- Consider adverse effects
- Relaxation
- Multiple strategies and flexibility
- Multi-component
- Short-term
- One to one delivery (academic)
- Combination of intervention types
- Self-monitoring
- Individuality of ADHD
- In classroom (academic)
- Self-regulation (academic)

Target:
ADHD symptoms and academic skills
Teacher-child conflict
ADHD toolkit

• Online training module (teachers, parents)
• Child activity
• Functional behaviour analysis
• Link observed behaviour to ADHD-related outcome (each outcome has a module)
• Implement Daily Reward Card
• Choose strategies to implement from selected module
• Evaluate change in behaviour
Fellowship project proposal

Develop a school-based intervention for ADHD
• Use intervention mapping to develop a theory- and evidence-based intervention
• Refine and adapt this prototype intervention in a multiple baseline case-series study
Aims for stage 1

1. Identify and synthesise existing evidence for interventions that have targeted the toolkit outcomes
2. Refine theory and create logic models of change in order to select strategies for inclusion in the toolkit
3. Produce version 1 of the ADHD toolkit
Intervention mapping

1. Analysis of the problem (needs assessment)
2. Detailed mapping of current behaviour, ideal outcome behaviour and behaviour change needed to get from current to ideal
3. Specify behaviour change techniques to use
4. Specify practical strategies and design intervention
5. Plan for adoption, implementation and sustainability of the intervention
6. Generate an evaluation plan

Stakeholder workshops
Logic models, co-created.
Informed by theory

Stakeholder workshops
Draw on existing literature for strategies where possible, co-create new strategies informed by steps 1-3 where needed
Case series study
Skill building
Aims for stage 2

• Develop a toolkit that is feasible and acceptable to implement in the school setting
• Assess whether the toolkit is perceived as useful by intended users
• Develop methods to evaluate the toolkit
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**Key**
- Baseline
- Intervention
- Follow-up
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Note: "X" indicates an activity or measure is conducted during the specified time period.
References

• Kok G. 2014. A practical guide to effective behavior change: How to apply theory-and evidence-based behavior change methods in an intervention.


Acknowledgements

Darren Moore, Tamsin Ford and Roisin Perry

Marianne Tay, Sophie Arnell, Becky Mars, Heather O’Mahen and Barney Dunn, Justin Matthews, Morwenna Rogers, Obioha Ukoumunne, Dylan Kneale, Jo Thompson-Coon, Katy Sutcliffe, Michael Nunns, Liz Shaw and Ruth Gwernan-Jones

?Are the functional outcomes most important?

?Do we include evidence summary in round 2?
Extra slides
<table>
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<tr>
<th>School</th>
<th>Teacher/Teaching Assistant interviews</th>
<th>Mental Health Lead interviews</th>
<th>School focus group</th>
<th>Child paired interviews</th>
<th>Parent phone interviews</th>
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<td>Intervention</td>
<td>Resource(s)</td>
<td>Who implements?</td>
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<td>Common strategies</td>
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<td>Labeled praise</td>
<td>Pfiffner and DuPaul (2015)</td>
<td>Any school staff</td>
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<td>Planned ignoring/teacher attention</td>
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<td>Posted/regularly reviewed rules; reprimands</td>
<td>Pfiffner and DuPaul (2015)</td>
<td>Classroom teacher</td>
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<td>Class-wide programs</td>
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<td>Good behavior game</td>
<td>Barrish et al. (1969)</td>
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<td>Tier 2</td>
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<td>Individual interventions</td>
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<td>Daily report card</td>
<td>Volpe and Fabiano (2013)</td>
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<td>Organizational skills training</td>
<td>Gallagher, Abikoff, &amp; Spira (2014); Langberg (2011); Schultz and Evans (2015)</td>
<td>School mental health provider</td>
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<td>Classroom teacher</td>
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<td>Token economy</td>
<td>Kazdin (1977) for a detailed guide; Pelham and Fabiano (2008) for ADHD-specific review</td>
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