

Digital tools for self- management of adult ADHD

A rapid mixed-methods review

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Glossary

Applied relaxation training: A treatment that teaches individuals to quickly relax in response to stressful situations. Training teaches individuals to relax in shorter intervals over time in response to stress, and to recognise the first signs of stress in everyday life

Bias: A term used to indicate the deviation of results or inferences from the actual truth.

Cognitive Behavioural Therapy (CBT): A goal-oriented form of psychotherapy that aims to change negative patterns of thinking that an individual feels about him or herself, abilities, and future. It is a useful short-term approach for addressing ADHD in adults with mood disorders or who suffer from anxiety and other emotional problems.

Cognitive training: Involves training specific aspects of your memory and other thinking skills. This is usually through an exercise or a game on a computer.

Executive Function: Mental skills that help people to control and coordinate other mental functions and abilities, such as planning or task completion. This deficit is common in those with ADHD.

Grey literature: Information not produced through traditional commercial or academic publishing e.g., government reports, conference papers, theses.

Heterogeneity: a measure of variability among included studies in a systematic review.

Intervention: An intervention in the context of ADHD refers to a specific strategy or set of strategies that has the effect of modifying an individual's behaviour, cognition, or emotional state, to improve the individual's functioning.

Meta-analysis: A form of data synthesis that typically appears as data table accompanying a systematic review. Shows the degree of effect of each included study, as well as an 'overall average'.

Non-randomised comparative study: a research design that compares two or more groups to evaluate an intervention, but without using random assignment to place participants into the groups.

PROSPERO: An international database of prospectively registered systematic reviews.

Protocol: The 'recipe' for how the review will be undertaken, established *a priori*.

Psychoeducation: A therapeutic intervention that focuses on enhancing education, support, and coping skills development to better understand and cope with illness.

Randomised controlled trial (RCT): a research study where participants are randomly assigned to different groups to test an intervention's effect, such as a new drug or treatment, against a control group. This process of random assignment helps minimize bias by ensuring the groups are comparable, making it the gold standard for proving whether an intervention causes a specific outcome.

Quality assessment: A process by which methodological quality and risk of bias is assessed in individual studies.

Search strategy: Used *a priori* to search, identify and select the appropriate and relevant evidence to answer the research question of a systematic review. Search terms are identified and arranged to retrieve eligible studies and information from electronic databases

Standard deviation: A statistical measure showing how spread-out numbers in a dataset are from their average (mean).

Treatment as usual: The standard care or treatment that would typically be received outside of a research study.

Working Memory: A system in the brain that temporarily stores and processes the information needed for much more complex tasks such as reasoning, comprehension, and learning.

1. Summary

Attention Deficit Hyperactivity Disorder (ADHD) affects approximately 3% of adults worldwide, yet its persistence into adulthood has only recently been recognised. There are a range of digital technologies and tools that may help people with ADHD self-manage. To date, these types of technologies have only been assessed in children and young people.

We aimed to systematically assess what digital self-management tools exist for adults with ADHD, and what their effectiveness and acceptability is.

A rapid mixed-methods systematic review was undertaken, searching three electronic databases up to 22nd August 2025. Studies were included if they assessed the impact of any digital self-management tool or intervention in adults with, or suspected of having, ADHD. Qualitative studies assessing the experience of using digital self-management tools were also included. Narrative synthesis, synthesis without meta-analysis, and thematic synthesis approaches were used to synthesise study findings. Study quality was assessed using the Quality Assessment with Diverse Studies tool.

We found...



29 reports
describing
30 studies



Evidence from
2791 people with
ADHD (and
controls) and 13
countries



15 distinct
named tools
and 9
unnamed tools



5 main types of digital tool
and 3 types of indirect
evidence with
psychoeducation the most
common

Across digital self-management types, the **evidence showed either benefits of digital self-management, or no difference** (either between groups or before and after the intervention).

Of 14 studies assessing the effect on ADHD symptoms, **64% found a beneficial effect** in at least one of the assessed outcomes. **No study found any negative effects** of digital self-management on key clinical outcomes.

Synthesis of the qualitative data identified six key themes that speak to features that improve engagement with digital self-management tools, barriers to their use and areas for improvement, as well as considering when and how people use these tools and what the potential benefits are.

Conclusions: The majority of the evidence for digital self-management tools for adults with ADHD is for psychoeducational tools. There is some evidence of benefits of such tools for improving ADHD symptoms, mixed evidence for other outcomes, and we did not identify any harms. People designing digital self-management tools should do so with input from those with lived experience. There is a need for more evidence assessing the safety and effectiveness of these tools, using robust methodologies, and in real world settings.

2. Background

ADHD

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition characterised by one or more specific behavioural patterns, including inattention, hyperactivity and impulsivity. In children and adolescents, the worldwide prevalence of ADHD is estimated at 5% (Polanczyk et al., 2007; Polanczyk et al., 2015). Although ADHD was once thought to remit after childhood (e.g., Hill & Schoener, 1996), longitudinal research has shown that 40-60% of children with ADHD will continue to experience symptoms into adulthood (Faraone et al., 2021; Franke et al., 2018; Kessler et al., 2005). Adult ADHD prevalence is now estimated at 2.5-3.1% (Ayano et al., 2023; Chaulagain et al., 2023; Simon et al., 2009), yet it remains under-detected, under-diagnosed and under-treated (Ginsberg et al., 2014; Rivas-Vazquez et al., 2023). Some studies suggest that less than 20% of adults with ADHD are accurately diagnosed and treated (Barkley & Brown, 2008; Ginsberg et al., 2014; Newcorn et al., 2007). Cross-sectional studies suggest undiagnosed ADHD prevalence ranges from 1.1–14% in general populations (Du et al., 2025; Hoeffding et al., 2018; Naya et al., 2021), and 7-35% in specific populations (Al-Yateem et al., 2023; Sabir et al., 2024).

ADHD has significant impacts daily life. Core symptoms include attentional dysfunction, impaired focus, emotional dysregulation, and difficulties with memory, executive functioning, and decision-making (Soler-Gutiérrez et al., 2023). Adults with ADHD are also more likely to experience co-occurring psychiatric disorders, such as anxiety, depression, bipolar disorder, and substance abuse disorders, and face elevated risks of suicidal behaviours (Choi et al., 2022; Hartman et al., 2023; Impey & Heun, 2012). Together, these can contribute to sleep problems (Díaz-Román et al., 2018), employment difficulties (Murphy & Barkley, 1996), higher divorce rates (Biederman et al., 2006), criminal justice involvement (Biederman et al., 2006; Ginsberg et al., 2014), and poor educational attainment (Ginsberg et al., 2014; Murphy & Barkley, 1996).

Despite these difficulties, qualitative research highlights a number of strengths and positive traits among adults with ADHD, including increased creativity, hyperfocus, social skills, courage, resilience, energy and cognitive flexibility (Mahdi et al., 2017; Nordby et al., 2023; Schippers et al., 2022; Sedgwick et al., 2019). Therefore, while adult ADHD presents a number of challenges that may benefit from intervention, it may also confer positive traits.

Management options include lifestyle changes (Björk et al., 2020; Mehren et al., 2019; Xie et al., 2021), work adjustments (Weber et al., 2024), talking therapies (Fullen et al., 2020; Jensen et al., 2016; Nimmo-Smith et al., 2020) and medications (Faraone & Glatt, 2010; Radonjić et al., 2023). Evidence suggests that these options are effective at treating or managing ADHD, with potentially greater effects when used in combination (Li & Zhang, 2024). However, access to reasonable adjustments at work can require a formal ADHD diagnosis, and access to medication always requires a formal diagnosis.

Diagnosis presents two major challenges. Firstly, adult ADHD is often unrecognised or misdiagnosed as a co-existing mental health condition (Cooper et al., 2018), due to clinician lack of awareness or misunderstanding, stigma, masking of symptoms, self-medication, overlapping symptoms with other disorders, and age-related changes (Johnson et al., 2021). This creates barriers to assessment, with many describing the process as “an uphill struggle” (Goodman et al., 2024; Matheson et al., 2013). Secondly, waiting times for assessment and

diagnosis are lengthy. In the UK, waiting list times vary dramatically by location and service, ranging from 12 weeks to 8+ years (ADHD UK., 2023; NHS England, 2025; Price et al., 2024). A 2023 report found over 19,000 adults on waiting lists across 21% of integrated care boards (ICBs), extrapolating to more than 90,000 nationwide (ADHD UK., 2023). Even after initial assessment, many individuals face delays in receiving an official diagnosis or initiating treatment (Hall et al., 2016; Hollis et al., 2018). These delays restrict access to support and negatively affect quality of life, self-understanding, and mental health (Holden & Kobayashi-Wood, 2025; Long & Coats, 2022).

Self-management

Self-management tools are therefore key. Firstly, self-management may enable people awaiting diagnosis to manage their ADHD to some extent, until they can access formal, diagnosis dependent treatment medication or therapy. They also benefit those diagnosed but who do not need, are unable or unwilling to use medication, and can complement pharmaceutical treatment for those already medicated.

Digital tools

Technological advancements have driven a shift towards digital health interventions, supported in the UK by the NHS 5- and 10-year plans, which emphasise using digital tools to improve patient access, empower patients to manage their own health, and free up staff time (UK Government & NHS, 2025). This shift towards digital health interventions is particularly evident in the mental health context, with over 10,000 mental health-related applications available to download in 2017 (Torous & Roberts, 2017).

Digital technologies explored for ADHD management include mobile apps and games (Hernández- Capistrán et al., 2025; Hosseinnia et al., 2025; Jiang et al., 2022; Păsărelu et al., 2020), internet-based therapies or training (Shou et al., 2022), video game-based interventions (Rodrigo-Yanguas et al., 2022), virtual reality (Satu et al., 2025; Wiebe et al., 2022), and neurofeedback (Van Doren et al., 2019). Findings suggest potential benefits, though many tools are not yet mature enough for clinical application, and require further robust and high-quality evidence, particularly regarding long-term effects, safety and in more varied populations.

However, much of this review evidence either (1) examine neurodevelopmental disorders or mental health conditions more broadly rather than only adult ADHD specifically, (2) are scoping reviews that map the existing evidence rather than assessing effectiveness, (3) focus on digital ADHD assessment rather than management, and/or (4) focus on non-self-management tools treatments that require professional input. Research specifically on digital self-management for ADHD, largely targets children and young people (Gudka et al., 2025; Powell et al., 2018). While these studies highlight potential, particularly for psychoeducation, evidence is limited by methodological weaknesses. To date, no systematic review has focused exclusively on digital self-management for adults with ADHD.

HIEM Neurodiversity Portfolio

In response to the growing recognition of adult ADHD and the increasing demand for related services, there is a pressing need to explore innovations that support self-management and service delivery. Throughout 2025-2026, Health Innovation East Midlands (HIEM) is leading work as part of a wider Neurodiversity portfolio, with an initial focus on adult ADHD. This

portfolio encompasses projects aimed at improving care pathways and supporting the identification, development and adoption of digital technologies to enhance adult ADHD pathways. By bringing together insights from data, research, innovation, and clinical practice, the portfolio seeks to address current system challenges, including delays in assessment, limited post-diagnosis support, and variation in local services.

Working closely with Integrated Care Boards (ICBs), clinicians, innovators, and people with lived experience, this programme aims to build a comprehensive understanding of needs and facilitate the development and implementation of meaningful digital solutions. The programme focuses on mapping ADHD services and pathways, identifying and assessing digital technologies that support assessment, self-management, and service productivity, and synthesising existing evidence to inform decision-making. Collaborative engagement with clinicians, people with lived experience of ADHD, and innovators is a central feature, alongside the creation of dedicated spaces for learning, idea-sharing, and testing digital tools.

The anticipated impacts of this work include supporting more informed use of digital technologies within ADHD pathways, improving the experience of care for people with ADHD, strengthening partnerships between clinicians, people with lived experience of ADHD, and digital innovators, and generating practical insights to guide future adoption and spread of digital solutions. Within this context, this rapid systematic review will inform innovation, and support evidence-based implementation.

Aims of the review

This review therefore aims to address the existing gaps and support the HIEM neurodiversity portfolio, by synthesising the evidence for digital self-management tools and interventions for adults with ADHD, to assess what digital self-management tools for adults currently exist and whether they are beneficial in this context. In doing so, this review aims to highlight the quality of the existing evidence, as well as any gaps in the literature.

Please note that it is beyond the scope of this review to assess the compliance of identified tools with regulatory standards, including medical device compliance, and Digital Technology Assessment Criteria (DTAC)¹ (which considers clinical safety, technical security, interoperability, usability, accessibility and data protection standards), and as such this review does not comment on commercial readiness.

3. Methods

Review Question

What is the impact of using digital tools for the self-management of adult ADHD?

Inclusion criteria

This review was conducted in accordance with latest guidance regarding conducting rapid reviews (Garritty et al., 2024). This included adhering to appropriate reporting guidelines, including the PRISMA-P, the PRISMA-S and the PRISMA. The protocol for the review was registered on PROSPERO (CRD420251167611).

¹ <https://transform.england.nhs.uk/key-tools-and-info/digital-technology-assessment-criteria-dtac/>

Population: This review aimed to identify studies involving adults, defined as 18 years old and over. Participants were required to have ADHD or be suspected as having ADHD, as defined by the study authors. This could include having a clinical diagnosis of ADHD, or self-reporting as ADHD but without diagnosis. Studies were included if not all participants had ADHD or were suspected as having ADHD, as long as the majority of participants had (or were suspected of having) ADHD, or results for those with ADHD were reported separately (i.e., as a subgroup). Studies targeting children and young people, parents of young people, or exclusively healthcare professionals were excluded.

Intervention: The intervention of interest was digital self-management. A digital intervention was defined as digital if it involved websites, mobile or tablet apps, or other digital technology. Self-management was defined as an intervention that does not require healthcare professional input, but does involve some form of self-management, self-guidance, or self-directed activity such as medication monitoring, psychoeducation and symptom reduction tools. Non-digital self-management interventions, such as exercise, diet, or paper-based information were excluded. Digital interventions that did not involve any form of self-management, such as online group therapy, were excluded.

Comparator: All comparators were considered, including non-digital versions of the same self-management intervention, other digital self-management interventions, other active controls, treatment as usual (TAU) and waitlist controls. Single arm studies without comparators groups were also included, as were qualitative studies due to the importance of understanding participants experiences with digital self-management interventions.

Outcomes: The primary outcomes were any effectiveness outcomes that spoke to the impact of the intervention on clinically relevant outcomes, such as ADHD symptoms, quality of life, and mental health. Secondary outcomes included any acceptability related outcomes, such as adherence, engagement, satisfaction, and usability. Outcomes relating to access to services and impacts on the number of in-person appointments, and other relevant health service-related outcomes were also included.

Study design: All study design types were included. We included evidence from pilot studies, dissertations and theses, early evaluation trials and prototype tests, as long as the intervention was tested and results were reported (either quantitative or qualitative).

Search

Search strategy: We searched Embase, Medline and PsycInfo without limitation on date or publication type. The search strategy included key terms relating to ADHD, self-management and digital technologies. Due to the sizable search results and the focus of ADHD research on children and young people, the search excluded a few key child-related terms from titles only. In doing so, the search excluded papers focusing on children and young people, while minimising the risk of excluding potentially relevant papers that mention children and young people in the abstract or elsewhere in the paper. The search was conducted on 22nd August 2025. The full search strategy can be found in Appendix A. Reference lists of any relevant systematic reviews that were identified in the main search were also assessed for relevance.

Limits to the search: Studies had to be reported in English due to a lack of resource to be able to translate non-English texts. While we did not perform a dedicated grey literature

search, we did not exclude any grey literature that appeared in the database searches we performed. Abstracts were excluded unless they included sufficient information to describe the intervention and reported relevant results.

Study selection and data extraction: Results of the search were exported into Endnote and deduplicated. They were then uploaded to Rayyan for title and abstract screening. This was done independently by two reviewers (SC, SH). All titles and abstracts were screened against the inclusion and exclusion criteria. Any discrepancies between the two reviewers were discussed. Full reports were then retrieved for full text screening, again against the inclusion and exclusion criteria. This was done by one reviewer, and a second reviewer screened 20%. Again, any discrepancies were discussed, as were any reports where either reviewer was undecided, until a consensus was reached. Data from the included full texts were then extracted using an excel spreadsheet. As per the rapid review guidelines, this was limited to the most important fields of data to address the review question. This included information regarding the participants, primarily age and ADHD diagnosis, the intervention and comparison group, outcomes, study design and country. Critical data were verified for accuracy and completeness.

Synthesis

Included studies were organised into broad categories of digital self-management interventions, and the evidence synthesised within each category. Within each category, there was heterogeneity in terms of study design, control group, and outcome measures, therefore meta-analysis of quantitative data was deemed inappropriate. Instead, results were synthesised following the Synthesis Without Meta-analysis (SWiM) guidelines (Campbell et al., 2020). Specifically, the method of vote counting based on the direction of effect was adopted to summarise key effectiveness findings from the studies. Additionally, quantitative and qualitative results from all studies were discussed narratively. Qualitative data were also summarised in themes using thematic synthesis (Thomas & Harden, 2008). Any qualitative data from the included studies were extracted, coded, and organised into themes and subthemes, to provide an overview of the key findings across the evidence.

Study quality

To assess the quality of included studies, the validated Quality Assessment with Diverse Studies (QuADS) tool was used (Harrison et al., 2021). This tool was felt appropriate due to the high heterogeneity of included studies in terms of study design. As per the rapid review guidance, study quality was assessed by one reviewer (TG), and a second reviewer verified the judgements (SC).

4. Results

Search results

The database search identified 1827 records. An additional 146 records were identified by searching reference lists of relevant existing systematic reviews. After deduplication, 1466 records underwent title and abstract screening, and of these 146 underwent full text screening. In total, 29 reports were included in the review, describing 30 studies. Figure 1 shows the PRISMA flow diagram of search and screening results. Details of the included studies can be found in Table 3. More detailed information about each tool can be found in Appendix 2.

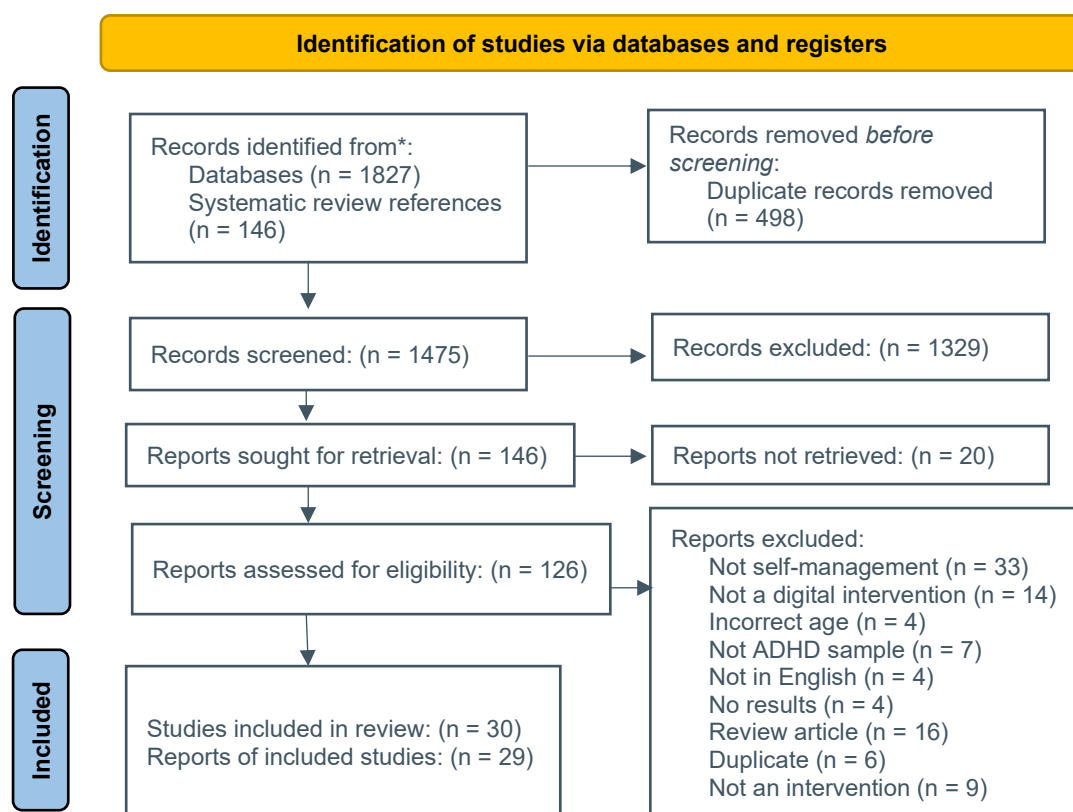


Figure 1. PRISMA flow chart

Study characteristics

There was a total of 2791 participants across the 30 studies, with a median sample size of 53 (range 3-552). Eight studies were conducted in the USA, six in Norway, four studies Sweden, two in Germany, two in Canada, one study was multi-national, including participants from Switzerland, Austria and Germany, and one study each was conducted in Ukraine, Australia, Brazil, Israel, Korea, Switzerland, and Ireland.

There were 10 randomised controlled trials (RCTs), one subgroup analysis of an RCT, and one study used a multiple randomised trial design. Three studies used a non-randomised comparative design. Ten studies described themselves as a feasibility and/or usability study. Of these, seven did not collect data related to intervention effectiveness, and used qualitative methodologies, cross-sectional design, or mixed methods. The remaining three reported effectiveness data, using either a pre-post design, or a randomised control group design. Three studies were design or development studies, using qualitative or participatory design methodologies. Finally, one used a pre-test post-test control group design, and one mixed-methods study used a randomised experimental design and qualitative surveys. Across the study designs, a total of 12 studies reported qualitative data from interviews, surveys, or feedback sessions.

Of the 30 studies, 18 had at least one control group(s), with a total of 22 control groups. The control groups varied from TAU (n=4), waitlist controls (n=4), active controls (i.e., an activity that was not digital self-management and was not expected to improve outcomes; n=6), other digital self-management tools (n=3), or alternative versions of the same tool (n=4; two of which

were reported in the same study). In one study both groups received psychoeducation, and only the intervention group also received reminders.

Twenty-one studies tested named apps or interventions (Table 1). Some studies tested the same app or intervention, with a total of 15 distinct named tools. The most common was *MyADHD*, an online psychological intervention with a strong psychoeducational component (n=5), followed by *Cogmed*, a working memory training programme (n=2), and *AwareMe ADHS*, a smartphone-based psychoeducation app (n=2).

Table 2 outlines the various measures used by the included studies to assess ADHD symptoms. The 17 studies assessing the impact of the intervention on ADHD symptoms used a total of nine different measures, demonstrating a large amount of variation. The most common measure was the Adult ADHD Self-Report Scale (ASRS), used in nine studies.

Further details on interventions and outcomes are provided in Appendices 2 and 3.

Table 1. Number of studies reporting each app or online intervention and their availability in the UK

Name of App or intervention	Number of studies	Availability in UK
Adult ADHD app	1	Yes
AttenFocus	1	No
AwareMe ADHS	2*	No
CANreduce	1	No
Cogmed	2	Yes
FOCUS ADHD	1	Yes
Focus Check	1	No
In Focus	1	No
Inflow	1	Yes
Living SMART	1	No
My Friendly Mind	1	No
MyADHD	5	Yes
NUMO	1	Yes
Terabot	1	No
Tokadi	1	No
Unnamed	9	N/A

*In one study *AwareMe ADHS* was the control group intervention

Table 2. Measures of ADHD symptoms used in the included studies

Method of assessing ADHD symptom improvement	Number of studies
Adult ADHD Self-Report Scale (ASRS)	9
Conners' Adult ADHD Rating Scale (CAARS)	3
Barkley Adult ADHD Rating Scale (BAARS)	2
Integrated Diagnosis of Adult ADHD Revised (IDA-R)	2
Brown Attention Deficit Disorder Scale (BADDS)	1
Mind Wandering Questionnaire	1
ADHD Rating Scale (ADHD-RS)	1
Current Symptoms Scale (CSS)	1
Adult ADHD Self Report Scale (ADHS-SB) (German version)	1

Table 3. Details of the included studies

Study details	Population	Intervention(s)	Comparison
Psychoeducation with or without additions			
Ahlers 2022 RCT subgroup analysis Switzerland, Austria, Germany	- Sample size: 94 - Age: Mean 26.9 (SD 7.5) years - ADHD: Screened using the ASRS (score >13) - Medication: NR	CANreduce: A cannabis reducing self-help web-based programme including psychoeducation, diary, optional chat counselling, motivational emails and coping strategies.	N/A. The study did compare the ADHD group to participants who also received the same intervention but not have ADHD, however this group does not meet the review inclusion criteria and so only the ADHD subgroup was extracted.
Carvalho 2023 3 arm RCT Brazil	- Sample size: 73 - Age: Mean 35 (SD 7.0) years - ADHD: Full diagnostic criteria for ADHD according to the DSM-5 and a clinical ASRS score at diagnosis of ≥ 24 - Medication: All participants were taking medication	FOCUS ADHD: A mobile app that includes pill reminders, weekly symptom assessment, the option to invite a support network, and twice-a-week psychoeducation.	(1) FOCUS ADHD + discount: As well as the mobile app participants received a discount on the purchase of prescribed ADHD medication. (2) TAU
Flobak 2021 Design / development study (qualitative methods) Norway	- Sample size: 109 - Age: Mean 36.0 (SD 9.0) years - ADHD: Self-reported diagnosis of ADHD - Medication: NR	MyADHD: An online intervention with psychoeducation, skill-building, coping techniques and video vignettes.	N/A
Jang 2021 Feasibility / usability, (using randomisation) Korea	- Sample size: 46 - Age: Intervention: 26.7 (SD 9.0); Control: 22.9 (SD 5.4) - ADHD: Significant attention problems, defined as being positive in 4 of 6 items on the ASRS. 21.7% had an ADHD diagnosis. - Medication: There was no significant difference between groups in medication dosage	Tokadi: An app with a conversational chatbot that includes a self-help programme with psychoeducation, mindfulness, chatbot-based CBT, quizzes and tools such as alarms and symptom tracking. Note: While this study also includes CBT and therefore could be classed as a self-	Active control group: Participants received a self-help book about ADHD.

Study details	Population	Intervention(s)	Comparison
		help CBT intervention, we have opted to class it as a psychoeducation intervention owing to the large psychoeducational component.	
Kenter 2022 Feasibility / usability study Norway	- Sample size: 5 - Age: Mean 38.4 (SD 16.3) years - ADHD: A previous diagnosis of ADHD. - Medication: NR	MyADHD: A structured self-guided psychoeducational intervention with elements from cognitive behavioural therapy, dialectal behavioural therapy and goal management training to target specific challenges experienced by adults with ADHD.	N/A
Kenter 2023 2 arm RCT Norway	- Sample size: 120 - Age: Mean 40.9 (SD 10.6) years - ADHD: A self-reported ADHD diagnosis - Medication: 83.3% were taking ADHD medication	MyADHD: A structured self-guided psychoeducational intervention with elements from cognitive behavioural therapy, dialectal behavioural therapy and goal management training to target specific challenges experienced by adults with ADHD.	Other digital self-management: A psychoeducation module with similar content but lacking exercises, videos or audio files.
Knouse 2022 Feasibility / usability study (pre-post design) USA	- Sample size: 240 - Age: Mean 29.2 (SD 7.1) years - ADHD: 84.2% had a current diagnosis of ADHD. - Medication: 60.4% were taking ADHD medication	Inflow: An app-based self-help programme including psychoeducation, goal setting and task lists	N/A
Luiu 2018 Feasibility / usability study (qualitative methods) Switzerland	- Sample size: 6 - Age: 20-55 years - ADHD: A previous diagnosis of ADHD - Medication: NR	An app-based psychoeducation intervention using tailored messages, advice, information, exercise and feedback.	N/A
Nordby 2021 Feasibility / usability study (pre-post design) Norway	- Sample size: 13 - Age: Mean 39.2 (SD 10.2) years - ADHD: A diagnosis of ADHD - Medication: 84.6% were taking ADHD medication	MyADHD: A self-guided internet delivered intervention with seven modules and including coping techniques, practice, action planning, a diary and vignettes.	N/A
Orel 2024 Non-randomised comparative study Ukraine	- Sample size: 63 - Age: 25-45 years - ADHD: A diagnosis of ADHD	NUMO: High intensity use of the NUMO app, which includes psychoeducation, exercises and a supportive community.	NUMO: Low intensity use of the NUMO app

Study details	Population	Intervention(s)	Comparison
	Medication: NR		
Seery 2025 Feasibility / usability study (qualitative methods) Ireland	- Sample size: 14 - Age: Mean 40.3 (SD 11.4) years - ADHD: 12 had a formal ADHD diagnosis and 2 self-identified as having ADHD - Medication: NR	The Adult ADHD app: A psychoeducation app aiming to provide evidence-based, trustworthy psychoeducation while waiting for ADHD services.	N/A
Selaskowski 2023 2 arm RCT Germany	- Sample size: 34 - Age: Mean 29.6 (SD 8.4) years - ADHD: Fulfilled the DSM-5 ADHD diagnostic criteria assessed with the IDA-R - Medication: 79.4% were taking a psycho-pharmacological treatment	A self-guided chatbot based psychoeducation app which offers higher levels of interaction and individualisation.	AwareMe ADHS: Conventional module app-based psychoeducation
Shelton 2022 Feasibility / usability study (cross-sectional survey with randomisation) USA	- Sample size: 240 - Age: Mean 34.7 (SD 11.4) years - ADHD: A diagnosis of ADHD - Medication: NR	An internet-based intervention including psychoeducation and content related to potential participant impairments.	Participants were allocated one of three versions of the same intervention (full, tailored or minimal).
Cognitive training			
Dentz 2020 2 arm RCT Canada	- Sample size: 44 - Age: Mean 38.9 (SD 12.8) years - ADHD: A diagnosis of ADHD - Medication: 63.6% were taking medication	Cogmed: An online computer programme to improve verbal and visiospatial working memory that was done five times a week for five weeks.	A placebo version of the programme.
Mawjee 2015 3 arm RCT Canada	- Sample size: 97 - Age: Mean 23.9 (SD 3.4) years - ADHD: A diagnosis of ADHD - Medication: 51.5% were taking medication	Cogmed (standard length): An online computer programme to improve working memory that was done for 45 minutes, five times a week, for five weeks. Cogmed (shortened length): The same intervention done for 15 minutes, five times a week for 5 weeks.	Waitlist control
Stern 2016 2 arm RCT Israel	- Sample size: 60 - Age: Mean 37.31 (SD 10.1) years - ADHD: A diagnosis of ADHD - Medication: 38% were taking ADHD pharmacological treatment	AttenFocus: An online cognitive training programme focused on improving executive function	Active control: A control version of the programme that had fewer executive demands.

Study details	Population	Intervention(s)	Comparison
Self-help CBT			
Pettersson 2017 3 arm RCT Sweden	- Sample size: 45 - Age: Intervention 38.9 (SD 8.5); Active control 39.6 (SD 12.4); Waitlist control 33.8 (SD 10.1) - ADHD: A primary diagnosis of ADHD - Medication: 48.9% were taking ADHD medication	In Focus – Self-help: Internet-based CBT in a self-help format, focusing on teaching compensatory techniques to handle ADHD-related difficulties.	(1) In Focus – Group: Internet based CBT with group sessions (2) Waitlist control
Information giving			
Glickman 2015a Feasibility / usability study USA	- Sample size: 6 - Age: 18-24 years - ADHD: A previous diagnosis of ADHD. - Medication: NR	Website for online self-help: The website includes links from established ADHD support websites, links to online ADHD forums, tools for coping with ADHD, information designed for college students with ADHD, timed audio and visual prompts, digital personal recording of usage and skill instruction	N/A
Glickman 2015b Pre-post control group design USA	- Sample size: 15 - Age: 18-24 years - ADHD: A previous diagnosis of ADHD. - Medication: NR	Website for online self-help: The website includes links from established ADHD support websites, links to online ADHD forums, tools for coping with ADHD, information designed for college students with ADHD, timed audio and visual prompts, digital personal recording of usage and skill instruction.	Active control: Participants viewed the Mayo Clinic website for 20 minutes. After week 1, the control group was given access to the intervention website.
Shahsavari 2024 Mixed methods (pre-post surveys and qualitative interviews) USA	- Sample size: 77 - Age: Mean 24 (SD NR) years - ADHD: Unclear if participants had ADHD - Medication: NR	My Friendly Mind: An app that provides assessment, monitoring, educational content and management recommendations	N/A
Attention monitoring / training			
Gibson 2015 Mixed methods (a randomised experiment and qualitative surveys) USA	- Sample size: 48 - Age: 18 years or older - ADHD: Participants had difficulties maintaining attention, and 15 had likely ADHD - Medication: NR	Focus check: An app using self-monitoring of on-task and off-task attention designed for students with attentional difficulties during university lectures or independent reading.	Waitlist control
Indirect evidence – Reminders			

Study details	Population	Intervention(s)	Comparison
Biederman 2019 Non-randomised comparative study USA	- Sample size: 552 - Age: Intervention 32.7 (SD 9.8); Control 31.5 (SD 7.7) years. - ADHD: Satisfied full diagnostic criteria for DSM-5 ADHD based on clinical assessment - Medication: Participants were starting a stimulant medication or had started within 6 months of study enrolment	Text message reminders: To remind participants to adhere to the medication regimen, contact the clinician for a prescription refill, and to pick up medication from the pharmacy, plus educational reminders about ADHD and its treatment	No text messages
Biederman 2020 Non-randomised comparative study USA	- Sample size: 448 - Age: Intervention 35.9 (SD 10.0); Control 33.7 (SD 7.0) years. - ADHD: Adults taking stimulant medication for ADHD - Medication: Adults taking stimulant medication for ADHD	Text message reminders: To remind participants to adhere to the medication regimen, contact the clinician for a prescription refill, and to pick up medication from the pharmacy, plus educational reminders about ADHD and its treatment	No text messages
Nordby 2022 Multiple RCT design Norway	- Sample size: 109 - Age: Mean 31.6 (SD 9.1) years - ADHD: Self-reported ADHD diagnosis - Medication: 78.9% were taking ADHD medication	MyADHD: A self-guided online psychoeducational intervention for ADHD. In this study, participants who did not complete any module within 48 hours were randomised to receive an automated SMS reminder.	MyADHD intervention with no SMS reminder
Indirect evidence – Guided self-management			
Moell 2015 2 arm RCT Sweden	- Sample size: 57 - Age: Intervention 36.3 (SD 11.1); Control 37.3 (SD 10.8) years - ADHD: A confirmed or probable diagnosis of ADHD - Medication: NR	LivingSMART: An online intervention involving coaching and education about smartphone apps to improve organisation skills and attention.	Waitlist control
Nasri 2023 3 arm RCT Sweden	- Sample size: 104 - Age: Intervention 1 36.7 (SD 11.4); Intervention 2 35.97 (SD 9.4); Control 37.2 (SD 10.3) years - ADHD: ADHD diagnosis according to DSM-IV and >16 points on one of the subscales of the ASRS	Internet-based CBT: iCBT involving self-help educative modules with homework that is reviewed by a therapist before unlocking the next module. Topics included attention training, organisation, impulsivity, emotion regulation, and planning.	(1) Internet-based applied relaxation training: The same structure as the iCBT group with psychoeducation about ADHD and relaxation-related topics.

Study details	Population	Intervention(s)	Comparison
	Medication: 66.3% were taking ADHD medication		(2) TAU
Selaskowski 2022 2 arm RCT Germany	- Sample size: 43 - Age: Mean 38.2 (SD 11.9) years - ADHD: Fulfilled the DSM-5 ADHD diagnostic criteria as assessed with the IDA-R - Medication: The intake of medication for ADHD was permitted	AwareMe ADHS: Smartphone assisted psychoeducation, involving group sessions led by therapists that covered eight ADHD related topics, accompanied by smartphone-based modules	Brochure based psychoeducation. Following each group session material was distributed using brochures instead of using the app.
Indirect evidence – Prototypes			
Nordberg 2019 Design / development study Norway	- Sample size: 9 - Age: 18 years and over - ADHD: A diagnosis of ADHD - Medication: NR	Guided chatbot based conversational peer support: This would accompany a self-help programme to guide participants through the programme. Note that in this prototype trial, the chatbot was not functional and the author acted as the chatbot, following scripts and improvising if necessary.	N/A
Patrickson 2024 Feasibility / usability study using qualitative methods Australia	- Sample size: 9 - Age: 18 years and over - ADHD: A diagnosis of ADHD - Medication: NR	ADHD care post-diagnosis: Includes a clinician dashboard and accompanying app for people with ADHD to allow self-monitoring and provide treatment recommendations	N/A
Ravishankar 2022 Design / development study Sweden	- Sample size: 3 - Age: 18 years and over - ADHD: Two students with ADHD (no further details) and one psychiatrist - Medication: NR	AI based dialogue partner and monitoring system: Involves the collection and processing of smartphone data to provide insights, empower self-reflection and assist with ADHD related difficulties.	N/A

ADHD Attention Deficit/Hyperactivity Disorder; ASRS Adult ADHD Self-Report Scale; CBT Cognitive behavioural therapy; DSM5 Diagnostic and Statistical Manual of Mental Disorders; NR Not reported; NA Not applicable; SD Standard deviation; TAU Treatment as usual

Quality of evidence

Quality scores of the included studies ranged from 13 to 32 out of a possible 39. The quality ratings for each domain and overall are presented in Table 4.

Table 4: Quality ratings per study and domain

Study	Domain													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Ahlers 2022	2	3	1	3	2	0	2	1	3	1	3	0	3	24
Biederman 2019	3	3	3	2	2	3	2	3	2	1	3	0	2	29
Biederman 2020	3	2	3	2	2	3	2	3	3	2	3	0	2	30
Carvahlo 2023	2	2	2	3	1	0	2	3	3	1	2	0	1	22
Dentz 2020	3	3	3	3	2	3	3	2	3	1	3	0	3	32
Flobak 2021	3	3	3	3	2	1	3	2	1	1	2	3	2	29
Gibson 2015	1	3	3	2	2	3	3	3	1	2	2	0	3	28
Glickman 2015a	2	3	2	3	1	2	3	3	1	1	2	0	3	26
Glickman 2015b	2	3	1	2	3	2	3	3	1	1	2	3	3	29
Jang 2021	2	2	3	2	1	0	3	2	1	1	2	0	1	20
Kenter 2022	3	3	3	2	2	2	3	2	1	2	3	3	2	31
Kenter 2023	3	3	3	3	3	3	2	2	2	2	2	1	3	32
Knouse 2022	3	3	3	2	3	3	2	3	2	1	2	1	3	31
Luiu 2018	2	3	2	1	0	0	1	1	1	0	1	0	1	13
Mawjee 2012	3	3	3	3	2	2	3	3	3	1	3	1	2	32
Moell 2015	3	3	3	3	2	3	3	3	2	2	3	0	3	33
Nasri 2023	3	2	3	3	3	0	2	3	2	2	3	2	2	30
Norby 2021	3	3	3	2	2	2	2	3	3	1	2	0	2	28
Nordberg 2019	3	2	1	2	1	1	1	1	1	1	1	3	1	19
Nordby 2022	3	3	2	2	2	0	2	2	3	1	2	2	2	26
Orel 2024	2	3	1	1	1	0	1	1	1	0	1	0	1	13
Patrickson 2024	3	3	3	2	2	3	3	2	1	3	3	2	2	32
Pettersson 2017	3	3	3	2	3	2	3	2	2	1	3	0	2	29
Ravinshankar 2022	3	3	2	2	0	0	0	0	0	0	0	3	0	13
Seery 2024	3	3	1	3	1	2	2	2	1	2	3	0	3	26
Selaskowski 2022	2	2	3	3	2	0	2	2	3	1	3	0	3	26
Selaskowski 2023	2	3	3	2	3	0	2	2	2	0	3	1	3	26
Shahsavar 2024	2	3	2	3	1	0	2	1	2	1	3	0	2	22
Shelton 2022	3	2	3	1	3	2	2	3	3	3	1	0	2	28
Stern 2016	3	3	2	2	2	2	3	3	3	1	2	0	1	27

1 Theoretical or conceptual underpinning to the research; 2 Statement of the research aim/s; 3 Clear description of research setting and target population; 4 The study design is appropriate to address the stated research aim/s; 5 Appropriate sampling to address the research aim/s; 6 Rationale for choice of data collection tool/s; 7 The format and content of data collection tool is appropriate to address the stated research aim/s; 8 Description of data collection procedure; 9 Recruitment data provided; 10 Justification for analytic method; 11 The method of analysis was appropriate to answer the research aim/s; 12 Evidence that the research stakeholders have been considered in research design or conduct; 13 Strengths and limitations critically discussed.

While the QuADS guidance recommends against creating arbitrary cut-offs for high or low quality, we have adopted the strategy used by Gudka et al. (2025), who used colour coded

quality scores to guide and provide clarity for readers. Studies scoring 0-13 were classified as low quality, 14-25 medium, and 26-39 high. Any studies scoring all three would have been highlighted as being of very high quality, however no such study was included in the review.

Overall, most studies scored well in terms of describing the theoretical or conceptual underpinning to the research, and describing key aspects of the research such as aims, settings and study participants. The two poorest scoring domains across the evidence were domains 10 and 12, with many studies not providing adequate justification of their analytic method, or any evidence of stakeholder involvement.

Effects of digital self-management interventions

Five main categories of digital self-management interventions were created: Psychoeducation (with or without additions) (n=13); cognitive training (n=3); self-help CBT (n=1); information giving (n=3); and attention monitoring (n=1). The various intervention categories and sub-types are defined in Table 5. One of the psychoeducation studies (Jang et al., 2021) also included a self-help CBT element and therefore could have been included in the self-help CBT category, however as it was not primarily a CBT intervention it was categorised in the psychoeducation group.

Table 5. Description of the intervention categories

Category	Description
Main categories	
Psychoeducation	A therapeutic intervention that focuses on enhancing participants' education, support, and coping skills to better understand and cope with illness. It aims to provide knowledge about the illness/disorder, its causes, maintenance factors, and treatment options, and emphasises the participant's individual strengths, resources, and growth potential. Psychoeducation has been recommended as a first step in supporting adults with ADHD (Kooij et al., 2019).
Computerised cognitive training (CCT)	The goal of CCT for adults with ADHD is to remediate deficiencies in cognitive processes. It involves training specific cognitive skills (e.g., working memory, attention, executive function) or general cognitive abilities, using computerised tasks that challenge skills through repeated and graded exposure.
Cognitive Behavioural Therapy (CBT)	A goal-oriented form of psychotherapy that aims to change negative behaviours and patterns of thinking that an individual feels about themselves, abilities, and future that contribute to ADHD-related symptoms and impairments. CBT helps with the development of self-regulation skills, and helps to manage negative thoughts.
Information giving	This category describes interventions and tools that predominantly focus on giving health or self-management related information such as signposting or the provision of tools. It is the least intensive intervention type.
Attention monitoring	The monitoring of a predefined behaviour to help an individual stay on track with the desired behaviour. It involves the regular re-focusing of the individuals' attention on the desired behaviour, highlighting discrepancies between enacted and expected behaviour.
Additional categories	
Reminders	Reminder tools included both medication reminders and reminders to use other tools (e.g., psychoeducational tools). Medication reminders include a variety of solutions designed to enhance adherence to medication, especially

Category	Description
	where forgetting is a key barrier. Digital reminder tools can include tracking apps with alarms and alerts, and SMS reminders.
Guided self-management	This category describes a range of tools and interventions that are not fully self-guided as they involve a healthcare professional in some way.
Prototypes	This category describes innovations that are not fully developed, but are first or preliminary versions of new digital self-management tools. They are not final products and the aim of these studies is to understand initial feasibility or acceptability.

Three additional categories were created that included evidence that did not directly meet the inclusion criteria, but were still felt to be informative:

- Reminders: interventions that used SMS reminders to provide either individualised medication reminders, prescription refill reminders and educational reminders or reminders to use a digital psychoeducation app, to enable ADHD self-management (n=3).
- Guided self-management interventions: digital interventions that involved input from a healthcare professional in some way, although still had a large self-management element (n=3).
- Prototype interventions: describe the development of digital self-management innovations that are not yet finished products, and the initial testing of these concepts (n=3).

The effects of the interventions on ADHD, clinically relevant symptoms and other quantitative outcomes are summarised in Table 6 and discussed narratively in the following section. Evidence relating to acceptability is discussed narratively.

Table 6. Effect direction table summarising direction of impacts on ADHD symptoms and clinically relevant outcomes

Study	Tool name	Design	Comparator	Quality	Sample size	Intervention duration	ADHD symptoms	Depression	Anxiety	QoL	Stress	Other
Psychoeducation												
Ahlers 2022	CANreduce	Subgroup analysis	N/A	Medium	94	6 weeks	✓	✓	✓	-	-	✓ ¹
Carvahlo 2023	FOCUS ADHD	RCT	TAU	Medium	49	3 months	↔	-	-	-	-	↔ ²
			DSM (+ discount)		49		↔	-	-	-	-	↔ ²
Jang 2021	Todaki	RCT	Active	Medium	46	4 weeks	↔	↔	↔	-	↔	-
Kenter 2023	My ADHD	RCT	Other DSM	High	120	7 weeks	✓	-	-	↔↔	↔↔	-
Knouse 2022	Inflow	Pre-post	N/A	High	240	7 weeks	✓	-	-	-	-	✓ ³
Nordby 2021	My ADHD	Pre-post	N/A	High	13	Unclear	↔	↔	↔	↔	↔	-
Orel 2024	NUMO	NRC	Low intensity usage	Low	63	3 months	✓	-	-	-	-	-
Selaskowski 2023	AwareMe ADHS**	RCT	Other DSM	High	34	3 weeks	↔	↔	↔	↔	↔	↔ ²
Cognitive training												
Dentz 2020	Cogmed	RCT	Active	High	44	5 weeks	↔	-	-	-	-	↔ ⁴
Mawjee 2015	Cogmed	RCT	WLC	High	64	5-6 weeks	↔↔	-	-	-	-	↔↔ ⁴
			DSM (short)		65		↔↔	-	-	-	-	↔↔ ⁴
Stern 2016	AttenFocus	RCT	Active	High	60	12 weeks	↔↔	-	-	↔↔	-	↔↔ ^{4,5}
Self-help CBT												
Petterssen 2017	In Focus	RCT	Active	High	27	10 weeks	↔	↔	↔	↔	-	↔ ⁵
			WLC		32		✓	↔	↔	↔	-	↔ ⁵
Information giving												
Glickman 2015b	N/A	Pre-post	N/A	Medium	15	3 weeks	✓	-	-	↔	-	✓ ⁶
		NRC	Active				↔*	-	-	✓*	-	↔* ⁶
Shahsavar 2024	My Friendly Mind	Pre-post	N/A	Medium	77	30 minutes	-	-	-	-	-	✓ ²
Attention monitoring / training												
Gibson 2015	Focus Check	RCT	WLC	High	48	4 weeks	↔	-	-	-	-	↔ ⁷

DSM digital self-management; NRC non-randomised comparative study; RCT randomised controlled trial; TAU treatment as usual; WLC Waitlist control

Effect direction: tick ✓ / green = positive impact; cross ✗ / red = negative impact; sideways arrow ↔ = no change (orange) or mixed effects (yellow). Note all mixed effects in this review were a combination of positive impacts or no change, no negative impacts were found.

Sample size: Final sample size (individuals) in intervention group – large tick ✓ > 300; medium tick ✓ 50–300; small tick ✓ < 50

Other outcomes: 1 Cannabis consumption, Severity of Dependence, Cannabis Use Disorder Identification Test; 2 User knowledge; 3 Functional impairment; 4 Cognitive function; 5 Occupational performance; 6 Coping; 7 Effortful control and Academic self-efficacy.

*Statistical tests were not performed therefore judgements are based on visual inspection of graphical data

** AwareMe ADHS was the control group in this study

Psychoeducation (with or without additions)

Of the 13 studies that investigated psychoeducation, three did not include additional components (Luiu et al., 2018; Seery et al., 2025; Selaskowski et al., 2023). The remaining 11 studies included additional aspects alongside the psychoeducation, such as optional chat-based counselling, pill reminders, symptom assessment/monitoring, skill building exercises and techniques, goal setting or goal management, homework, task lists, mindfulness breaks, live events, community spaces, and SMS reminders to complete intervention content. Of the 14 studies, 12 involved the use of a named app or website.

Seven of the studies did not have a control group, as they were either single-arm feasibility, usability or acceptability studies, or qualitative studies. Of the remaining seven, five were RCTs, one was a non-randomised comparative study, and one was a subgroup analysis of an RCT focusing only on the RCT's intervention arms. Of the studies with a comparator group, one used a TAU comparator, one used an active control, and five involved another form of digital self-management or another version of the same digital self-management tool. Eight of the 13 studies reported outcomes relating to ADHD symptoms or other clinically relevant areas (Table 6), while the remaining six studies only reported outcomes relating to acceptability and/or engagement, or qualitative data.

ADHD symptoms

Eight studies assessed and reported data on ADHD symptoms. A range of measures were used, with some studies using more than one.

One study compared the *FOCUS ADHD* app (with and without discounts on ADHD medication) to usual care and found that all groups had a significant decrease in ADHD symptoms, with no significant differences between groups (Carvalho et al., 2023).

One study compared digital self-management in the form of a chatbot-based psychoeducational app, *Tokadi*, to an active control group who received a self-help book (Jang et al., 2021). Results showed that the chatbot group had a significantly greater decrease in ADHD symptoms for three out of seven subscales, while in the remaining subscales there were similar decreases in both groups.

Three studies compared a digital self-management intervention to a second digital self-management intervention. Kenter et al. (2023) compared the *MyADHD* app to a psychoeducation module with similar content, but without exercises, videos and audio. They found changes in ADHD symptoms (total scores and subscales) from pre- to post-intervention and 3-month follow up that were significantly different between the intervention and comparison groups, with a bigger decrease in the group receiving the *MyADHD* app. Selaskowski et al., (2023) compared chatbot-based and app-based psychoeducation and found improvements in ADHD symptoms in both groups, with no significant differences between groups. Lastly, Orel and Antshel (2024) compared high intensity (those who used it daily) with low intensity (those who used it infrequently) users of the *NUMO* app. They found that the high intensity group had significant decreases in ADHD symptoms, whereas low intensity users showed minimal differences.

Both Knouse et al. (2022) and Nordby et al. (2021) looked at the impact of their interventions (*Inflow* and *MyADHD*) over time, without a control group. Both studies showed significant

reductions in all or all but one ADHD symptom subscales, from pre- to post-intervention. Similarly, Ahlers et al. (2022) found a significant decrease in ADHD symptoms over time.

Clinical outcomes

Studies reported a range of other clinically relevant outcomes, including quality of life, anxiety, depression and stress. Overall, studies showed mixed results for these outcomes.

Evidence from the RCTs generally showed no differences between groups. For instance, Jang et al., (2021) found that depression, anxiety and stress were all significantly decreased in both the *Tokadi* group and active control group, with no significant differences between groups. Similarly, Selaskowski et al., (2023) found no differences between the chatbot group and the *AwareMe ADHS* app group in the change from pre- to post-intervention scores for the same outcomes, and for all but one quality of life subscale. While Kenter et al., (2023) found significant improvements in quality of life from pre- to post-intervention in the *MyADHD* app group compared to the psychoeducation control group, this was not sustained to follow-up. They found no significant effects for stress.

Evidence from single arm studies were also mixed. Knouse et al., (2022) assessed functional impairment, and found a significant decrease from baseline to post-intervention. Nordby et al., (2021) assessed quality of life, stress, depression and anxiety. They found no significant differences from pre- to post-intervention for any of these outcomes when considering all participants. However, when analyses were limited to those that completed the intervention (n=7), they found a significant improvement in quality of life and stress. Ahlers et al., (2022) found that after using *CANreduce*, participants had significant reductions in depression and anxiety.

Other outcomes

The primary aim of the *CANreduce* app is to reduce cannabis intake. As such, the study reported three outcomes related to cannabis intake and dependency. Results showed that participants had significant reductions in the number of days in the preceding month on which one or more joint was used, severity of dependence scores, and the cannabis substance use disorder score (Ahlers et al. 2022).

Both Carvahlo et al., (2023) and Selaskowski et al., (2023) reported ADHD knowledge. Carvahlo et al., (2023) found that participants had non-significant increases in ADHD knowledge across intervention groups, while Selaskowski et al., (2023) found similar proportions of correct answers in both the chatbot-based and app-based groups.

Carvahlo et al., (2023) also assessed medication possession rate (i.e., a ratio of the number of days an individual is stocked with their treatment to the number of days they should be stocked, between two prescriptions), and found that all three groups had a rate of above 100% (indicating that the individual restocked their medication before the end of their supply), showing good medication adherence across groups.

Acceptability

Eight of the psychoeducation studies reported outcomes relating to acceptability.

Ahlers et al., (2022) reported low levels of adverse effects, however this was not reported separately for those with and without ADHD, data were missing for 85% of the overall study population, and the specific adverse events experienced were not disclosed. Jang et al., (2021) also reported on adverse effects in both groups and found no significant differences in scores, with both groups showing low levels of adverse effects. Participants also reported similar levels of satisfaction which were rated as average (overall scores were 2.05 and 2.17 on a five-point scale). Participants in the *Todaki* group reportedly found the chatbot character friendly and empathetic and enjoyed various aspects of the app including the daily check and tracking, mindfulness training and easy explanations, however, some found the conversation unnatural, felt that interfaces were non-intuitive, the app was repetitive, or the content was too long or simple, and some reported technical difficulties.

Carvahlo et al., (2023) assessed usability of *FOCUS ADHD* using the uMARS questionnaire, and found similar overall scores between the two groups, with an overall rating of 3.45 out of 5. Across the different subscales, the combined app and discount group consistently scored higher than the app without the discount. Usability of *Inflow* was assessed by Knouse et al., (2022) using a 13-item questionnaire. The overall score indicated high overall usability ratings (4.26 out of 5), with high scores for being easy to understand and helping participants remember where they left off (4.49 and 4.51 out of 5), and lowest scores for being more likely to use *Inflow* than see a therapist (3.72) and feeling like they are making progress (3.83). Kenter et al., (2022) assessed usability with the System Usability Scale, where a score below 70 indicates poor usability. The five participants gave the *MyADHD* app an overall usability score of 75.5 out of 100. Satisfaction was also assessed with one participant giving the app a rating of “excellent” and four as “good”. Overall, participants experienced some difficulties in navigating the app and found some functionality unclear or experienced usability issues (e.g., text boxes being too small). They were generally positive about the content of the app, although some found it lengthy in places and some found the language around ADHD too negative. Participants also reported valuing visual aids but had some difficulties filling out questionnaires. The authors responded to this feedback by making adjustments to the app to improve its functionality and usability.

Kenter et al., (2023) found that 79.1% of participants were very satisfied or satisfied with the *MyADHD* intervention, and 88.1% would recommend it to a friend. Similarly, Nordby et al., (2021) found that 80% of participants were mostly satisfied, satisfied or very satisfied with the same intervention, with participants rating their likelihood of continuing to use the techniques from the programme as 3.5 on a scale of 1-4. Participants fed back that they experienced some technical issues, and identified areas for improvement, such as the inclusion of therapist support and adapting the intervention into an app for easier access.

Finally, Shelton et al. (2022) investigated the acceptability of internet-based interventions in general, as well as the specific acceptability of three versions of the same internet-based psychoeducational intervention. They found that 59% of participants indicated they would prefer an internet-based intervention over a face-to-face treatment, and that 91% of those that would prefer face-to-face treatment would still find an internet-based intervention acceptable. Of those preferring internet-based treatments, 73% preferred the idea of guided rather than unguided treatments. In terms of the specific psychoeducation intervention, there were no significant differences on any acceptability or credibility outcomes when comparing the tailored and full conditions. When comparing tailored and minimal conditions, those in the tailored condition reported higher treatment acceptability and relevance.

Engagement

Three studies reported outcomes related to engagement, including retention, adherence, and engagement.

Ahlers et al., (2022) found that low levels of adherence, with an average 2.1 modules completed out of a possible eight. Further, approximately a third of participants dropped out after completing one module.

Carvalho et al., (2023) found that those who used *FOCUS ADHD* and received a medication discount had significantly higher engagement compared to the app only group in terms of the number of times that medication intake was inputted, and that this decreased over time.

Finally, Nordby et al., (2021) found that 54% of participant completed all three available modules of the *MyADHD* tool, and the average number of completed modules was 1.85 (SD 1.3). Non-completion was due to illness, stressful life events or busy schedules.

Qualitative studies

Three qualitative studies investigating psychoeducation digital self-management were included.

The themes found by Flobak et al. (2021) were predominantly focused on the acceptability of the video vignettes that were developed as part of the *MyADHD* web-based modular course. The first theme, “‘You can see the experience’ – recognising ADHD related challenges” describes how the situations and challenges presented in the videos resonated with participants. Similarly, the second theme, “Relating to the characters and their situations”, describes how participants also related to the characters depicted in the videos, both socially and emotionally. Finally, the theme “Video protagonists as companions and role models for change” describes how the videos provided participants with role models that acted as motivators for change, as well as providing comfort in their situations and struggles being recognised.

Luiu et al. (2018) identified three themes from interviews which took place after participants used the app for 20 minutes. The themes included: “Perceived helpfulness”, which described how helpful participants thought the app may be, as well as identifying other areas they would like information about; “Ergonomics”, which described issues around content length, the use of images or videos, and incorporating feedback; and “Willingness to use”, which identified features that may increase app engagement, such as having playful aspects and helpful tips.

Finally, Seery et al. (2025) conducted interviews with users of the *Adult ADHD App*, and identified four themes, including “An evidence-based tool for ADHD”, “Recommendations for ADHD friendly adaptations”, “Meeting the needs of different stages”, and “Perception of public services impacts app experience”. The first theme described how participants felt the app was a source of trustworthy and evidence-based psychoeducation, and how helpful this was for participants. The second theme described suggestions made by participants for further improvements, such as improved app navigation and structure, incorporating gamified elements, and using colourful graphics. The third theme reflected when participants felt they would benefit from using the app, with some saying it would be most beneficial at the start of the ADHD journey, and others saying it would be helpful in moments of struggle. Finally, the fourth theme considered the app in the context of a frustrating system in Ireland, where participants face difficulties accessing services and support.

Cognitive training

Three studies investigated the effect of cognitive training. Two used the same cognitive training programme, *Cogmed*, while the third used a programme called *AttenFocus*. All three studies used RCT methodology, though the control groups differed, with two using a placebo version of the training programme, while the third compared a standard-length cognitive training intervention, a shortened version, and a waitlist control comparison.

ADHD symptoms

Both Mawjee et al. (2015) and Stern et al. (2016) assessed ADHD symptoms using the ASRS, and found a significant time effect (i.e., scores improved over time), however no significant differences between groups (i.e., intervention and control groups improved equally). Dentz et al. (2020) found no significant effects on the CAARS or the Brown Attention Deficit Disorder Scale, indicating that ADHD symptoms did not differ between groups or across time points.

Clinical outcomes

Stern et al., (2016) assessed the impact of *AttenFocus* on ADHD-related quality of life. They found that both groups had small, non-significant improvements, with no significant differences between groups.

Other outcomes

All three studies assessed the impact of cognitive training on measures of cognitive function, such as working memory and executive function. Dentz et al., (2020) assessed two measures of verbal working memory, visual working memory, and nonverbal reasoning. All measures showed an effect of time (i.e., scores in both groups improved over time), however this improvement was only significantly better in the intervention group for visual working memory and one measure of verbal working memory. They also assessed executive function and found no significant effects. Mawjee et al., (2015) also found mixed effects of *Cogmed* on cognitive outcomes. They tested seven measures of working memory and after statistical adjustments and corrections, found that only two of these showed statistically significant effects, with intervention groups performing better than the control group. Mawjee et al., (2015) also assessed cognitive failures, executive function deficits in everyday life activities, maths and reading fluency and perseverance of effort, with no significant differences between groups. They found a significant effect for the ability to adopt an efficient strategy when completing a working memory task, with those in the standard-length group performing better than the shortened version and the waitlist control groups.

To assess the impact of *AttenFocus* on cognitive outcomes, Stern et al., (2016) assessed working memory, sustained attention, inhibition, intrusions, response variability, fluency, and executive function found small and non-significant time effects for all outcomes except the sustained attention domain and executive function measures, for which both groups significantly improved with medium to large effect sizes. There were no significant differences between groups for any outcomes. They also assessed occupational performance and again found that both groups improved with no statistical difference between groups, although the difference was clinically significant (23.1% improved in the intervention group compared to 7.7% in the control group).

Acceptability

Mawjee et al., (2015) reported participant feedback regarding the acceptability of the *Cogmed* intervention. Most participants reported that the training experience had been either unequivocally good or mostly positive (53% of the standard-length training group and 63% of the shortened version). Five of the 65 participants who received either version of the intervention reported that it had been a completely negative experience. Some negative feedback included that the training could be frustrating or tedious and was a big commitment that became a chore once the novelty had worn off. On the other hand, some participants reported that the intervention was interesting, easy to use, and a good overall experience. Only 41% of the standard-length group and 57% of the shortened group thought that the training had beneficial effects, such as improved ability to remember numbers (e.g., phone numbers), better able to focus, and improved organisation.

Engagement

Mawjee et al., (2015) also reported metrics relating to engagement and attrition. They found that both groups completed a similar number of sessions (24.68 in the standard version versus 24.84 in the shortened) and completed a similar number of coach calls (76% versus 83.9%). Overall, 12.3% of participants withdrew from the study, with less participants in the standard-length group completing the intervention (78.1%) compared to the shortened version (93.9%) and the waitlist control group (90.6%). Stern et al., (2016) also assessed attrition, and found that 76.5% of the intervention group completed the training, compared to just 50% of the control group. Of those who did complete the training, time spent doing the training was similar between groups (11 hours versus 10 hours 23 minutes).

Self-help CBT

Pettersson et al. (2017) assessed an internet-based self-help CBT programme called *In Focus*, which focuses on teaching techniques for dealing with ADHD-related difficulties, such as mindfulness, behaviour analysis, time management, organisation and planning and cognitive restructuring. This was compared to a group who undertook a non-self-management version of the internet-based CBT programme, where participants followed the same programme but in the context of group therapy. Both groups were compared to a waitlist control comparator group.

ADHD symptoms

Results showed that the self-help group had significantly less severe ADHD symptoms post-intervention compared to the waitlist control group, while there was no significant difference between the self-help and group-based groups. The improvements seen in the self-help group appeared to be sustained at the six-month follow-up time-point.

Clinical outcomes

Pettersson et al., (2017) also assessed depression, anxiety, and quality of life. For all these outcomes there was no significant differences found between the three groups.

Other outcomes

Occupational performance and occupational satisfaction were assessed with no significant differences between the three groups. However, there was a trend towards significance on

one of the subscales measuring performance, with the group-based group showing higher scores than waitlist controls.

Engagement

The proportion of drop-out before starting the programme was higher in the self-help group (31%) compared to the group-based group (0%), as was the overall drop-out rate (77% versus 50%). However, the average number of modules completed (6.11 versus 6.93), and the proportion of participants completing all nine modules (46% and 50%) was similar between the two groups.

Information giving

Three studies investigated information-giving interventions, including two that reported on the same intervention. Glickman (2015a;b) reported a feasibility study and a non-comparative follow-up study on a website designed to provide tools, social support, and evidence-based advice for college students with ADHD. The third study looked at the *My Friendly Mind* app, a digital health tool that screens users' mental health and ADHD symptoms, provides a score and interpretation, and then delivers tailored educational content and management recommendations (Shahsavari et al., 2024).

ADHD symptoms

The comparative study by Glickman (2015b) involved 11 participants accessing the website for three consecutive weeks, and four participants who accessed a control website for the first week, and then the intervention website for the following two weeks. When comparing ADHD symptom scores at different time points for all 15 participants, there was a significant improvement in scores from pre- to post-intervention which was sustained to follow-up. When comparing the first week only between the intervention and control groups ADHD symptoms in both groups decreased (statistical significance tests were not performed so it is unclear whether there were between group differences).

Clinical outcomes

Glickman (2015b) also assessed quality of life and coping. They found no significant differences between scores over time for quality of life in the total cohort. When comparing the two groups who received different interventions for the first week, there was a marginal decrease in perceived quality of life in the intervention group, whereas the control group remained stable. Again, no statistical tests were performed when comparing the two groups. In terms of coping, there were significant improvements from pre-intervention to follow-up. When comparing the two groups, both groups appeared to improve.

Other outcomes

Shahsavari et al., (2024) assessed the impact of the app on participants' knowledge of both ADHD and depression. Scores for both significantly increased, demonstrating an increase in knowledge. There was also a significant increase in the perception of the importance of knowledge about these topics.

Acceptability

All three studies provided qualitative data on acceptability. In their initial feasibility study, Glickman (2015a) found that participants liked reading materials that discussed and resolved

issues that they'd encountered themselves, those that discussed daily routines and activities, and learning materials and forums that talked about ADHD management skills. However, they also reported repetitive information provided in various links, found some aspects were unneeded, and wanted more personal stories from those with different types of ADHD, as well as interactive tools. In their follow-up study, participants reported that they liked the use of videos, links and tips for different types of ADHD, however disliked wordy survey questions and reported some technical difficulties (Glickman 2015b). They also wanted to see more interactive features and additional resources and tools, such as a visual academic planner.

Shahsavari et al., (2024) looked at the acceptability of the *My Friendly Mind* app and found that participants generally found the app user-friendly and they liked the educational videos which were informative and concise. They also liked that the app acted as a preliminary step before seeking professional help, highlighting the potential for early diagnosis and how it might encourage users to seek help. However, some felt that the app needed to ask more questions before making an assessment, and found the videos "lacked a human touch".

Attention monitoring

The *Focus Check* app allows students to self-monitor on-task attention during lectures or independent reading (Gibson, 2015). The app works by reminding students to record on-task and off-task attention in 10-minute intervals, so that they can quickly monitor and adjust (when needed) their focus, with the aim of providing an independently administered learning tool for attention regulation. The app was evaluated using a mixed-methods design with a waitlist control comparison group, in students who identify as having attention difficulties, with 31.3% having likely ADHD.

ADHD symptoms

ADHD symptoms were assessed using the BAARS. In the overall cohort, results showed that those in the *Focus Check* group had significantly improved symptoms on two subscales (inattention and sluggish cognitive tempo) compared to the control group, but there was no difference between groups in impulsivity of hyperactivity (both groups significantly improved). Mind-wandering was also assessed, with a similar pattern where both groups improved over time but with no significant differences between groups. Gibson (2015) also carried out a sensitivity analysis of just those participants with likely ADHD. This showed similar findings, with the app group demonstrating significantly improved symptoms compared to the control group in terms of inattention, sluggish cognitive tempo and mind-wandering, but no significant differences for hyperactivity or impulsivity.

Other outcomes

Gibson (2015) also assessed students' self-efficacy, metacognitive self-regulation, and effort regulation using subscales of the Motivated Strategies for Learning Questionnaire, and activation control and effortful attention using items from the Effortful Control Scale. In the overall cohort, there were no significant differences in terms of change in scores over time or between groups for any of the outcomes, although both groups showed improvements over time in effortful attention. Results were similar in the sensitivity analysis, with no significant differences between groups or over time for effort regulation and activation scores. There was a significant effect for academic self-efficacy, with the app group showing greater improvements over time compared to the control group. For the remaining subscales,

metacognitive self-regulation and effortful attention, both groups improved over time but with no significant differences between groups.

Acceptability

Acceptability for the *Focus Check* was good, with 92% of intervention participants indicating that they found the app either helpful or very helpful. A high proportion of participants also reported that the app was easy to use (78%), somewhat to very enjoyable to use (77%), and most found it at least somewhat comfortable to use during lectures (83%) and while reading (85%). In terms of perceived effectiveness, 69% felt that the app had resulted in at least a 50% increase in their ability to maintain focus, while 14% did not feel that it had helped. Overall, 94% rated their experience of the app as somewhat to very positive. Most open-ended comments were positive, with a few indicating that the prompts themselves can sometimes be distracting or inconvenient.

Indirect evidence

The effects of the interventions providing indirect evidence on have been summarised in Table 7 and are discussed narratively below.

Reminders

Reminders have been included but classed as indirect evidence. This is because SMS reminders may not be considered as wholly self-management as they are facilitated by an external process. However, the SMS reminders are being used to help participants manage their ADHD, either by helping participants to remember to take their medication and pick up their prescriptions, or to engage in a psychoeducational self-management app, therefore they enable self-management. Two of the studies used non-randomised comparative methodology, comparing the SMS intervention group to a historical cohort who received usual care. The third used a multiple randomisation design, where those who had not completed their weekly module were randomised to either receive a reminder or not.

Other outcomes

Both medication reminder studies found that significantly more participants in the medication reminder intervention were engaged in treatment with their stimulant medication (defined as a stimulant prescription being issued within 37 days of the start date of the text messages) compared to the usual care control group (Biederman et al., 2020; Biederman et al., 2019). This difference remained significant in both studies when the window was widened to 45 days. Additionally, both studies found a number needed to treat value of three (i.e., for every three participants receiving SMS reminders, one will engage in their medication treatment for at least a month).

Engagement

Nordby et al. (2022) found that 56% of participants completed five of the seven modules. SMS reminders were associated with an increased likelihood of login but only for the second module and were not associated with module completion.

Table 7. Effect direction table summarizing direction of impacts from studies providing indirect evidence

Study (Tool name)	Design	Comparator	Quality	Sample size	Intervention duration	ADHD symptoms	Depression	Anxiety	QoL	Stress	Disability	Functional impairment	Other
Reminders													
Biederman 2019 (N/A)	NRC	TAU	High	552	At least 45 days	-	-	-	-	-	-	-	✓ ₁
Biederman 2020 (N/A)	NRC	TAU	High	448	At least 37 days	-	-	-	-	-	-	-	✓ ₁
Guided self-management													
Moell 2015 (LivingSMART)	RCT	WLC	High	57	6 weeks	✓	✓	↔	-	↔	↔	-	✓ ₂
Nasri 2023 (N/A)	RCT	Other DSM	High	73	12 weeks	↔	✓	-	↔	↔	✓	-	↔ _{2,3}
		TAU		67		✓	✓	-	↔	✓	✓	-	↔ _{2,3}
Selaskowski 2022 (AwareMe ADHS)	RCT	Active	High	43	8 weeks	↔	↔	-	-	-	-	↔	↔ ₄

DSM digital self-management; NRC non-randomised comparative study; RCT randomised controlled trial; TAU treatment as usual; WLC Waitlist control
 Effect direction: tick ✓ / green = positive impact, cross ✗ / red = negative impact, sideways arrow ↔ = no change (orange) or mixed effects (yellow). Note all mixed effects in this review were a combination of positive impacts or no change, no negative impacts were found.

Sample size: Final sample size (individuals) in intervention group – large arrow ✓ > 300; medium arrow ✓ 50–300; small arrow ✓ < 50

Other outcomes: 1 Engagement in medication; 2 Clinical Global Impression Scale; 3 Emotion regulation, Work ability and Satisfaction with life, Insomnia, medication changes; 4 User knowledge

Guided self-management

Guided self-management tools and interventions refer to a category of digital self-management that does not meet the criteria for being fully independent, as they involve the input of a healthcare professional in a substantial way (yet also involve a large self-management component). In these interventions, all participants access the healthcare professionals (compared to some self-management interventions where therapist input is not a core feature and/or is not routinely accessed by all participants), and this input is more substantial than initial set-up and checking on and/or promoting engagement in the intervention. Because of this key distinction, these interventions have been assessed separately to the rest of the evidence, while acknowledging that there is overlap between other intervention categories.

Three studies investigated the impact of various guided self-management interventions or tools. Moëll et al. (2015) conducted an RCT comparing *Living SMART*, an online intervention that involved support from a coach to find an everyday routine for organisation, and education regarding various apps that can support organisational skills and attention, to a waitlist control comparator group. Nasri et al. (2023) conducted a three-arm RCT, comparing an internet-based CBT (iCBT) intervention with an internet-based applied relaxation training intervention (iART), and a TAU comparator group. The internet-based CBT involved self-help modules that included educative materials, therapeutic techniques, exercises, and homework that are reviewed by a therapist before participants can progress to the next module. The relaxation training followed a similar structure, with modules that included psychoeducation, progressive relaxation, positive imagery, rapid relaxation and relapse prevention. Finally, Selaskowski et al. (2022) conducted an RCT comparing smartphone assisted psychoeducation (*AwareMe ADHS*) with brochure assisted psychoeducation. Both groups had eight one-hour group sessions that were led by two therapists. Following each session, the smartphone group received access to that session's module on an app, while the brochure group received written material. Both groups received identical homework.

ADHD symptoms

All three studies reported ADHD symptoms, and for the two that included a waitlist or TAU control group, there were significantly larger reductions in the digital self-management group(s) in all scales and subscales. When comparing iCBT to iART, Nasri et al., (2023) found no significant differences between the groups. However, when comparing smartphone-assisted and brochure-assisted psychoeducation, Selaskowski et al., (2022) found significantly larger reductions in the smartphone-assisted group in three of four IDA-R domains.

Clinical outcomes

All studies assessed the impact of the interventions on depression with varying results. Moell et al., (2015) found that the *Living SMART* group had significantly larger improvements compared to the control group, while Nasri et al., (2023) found that iCBT was more effective in improving depression scores than both the iART and the TAU control group. Selaskowski et al., (2022) found no differences between groups.

Moell et al., (2015) found no differences between groups in terms of anxiety, stress or disability. Nasri et al., (2023) found that iCBT was more effective at improving stress, disability, and satisfaction with life scores than both iART and the TAU control group, but found no

differences between groups for emotional regulation, work ability or insomnia. They also assessed quality of life and found a significantly larger improvement in the internet-based CBT group for ADHD related quality of life, but no differences in terms of the EQ5D, a measure of health-related quality of life.

Two of the studies measured the Clinical Global Impression scale as a measure of progress over time. Moell et al., (2015) found that 71% of intervention participants were rated as minimally improved, much improved or very much improved, compared to 14% of the control group. Nasri et al., (2023) found that iCBT showed superiority in this outcome over the control group while iART did not.

Finally, Selaskowski et al., (2022) assessed functional impairment, and found no significant differences between groups.

Other outcomes

Nasri et al., (2023) assessed medication changes, with similar proportions of participants across the three groups reporting a reduction in medication, stable medication or an increase in medication across the study period.

Selaskowski et al., (2022) assessed ADHD knowledge and found a similar proportion of correct quiz answers in the smartphone-assisted group (75.9%) and the brochure-assisted group (80.2%).

Acceptability

Acceptability seemed to be good in the two studies that assessed this. Moell et al., (2015) obtained feedback from participants and found that they were overall happy with the *Living SMART* course and found that it had been a good intervention that they found helpful. Some wanted more guidance and a longer treatment period, and some reported issues that made it difficult to participate, such as events in their personal lives, and a lack of time or energy.

Nasri et al., (2023) assessed treatment credibility and satisfaction in the two intervention groups, and found no differences at week one, but greater credibility in the internet-based CBT group at week five. There were no differences in terms of satisfaction.

Engagement

All three studies reported metrics relating to adherence and attrition. Moell et al., (2015) reported minimal drop-out in the intervention and control groups (10.3% versus 3.6%) and an average of 3.7 out of seven modules completed. Nasri et al., (2023) reported higher levels of drop-out at 3 months in the intervention groups (22.2% in the iCBT group, 16.2% in the iART) compared to the control group (3.2%). Module completion was similar in the intervention groups (7.3 and 6.8 out of 13), and across metrics the iCBT group had more contact (messages and telephone calls) with the therapist than the iART group. Selaskowski et al., (2022) found that the smartphone-assisted group had lower drop-out than the brochure group (20.0% versus 36.7%) and completed a greater proportion of homeworks (93.9% versus 66.2%), although the number of therapy sessions completed was similar (6.7 versus 6.9 out of eight).

Prototypes

Three studies described prototypes that have been described and tested for feasibility and/or acceptability with small numbers of participants. As these studies do not describe functional, testable digital self-management tools, they have been grouped together and should be given less weight when considering the body of evidence. However, they have been included as they highlight potential future avenues for digital self-management approaches and innovations.

Nordberg et al. (2019) described a guided chatbot-based support prototype, *Terabot*, that accompanied an online self-help programme for adult ADHD. The idea of the chatbot is to guide participants through the programme, using group chat sessions that encourage the participants to prepare for the programme's exercises and discuss experiences of the exercises. In this prototype evaluation, the researcher used scripts to act as the *Terabot*, and participant feedback was gathered.

In a similar vein, Ravishankar (2022) assessed a prototype AI-based dialogue partner for students with ADHD that aimed to provide insights into the users' mental health, encourage self-reflection, and provide assistance with ADHD related issues. The system involves collecting data from the users' smartphone, including physiological data, calendar information, social media app notifications, environmental data, and screen tracking, and using that data to respond to participant needs through a message-based conversation. The given example is that the system may detect an upcoming exam in the calendar and stress responses through the physiological data, and then provide insights regarding stress and organisational skills. For this prototype evaluation, the author developed app screens with limited functionality.

Finally, Patrickson et al. (2024) developed a prototype digital service model for ADHD care, that integrates clinician and patient systems. The model includes a clinical decision support tool and clinician dashboard, and an app for people with lived experience of ADHD which allows self-monitoring and psychoeducation. It can provide real time treatment recommendations and promote interaction between people with ADHD and clinicians. The evaluation involved testing of the app and dashboard using prototype display screens, and interviews with participants to understand their thoughts about the system, as well service innovation needs more generally.

Acceptability

Norby (2019) gave participants a user experience questionnaire and asked for open-ended feedback. The questionnaire suggested average to high acceptability across the statements, with ratings of between 4 and 7 out of seven. Participants particularly enjoyed speaking to others with ADHD who they could relate to, and being forced to formulate plans to practice the programme exercise, and described the *Terabot* as nice and helpful, however some struggled with having set times for chats given that they struggle to be on time, and felt that the chatbot moved the conversation on too quickly sometimes. They also suggested having a "like" button to easily acknowledge what someone else had said.

Ravishankar (2022) found that acceptability was generally good, with participants particularly positive about receiving insights about stress and distractions, and finding the messages friendly and trustworthy, although some participants had concerns about the amount of data being collected. Feedback from a psychiatrist however was that while the idea had potential

in terms of improving monitoring and independence, there was scepticism regarding its feasibility of both the system as a whole, and the specific therapy recommendation aspect as a replacement for in-person therapy.

Patrickson et al., (2024) identified several key barriers and enablers to their innovation. Enablers included empowerment and validation, with participants reporting potential benefits of a self-monitoring and guidance tool such as enhanced well-being and quality of life, giving them more control and responsibility for themselves. They felt that the system gave them support in terms of the guidance and in clinical conversations. Key barriers included privacy and data security concerns, echoing feedback from the Ravishankar study, highlighting the need for robust and transparent processes. Participants felt that the app improved accessibility, however noted room for improvement in terms of ensuring the app is user friendly for all abilities, making sure it is visually appealing, and having options for tailoring and customisation.

Thematic synthesis

Thirteen studies collected and/or reported qualitative data and were included in the thematic synthesis. Four were strictly qualitative studies, while the remaining nine were mixed methods studies that included brief interviews, open ended surveys, or other forms of qualitative feedback. The synthesis included evidence from five psychoeducation interventions, three prototype interventions, two information focused interventions, one cognitive training intervention and one guided self-management intervention.

The synthesis resulted in six themes, each with up to four subthemes. These are summarised in Appendix 4. Figure 2 depicts the key themes, subthemes, and some of the key study findings.

Theme 1: Tool presentation preferences

Use of visuals: Participants enjoyed apps and websites that had good visuals, including the use of colours, and images and videos. A common suggestion for improvement was to have more visual materials and less text, provided visuals are clear and not confusing. Some participants however found that too many colours or images was distracting.

Concise, easy to understand information: Participants preferred information that was concise and easy to understand. A common criticism of apps or websites was information that was repetitive, questionnaires or text that was too lengthy, or information that was too vague: *“...having too many questions on a single page can be overwhelming and distracting, especially for someone with ADHD like me”* (Patrickson et al., 2024). In line with the previous subtheme, participants often wanted less text to read and more images or videos. On the other hand, concise yet informative information was praised: *“The videos were all very informative and none of them overstayed their welcome in terms of length.”* (Shahsavari et al., 2024).

Interactive elements: Participants suggested more interactive features as a way to improve the interventions, such as games, forums or quizzes. This is linked to the later subtheme, enabling engagement, as interactivity may improve intervention usage: *“As long as it triggers my curiosity, like true/false game for example, I will use it...”* (Luiu et al., 2018). For interventions that already included interactive elements, this was often seen as a positive.

Tailoring: Participants responded positively to features that allowed tailoring or personalisation and tailoring was often suggested as an improvement for those lacking this feature. Participants wanted tools that could cope with complicated treatment regimens and nuanced life experiences. This again relates to the subtheme, enabling engagement: *“The questions should resonate with my experiences and challenges. If the tool seems generic or not applicable to my specific situation, I might lose interest.”* (Patrickson et al., 2024).

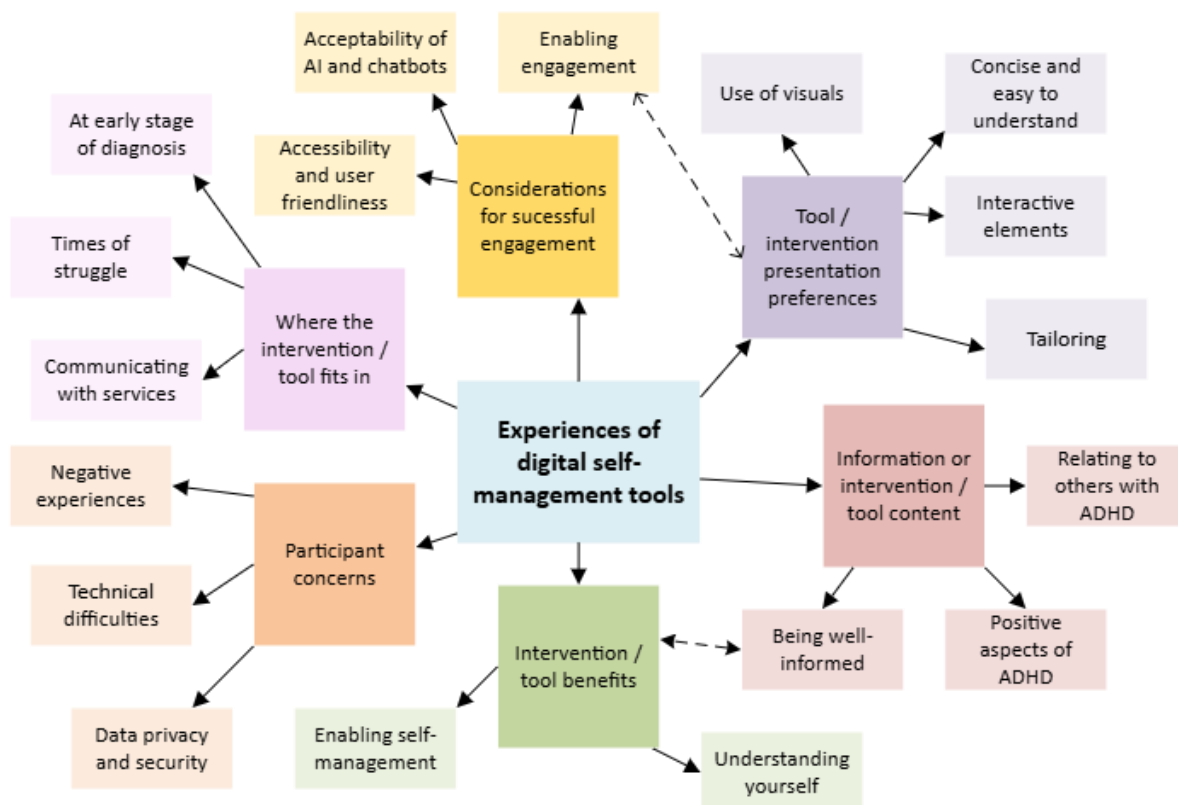


Figure 2: Overview of themes, subthemes and key findings

Theme 2: Information or intervention content

Relating to others with ADHD: Participants appreciated interventions that included vignettes, videos, or stories from or about people with lived experience of ADHD. Interventions that involved vignettes benefited from being designed in partnership with people with ADHD to ensure authenticity and relatability. Participants reported benefits such as realising they are not alone, being motivated by seeing how others with ADHD cope, and learning about different types of ADHD from those who have it: *“It has actually been a huge relief to find out that there are others who have it just like you; you are not as unique as you thought!”* (Flobak et al., 2021). A lack of content on lived experience was identified as a limitation in one study.

Being well-informed: There are a lot of sources of information on ADHD, and participants felt that they did not always know which ones to trust: *“Going online... at first, it felt awesome because so much clicked, like, “that’s me!”. But the more I dug, the more overwhelmed I got. There’s so much info, and it’s not all clear or trustworthy”* (Patrickson et al., 2024). Many saw the apps and websites as sources of reliable, trustworthy information. Additionally, participants

saw improvements in their knowledge about ADHD as a benefit of the intervention, and felt that being informed could benefit their self-management. Participants sometimes wanted more information and feedback on performance, and suggested specific topics such as emotional issues, attention, and information for their family and friends to support them better.

Positive aspects of ADHD: Interventions that used positive language to describe ADHD or that highlighted positive experiences were praised by participants, while those that used negative language like “problems” saw this as a drawback: *“I do not recognize myself in having problems, I might have challenges, not problems.”* (Kenter et al., 2022).

Theme 3: Intervention benefits

Understanding yourself: Benefits of the interventions included participants having greater insight and an improved understanding of ADHD, which allowed them to understand themselves better, and in turn may lead to more self-compassion: *“So huge relief that I wasn’t mad, or loser or some sort of just weirdo... It’s been really, really positive.”* (Seery et al., 2025).

Enabling self-management: Many participants also reported impacts in terms of improved self-management, which came from increased motivation, learning new self-management skills and techniques such as mindfulness practice, and feeling empowered by having more information and by feeling supported: *“Getting insights on my health and comparing it with how I was doing last week can be a game changer. It’s like having a reality check. It’s not just about the data; it’s the empowerment that comes with it, making me think twice about my choices.”* (Patrickson et al., 2024). Many participants rated app features that contributed to self-management, such as alarms, tracking records, routine management and daily check-ins, positively. In studies of interventions without such features, they were often suggested as routes for improvement.

Theme 4: Participant concerns

Data privacy and security: Two of the prototype interventions involved a large amount of data collection, including sensitive data, such as symptom assessments, location data and social media notifications. For both of these prototypes, some participants had concerns regarding the security of their data: *“...are any of us safe in this digital world? It feels like our security is hanging by a thread sometimes.”* (Patrickson et al., 2024). To address this, they wanted transparent and robust privacy and data security processes, and to be provided with an explanation of how their data is being used.

Technical issues: A number of studies reported that participants experienced technical issues or usability difficulties when interacting with the interventions. These included issues logging in, issues saving data, and confusion about how to navigate the interface. This is demonstrated by this participant quote in a “think aloud” session that noted participants thoughts while they interacted with the intervention, and demonstrates the need for easy to navigate functionality: *“Did I save this now? I am not sure, can I go back? How do I check this?”* (Kenter et al., 2022).

Negative experiences: Some participants experienced negative effects as a result of the interventions or reported a negative experience of using them. For instance, while participants liked lived experience content, it may be triggering for those who resonate with the difficulties described: *“I thought this video was painful to watch, I cried afterward.”* (Flobak et al., 2021).

Some found the interventions themselves difficult or tedious. For instance, a participant who took part in a cognitive training intervention described the training as “tedious”, saying “[the] games were fun at first but lost their novelty and became a chore.” (Mawjee et al., 2015). Some found the experience frustrating, not because of the intervention itself, because it reminded them that the ADHD system is frustrating to work through: “Like because the way the system is here and the waitlists are so long and so on it just frustrates me, because of the system, not because of the app...” (Seery et al., 2025).

Theme 5: Considerations for successful engagement

Enabling engagement: Many participants described barriers and enablers to engaging with the interventions. For instance, some barriers to adherence with the self-help CBT programme included lack of energy or time or personal issues which made it hard to focus, while participants in the chat-based prototype study found it difficult having a set time that they needed to participate in. Those undergoing cognitive training found the five-week programme a big commitment. Some participants discussed features that might enhance engagement, which included having reminders or push notifications: “Reminders like that’s like a massive thing like even for me.”, (Seery et al., 2025), or having structured stages that are worked through in order: “But I think if it had been sort of like and then for less lesson plans or little stages that a little nugget opened each step at a time, so lesson one, then into lesson two. I think I would have been much more likely to go back on, because I would say ‘right, I’ve done this section, I need to do the next one.’” (Seery et al., 2025). However, other participants did not like the idea of reminders: “...I forget they exist. I get annoyed at the reminders because I do get pathological demand avoidance, where... as soon as it told me I have to do it, I can’t.” (Patrickson et al., 2024).

Acceptability of AI and bots: The studies using AI and chatbots as part of the intervention assessed their acceptability. Participants in both chatbot based studies found the chatbots acceptable, describing them as friendly and empathetic, although several participants found the conversations unnatural. It should be noted that the chatbot used in the Nordberg (2019) prototype study was not functional and the author used scripts to play the role of the chatbot rather than an actual chatbot. On the other hand, an intervention that incorporated generated videos was described as lacking a human touch: “Honestly the biggest suggestion is just making speakers a little bit more human like.” (Shahsavari et al., 2024), suggesting that chatbots may be more acceptable than AI generated speech.

Accessibility and user friendliness: Participants highlighted two key issues relating to accessibility. Firstly, many noted that apps in particular, increased the accessibility of information and self-management: “I don’t like to go out unless I must, and with my family living 200 km away, I’m on my own a lot. This app can be a lifesaver, allowing me to assess myself.” (Patrickson et al., 2024). Similarly, participants of a web-based intervention suggested that there should be an app to improve access. Secondly, the accessibility of the app itself was mentioned, with participants noting that apps need to be intuitive and user friendly for a range of abilities. Apps that were user friendly were praised for this aspect.

Theme 6: Where the intervention fits in

Participants discussed when the various interventions would benefit them the most. For instance, participants testing a psychoeducation app talked about how useful it would have been to have when they were first diagnosed, as a starting point for learning more about

ADHD: *“If I put myself into my shoes like when I had been diagnosed like this would have made a big difference.”* (Seery et al., 2025), while others saw it as a resource to access when they are particularly struggling: *“So you’d normally go into it – well for me anyway – I’d go into it when I really like I’m really struggling with something.”* (Seery et al., 2025). Others saw the interventions as a potential way to communicate with their GPs outside of appointments and to support their clinical conversations: *“It’d be even better if I could log and track my feelings, sleep, and other symptoms to see if my medication is working. And ideally, share it with my GP... I wish I could communicate with my GP in this app.”* (Patrickson et al., 2024).

5. Conclusions

Summary of findings

An overview of the findings for each digital self-management category is provided in Table 9, and for each commercially available app or online intervention in Table 10. In brief, evidence for digital self-management in the adult ADHD population is mixed, with studies suggesting either benefits of digital self-management or no difference in outcomes between digital self-management groups and control groups. No study showed any negative effects of digital self-management on any of the key clinical outcomes, while a small number reported some minor negative effects. Therefore, overall digital self-management appears to be acceptable and potentially beneficial for adults with ADHD.

Table 9: Summary of findings for each digital self-management (DSM) type

DSM type	Summary of findings
Psychoeducation	There were promising but mixed results. Several apps (MyADHD, Tokadi, NUMO, Inflow, CANreduce) demonstrated significant reductions in some ADHD symptoms, while others (FOCUS ADHD, AwareMe ADHS) showed improvements without differences compared to controls. Evidence for clinical outcomes such as quality of life, depression, anxiety, and stress was inconsistent with some measures or subscales showing no difference and others suggesting a potential benefit. Acceptability was mostly positive, with moderate to high usability and satisfaction ratings, though some technical issues and low levels of adverse effects reported. Engagement varied, with incentives like medication discounts improving participation, but drop-out rates remained a common challenge.
Cognitive training	Results showed limited impact on ADHD symptoms, with improvements over time observed in both intervention and control groups but no significant differences between them. Clinical outcomes such as ADHD-related quality of life also showed small, non-significant improvements. Cognitive outcomes were mixed: some measures of working memory and sustained attention improved significantly in intervention groups, while most other domains showed only time effects or no differences. Occupational performance improved in both groups, with a clinically but not statistically significant advantage for the intervention group. Acceptability was generally moderate, with many participants reporting positive experiences but others finding the training tedious or burdensome. Engagement data from two studies suggested that around 75% of participants complete cognitive training programmes.
Self-help CBT	Self-help CBT may be better than being on a waiting list for ADHD symptoms, but there was no difference when compared to group CBT. There were no differences between any groups in terms of depression, anxiety, quality of life, and occupational performance. Levels of drop-out

	and non-completion were relatively high suggesting potential issues with engagement. Drop-out was consistently higher in the self-help group.
Information giving	Evidence from a single, very small study suggested that information giving may improve ADHD symptoms over time, though group differences were unclear due to limited statistical testing. Clinical outcomes such as quality of life showed no significant changes, while coping improved over time. A second medium sized study found potential benefits for improving knowledge. Acceptability was generally positive, although some issues were reported and there was a desire for more interactive features and personal stories.
Attention monitoring	Evidence from a single small study found mixed findings in terms of ADHD symptoms, with significant improvements inattention and sluggish cognitive tempo in the Focus Check group, while both groups improved similarly in hyperactivity, impulsivity, and mind-wandering. Academic self-efficacy improved more in the app group, though other outcomes such as self-regulation, effort regulation, and effortful attention showed only general time effects without group differences. Acceptability of the app was good, with high ratings for perceived helpfulness, enjoyability, and overall experience.
Indirect evidence	
Reminders	High quality evidence from two large studies found a benefit of medication reminders on engagement in medication. One study found that reminders to use a psychoeducational app were generally not associated with increased app usage or module completion.
Guided self-management	Two of three studies found benefits of guided self-management interventions on ADHD symptoms when compared to a waitlist control or TAU. When compared to an active control group or another form of digital self-management, there were either no differences between groups or mixed findings. There were no differences between groups in terms of anxiety, functional impairment and ADHD knowledge. For stress and disability outcomes, one study found no differences between groups, and one found potential benefits of guided self-management. There were no differences between groups for emotional regulation or work ability, while there was a potential benefit of guided self-management in terms of satisfaction with life. Acceptability was good, while two out of three studies reported moderate to high levels of drop-out and varying levels of module completion.
Prototypes	All three prototype studies collected qualitative data relating to feedback on the interventions and participants experiences of interacting with the prototypes. Across the studies, acceptability appeared to be good, although all participants noted some concerns or areas for improvement.

Table 10. Summary of findings for each named app or online intervention

Tool details	Summary of findings
Adult ADHD app • Psychoeducation • 1 study • High quality	Qualitative evidence suggested good acceptability of the app, with recommendations for improvements that may improve usability and engagement.
AttenFocus • Cognitive training • 1 study • High quality	Evidence from a single study of 60 participants suggested no effect on ADHD symptoms, executive function and neurocognitive assessments in comparison to a limited control version of the programme. Occupational performance improved clinically but not statistically more in the intervention group. Engagement was moderate.

Tool details	Summary of findings
AwareMe ADHS • Psychoeducation • 2 studies • High quality	When compared to non-digital self-management (brochure-based psychoeducation), there were mixed findings in terms of ADHD symptoms, with benefits of AwareMe ADHS for some domains and no difference between groups for others, and no difference between groups for depression, functional impairment, or ADHD knowledge. There were also benefits in terms of lower drop-out and greater module completion. When compared to a chatbot version of the intervention, there were no differences between groups in ADHD symptoms, depression, anxiety, stress or most quality-of-life domains. Acceptability was moderate, with feedback highlighting positives and areas for improvement.
CANreduce • Psychoeducation • 1 study • Medium quality	ADHD users showed significant symptom reductions, while non-ADHD users did not. Both groups improved in depression and anxiety. The app also reduced cannabis use, dependence, and disorder scores. Acceptability was mixed, with 20% reporting adverse effects. There were no differences between those with and without ADHD in terms of retention and module completion.
Cogmed • Cognitive training • 2 studies • High quality	ADHD symptoms improved over time but not more than control. Cognitive outcomes were mixed: some measures of working memory showed significant benefits in the intervention groups, while most other domains, including executive function, nonverbal reasoning, and everyday cognitive failures, did not. Acceptability was moderate, with many finding it positive, though some reported frustration and limited perceived benefits. Engagement was generally good, with most participants completing sessions.
FOCUS ADHD • Psychoeducation • 1 study • Medium quality	Evidence suggests no differences between the FOCUS ADHD app, the app plus a medication discount, or TAU in terms of ADHD symptoms. Usability of the app was moderate to good, and engagement was higher in the combined app and discount group. Medication adherence was strong.
Focus Check • Attention monitoring • 1 study • High quality	There were mixed findings for the effectiveness of FOCUS ADHD on ADHD symptoms, with significantly better improvements in scores for three of the five subdomains measured. There were no differences between groups in measures of effortful control, and mixed findings for the subdomains of the motivated strategies for learning questionnaire, a measure of self-regulated learning. Acceptability of the app was good, with high ratings for perceived helpfulness, enjoyability, and overall experience.
In Focus • Self-help CBT • 1 study • High quality	When compared to a waitlist control group, there was evidence of a benefit for ADHD symptoms, and no differences between groups for depression, anxiety, quality of life and occupational performance. When compared to group CBT, there were no significant differences between groups for any outcomes. Engagement was lower in the self-help group, with higher drop-out rates, though module completion rates were similar to group-based CBT.
Inflow • Psychoeducation • 1 study • High quality	Evidence from a medium sized single arm study of high quality showed significant improvements in both ADHD symptoms and functional impairment over time. Overall usability was rated highly.
Living SMART • Guided self-management • 1 study • High quality	Evidence suggested a potential benefit of the Living SMART intervention compared to a waitlist control in terms of ADHD symptoms and depression, but no differences between groups for anxiety, stress or disability scores. Qualitative feedback suggested the intervention was acceptable, with some suggestions given for further improvement.
My Friendly Mind • Information	ADHD and depression knowledge significantly increased, along with recognition of the importance of knowledge. Acceptability was generally positive, with participants finding the app user

Tool details	Summary of findings
1 study - Medium quality	friendly and informative, however there are areas for improvement.
MyADHD - Psychoeducation 5 studies - High quality	Evidence from a single arm study found improvements in ADHD symptoms over time for total ADHD symptom scores and inattention, but not hyperactivity. Evidence from a medium sized RCT found benefits of MyADHD compared to digital psychoeducation without exercises or audiovisual content for both overall scores and both sub-measures. In both studies, there was either no differences between groups or over time or there were mixed findings, for all remaining outcomes. Acceptability of the intervention seemed good, with high satisfaction ratings across studies. An early feasibility study suggested that usability could be improved, and authors adjusted the intervention accordingly.
NUMO - Psychoeducation 1 study - Low quality	High-intensity daily users showed significant ADHD symptom reductions, while low-intensity users showed minimal change, although evidence was low quality.
Terabot - Chatbot prototype 1 study - Medium quality	Evidence suggested moderate to good participant acceptability of the Terabot prototype, with some suggestions for future improvement. User experience questionnaires showed moderate to very good user experiences, and qualitative feedback identified both positive and negative aspects of the prototype. As this was a prototype study, clinical efficacy was not assessed.
Tokadi - Psychoeducation 1 study - Medium quality	Evidence suggests a benefit of the Tokadi chatbot on some ADHD symptoms compared to a self-help book, but no differences for depression, anxiety or stress. There were low levels of adverse effects, average satisfaction ratings. Users appreciated the chatbot's empathy but noted repetitive content and technical issues.

Note: This table doesn't include summaries of the nine tools that are not named

Evidence gaps

In terms of the outcomes of interest for the review, we **found no evidence that assessed outcomes relating to health resource use**, such as impacts of digital self-management on access to services, the number of in-person appointments, or outcomes relating to freeing up staff time. Therefore, we cannot draw conclusions regarding the impact of digital self-management for adult ADHD on this aspect of the NHS 5- and 10-year plans. However, there is some evidence from the qualitative data suggesting improved access to information and management resources, and improved patient empowerment, two other key goals of the plan (UK Government & NHS, 2025).

Most of the identified evidence included adults already with a diagnosis of ADHD, many of whom were taking ADHD medication. There was very limited evidence for those with suspected ADHD, who were either waiting for a diagnosis or not seeking a diagnosis. As such, the findings of this review may not be generalisable to adults with suspected by not confirmed ADHD. It is possible these digital self-management interventions may be more effective in adults who do not have access to medication as their symptoms may be greater and therefore there may be more room for improvement. On the other hand, it is also possible that adults with undiagnosed, unmedicated ADHD may not be able to glean as much benefit from self-management interventions while their symptoms are unmanaged because symptoms may be too severe to make the most of self-management tools. More research on those on assessment waiting lists, or subgroup analyses of existing data comparing those taking and

those not taking medication, may be beneficial to address this knowledge gap. Relatedly, while there was evidence for digital self-management as an adjunct to medication compared to medication only, which demonstrated possible benefits, we do not have evidence for digital self-management plus medication compared to digital self-management alone, therefore we are unable to ascertain whether digital self-management has benefit for those not taking medication.

Finally, there is **a general evidence gap** in this space, particularly for commercially available applications (apps). In their 2020 review, Pasarelu et al., searched for apps designed for ADHD that were available on iTunes iOS (Apple App Store), Android (Google Play) and the NHS Apps Library, as well as the academic literature. They identified a total of 110 relevant apps (96 that focused on treatment or treatment and assessment), but only one academic study assessing the efficacy of an app, and this was an app designed for children with ADHD. Of the four most downloaded apps identified in the review, three apps had been downloaded over 10,000 times, while one had been downloaded between 100,000–500,000. This demonstrates the popularity and accessibility of digital self-management apps, however also highlights the need for research to assess the safety, efficacy and effectiveness of these apps.

Strengths and limitations

To our knowledge, this is the **first systematic review to assess the effectiveness of digital self-management interventions for adults with ADHD specifically**. The review builds on and extends previous similar reviews that focus on younger populations such as children or young adults specifically and goes a step further than previous scoping reviews by assessing the evidence of effectiveness. A major strength of this review is the **inclusion of both quantitative and qualitative studies**, which allows us to assess the quantitative effectiveness of digital self-management interventions and tools, while ensuring that the experience of people with ADHD and their voice is heard.

There are however several limitations to this review that should be recognised when considering the review findings. Using **rapid systematic review methodology** means that the review has a number of compromises that allowed for the rapid timeline required. While these are well considered and recognised compromises that are recommended in rapid review guidelines, these compromises do restrict the robustness of the review and interpretation of the results should acknowledge this. For example, we **could not conduct grey literature searches**. It is possible that some digital technology innovators have assessed the effectiveness of their ADHD digital self-management technologies and published the results on company websites; these would not have been identified by the search strategy. Further research could extend and complement this review by conducting thorough searches of the grey literature for evidence published outside of the academic publishing routes.

Secondly, the **included studies were very diverse**, with a variety of intervention types, study designs, and comparator types, making comparison and synthesis challenging. There is also a lack of consistency across studies in how ADHD symptoms are assessed. This review identified nine different measures of ADHD, and within these, some studies reported subscale scores while others reported overall scores. Together, this inconsistency meant that **meta-analysis was not possible**, reducing the robustness and power of the review's findings and conclusions. This variation also makes it challenging to untangle exactly what conditions, which specific digital self-management tools perform best in. There is a need to continue to

build the evidence base, with researchers giving careful consideration to what their digital self-management tool is compared to, how outcomes are assessed, and what study designs provide the most robust evidence, which will in turn allow for robust meta-analysis in the future.

Relatedly, and as evidenced by Pasarelu et al., (2020), there are **many apps and technologies that exist and can be accessed and used by people with ADHD that were not able to be included in this review because they do not have published evidence**. Given the fast-paced nature of this area, the number of available digital self-management technologies is likely to be even larger than those identified in this 2020 review. Therefore, we acknowledge that there are many other available tools that exist online is not represented in this review.

Finally, while the quality assessment tool used was deemed most appropriate based on the methodological heterogeneity of included studies and on tools used in previous similar systematic reviews, **the QuADS does have some drawbacks**. For instance, by being non-specific enough to be relevant for all study types, it is not able to assess quality concerns relevant to specific study designs and therefore may overestimate the quality of the included studies. It also does not include a risk of bias measure, meaning that we were unable to assess risk of bias of the studies. This means that the quality ratings of studies included in this review may be an overestimation of study quality and may not reflect some design specific quality issues.

Implications

This review has identified a number of implications for people with ADHD wanting to make use of digital self-management tools to help with the management of their condition, clinicians supporting people with ADHD, researchers working in this field, and for innovators looking to design a digital self-management tool for adults with ADHD.

Adults with ADHD

- The reviewed evidence supports the view that adults with ADHD may wish to consider using digital self-management tools to help manage their symptoms, as such tools (particularly psychoeducational tools) do not appear to be harmful and may improve ADHD symptoms and potentially other clinically relevant outcomes.
- Before using such tools, adults with ADHD should be aware that there is limited evidence of long-term effects, and for adults with ADHD who are not taking ADHD medication, or who are on a waiting list for assessment. Further, compliance of these tools with regulatory standards and DTAC has not been assessed as part of this review.

Clinicians and healthcare professionals

- Clinicians and healthcare professionals may wish to consider signposting adults with or are suspected of having ADHD to explore digital self-management tools as there is no evidence to date that such tools will have a negative impact on ADHD symptoms or other clinical outcomes.
- Before signposting to such tools, clinicians should be aware of the limitations outlined above.

Researchers

- Researchers should aim to address evidence gaps, including evaluating digital self-management interventions for adults awaiting ADHD assessment and/or comparing outcomes with those already diagnosed, examining impacts on health resource use and staff time, and continuing to test the efficacy and safety of commercially available digital self-management tools, including in real world settings.
- Researchers should strive to use robust methodologies and to follow reporting guidelines, to produce high quality, reliable evidence.
- Future systematic reviews on adult ADHD should include grey literature in to reduce publication bias and include all relevant evidence.

Innovators

- Innovators should include people with lived experience in the design and development of the digital self-management tool. This will increase the likelihood of the tool being relatable, relevant and engaging.
- Tools should be eye-catching, with lots of visuals such as images and videos. Information should be clear and concise, and text should be minimal.
- Innovators should consider interactivity and personalisation make tools more engaging and may make it more likely that users will continue to engage and not lose interest.
- Innovators, researchers and evaluators should work collaboratively to robustly evaluate the safety and effectiveness of the tool.

Overall conclusions

The majority of the evidence for digital self-management tools for adults with ADHD is for psychoeducational tools. There is some evidence of benefits of such tools for improving ADHD symptoms, mixed evidence for other outcomes, and we did not identify any harms. People designing digital self-management tools should do so with input from those with lived experience. There is a need for more evidence assessing the safety and effectiveness of these tools, using robust methodologies, and in real world settings. There is also a need for such digital technologies to meet regulatory, medical device, and DTAC standards, where appropriate, to ensure that they are safe, secure and accessible. The key take home messages are also summarised in Figure 3.

- 1 There is limited research on digital self-management tools for adults
- 2 Digital self-management tools may be beneficial for adults with ADHD
- 3 There is no evidence that digital self-management tools make symptoms worse
- 4 People with lived experience of ADHD should be involved in the development of self-management tools
- 5 Digital self-management tools need to be robustly tested

Figure 3. Key take home messages

Appendix 1. Search strategy

- 1 "attention deficit and disruptive behavior disorders"/ or attention deficit disorder with hyperactivity/ 165600
- 2 (ADHD or "ad dh" or addh or "Attention Deficit Hyperactivity Disorder" or "Attention Deficit Disorder with Hyperactivity" or "attention deficit disorder" or "attention deficit hyperactivity" or "hyperkinetic syndrome" or "hyperkinetic disorder" or "hyperkinesis" or "Minimal Brain Dysfunction" or "minimal brain disorder").ti,ab,kw. 165068
- 3 1 or 2 204495
- 4 (child* or adolescen* or teenage* or infant* or paediatric* or pediatric* or school*).ti. 4397709
- 5 exp Self Care/ or exp Self-Management/ 205476
- 6 ("self-manag*" or "self-monitor*" or "self-car*" or "self-help" or "self-guide*" or "self-regulat*" or "self-evaluat*" or "self-direct*" or "self-support*" or psychoeducat* or psycho-educat* or educat* or "patient education" or "symptom monitor*" or "low level").ti,ab,kw. 3217905
- 7 5 or 6 3302942
- 8 (digital* or internet or online or web* or mobile* or phone* or telephone* or smartphone* or cellphone* or smartwatch* or "virtual reality" or VR or robot or "mobile health" or mhealth or m-health or ehealth or e-health or technolog* or app or apps or application* or device* or "video game*" or game* or "social media" or forum* or "assistive technolog*" or email* or software or download* or SMS or chatbot* or "artificial intelligence" or innovat* or "ambient voice" or telehealth or tablet* or computeri?ed or gaming or "body doubling").ti,ab,kw. 11240339
- 9 3 and 7 and 8 3284
- 10 9 not 4 1827
- 11 remove duplicates from 10 1329

Appendix 2: Further details of apps and online interventions

Tool	No. of studies	Availability in UK	Regulatory status	Description summarised from included studies
Adult ADHD	1	Available in app stores - Free	No UK regulatory approvals	A psychoeducational resource for adults with ADHD, aiming to provide evidence based, trustworthy psychoeducation from clinicians while waiting to access ADHD services. The app is divided into 5 sections: about ADHD-related traits, self- help techniques, living with ADHD, seeking help, and services for adult ADHD in Ireland. In total, there are 37 static pages on the app. All pages are written materials, bar the mindful breaks (brief mindfulness audio practices) and SMART goals-based planner.
AttenFocus	1	No	Does not appear to be available as a product	The program utilizes neutral universal stimuli (e.g., circles and squares). The training is organized in a hierarchical structure, is continuously adjusted to individual performance, and delivers immediate feedback on performance. The program focuses on cognitive skills including working memory, inhibition, shifting, selective and divided attention, and persistence. The training tasks require timely and accurate responses to changes in the stimuli with increasing working memory demands provided by conditional instructions (e.g., "Press once as quickly as you can when the ball changes colour, but do not press any key when the colour is white"). All training is conducted online, and performance parameters are automatically recorded.
AwareMe ADHS	2*	No	No UK regulatory approvals	Smartphone-assisted psychoeducation. Eight psychoeducation sessions accompanied by eight modules accessed via a smartphone. The modules contained an outline of the psychoeducation content covered, corresponding homework assignments, a content quiz, and addressed one of the following topics: basic information on ADHD, personal resources, mindfulness and attention control, self-organisation, stress management, mood regulation and impulsive behaviour control, relationships, and a final evaluation. On a weekly basis, following each group session, the app modules were unlocked.
CANreduce	1	No	Does not appear to be available as a product	A cannabis reducing self-help web-based programme with psychoeducation and a consumption diary, with the opportunity for individual chat counselling. The programme also had adherence focused guidance-feedback through motivational automated emails with weekly reminders, encouragement and suggestions for further self-help module interventions, and the opportunity to ask questions. The advanced version of CANreduce (2.0) is particularly tailored to people with a common mental disorder (CMD) such as ADHD, to enhance program adherence and achieve better outcomes via improved module content that focuses on dis-related problems. These include associated CMD symptoms such as depressed mood, and problem-solving skills, as well as excessive ruminations and poor

Tool	No. of studies	Availability in UK	Regulatory status	Description summarised from included studies
				sleeping habits. In addition, to help participants with ADHD who are known to be easily distracted, coping strategies (such as focusing on cravings and letting them come and go) are evaluated.
Cogmed	2	Accessible at a cost to UK citizens. No NHS provision	No UK regulatory approvals	A computer program designed to improve working memory abilities through training accessed online at home. It involves 12 exercises that target verbal and visuospatial working memory. All tasks involve: maintenance of simultaneous mental representations of multiple stimuli, unique sequencing of stimulus order in each trial and progressive adaptation of difficulty level as a function of individual performance. The program requires 25 training sessions, typically described as taking about 45 minutes per session, to be completed 5 days per week, for 5–6 weeks.
FOCUS ADHD	1	App available in app stores	No UK regulatory approvals	A mobile app that includes pill reminders, weekly symptom assessment, the option to invite a support network, and twice-a-week psychoeducation
Focus Check	1	No	Unclear	The app involves participants monitoring on-task attention during lectures and independent reading using self-monitoring methods – participants are cued to record on-task or off-task attention during 10 minute intervals. The aim is to allow participants to quickly monitor and, if needed, adjust focus during lectures or reading. The overall aim was to provide an independently administered learning tool to assist with attention regulation.
In Focus	1	No	Unclear	Internet-based CBT in a self-help format that focuses on teaching compensatory techniques to handle ADHD-related difficulties. It consists of ten modules made up of information and therapeutic techniques, including behaviour analysis, mindfulness and acceptance, time management, gauging attention span, reducing distractors, organisation and planning, problem solving, behaviour activation, cognitive restructuring and anger control training. There is an optional and non-scheduled function to ask the therapists questions via a contact function.
Inflow	1	Virtual in-app community. US based. Free access for one year	No UK regulatory approvals	A science-based self-help app to help people manage their ADHD. The app includes daily routines and tools, including various features such as task lists, goals and personal objectives, and CBT based psychoeducation, which includes topics such as time management, organisation, impulsivity, and includes exercises and challenges. The app also has a community space which encourages users to engage with other users. There are also tools such as daily reminders, journal entries, key takeaways and live events (e.g., live Q&A sessions).
Living SMART	1	No	Unclear	An online intervention which aims to improve organisational skills and attention with the help of smartphone applications. It involves support from a coach in finding a routine for organising everyday life. The course consisted of seven text modules

Tool	No. of studies	Availability in UK	Regulatory status	Description summarised from included studies
				distributed over six weeks. The weekly modules taught the use of an online calendar (via computer and smartphone) and applications for reminders and to-do-lists. Furthermore, additional apps were introduced that previously had been shown beneficial for adults with ADHD (e.g., Evernote, N-Back, Simply Noise, Stayfocused, Leechblock).
My Friendly Mind	1	No	Unclear	A digital health tool designed to enhance users' knowledge of depression and ADHD and provide preliminary mental health screening. The app's primary function is to screen users' mental health using the Patient Health Questionnaire-9 (PHQ-9) for depression and the Adult ADHD Self-Report Scale (ASRS) for ADHD. Upon completing these screenings, users receive a score along with a clinical interpretation presented in layman's terms. The app also allows users to keep a log of their mental health score. After screening, the app delivers educational content and mental health management recommendations tailored to the user's screening outcomes via short audio-visual clips (generated using a commercial video generating software). These recommendations help users understand their screening outcome and provide actionable steps to manage their mental health. It is important to note that the app is not intended to replace clinical treatment.
MyADHD	5	Requires subscription. Not available in the NHS	No UK regulatory approvals	A structured, self-guided online intervention with elements from cognitive behavioural therapy, dialectal behavioural therapy and goal management training to target specific challenges experienced by adults with ADHD. It is available via an online secure portal and includes seven modules, with one accessed each week. Modules covered topics such as, breathing, stop, emotions, planning, and acceptance. Each of the first 6 modules included psychoeducation, skill-building exercises, and coping techniques for everyday challenges for adults with ADHD. Modules also featured two video vignettes that explained the use of coping techniques and contextualized their suitability and application. The main goals are to help participants to improve functioning in daily life activities; offer stress reduction strategies, reduce inattention, and improve quality of life.
NUMO	1	US based self-management app	No UK regulatory approvals	The NUMO app combines psychoeducation, science-based exercises, and a supportive community made of people with ADHD. Features include a daily planner, calendar, task division for procrastination, thoughts testing to lower anxiety or sadness, white noise, sharing of goals, tracking of accomplishments.
Terabot	1	No	Unclear	A guided chatbot based peer support technology prototype accompanying an online self-help programme for adults with ADHD. The chatbot consists of a concept, two scripts, personality traits and requirements and is a conversation prototype. It aims to guide participants through a self-help programme through two

Tool	No. of studies	Availability in UK	Regulatory status	Description summarised from included studies
				chat sessions that concerned an exercise from the programme, which focused on building a foundation and expectations towards the exercise, and execution and experience with the exercise. The long-term aim is to expand the scripts to other programme exercises.
Tokadi	1	No	Unclear	An app with a conversational chatbot, Tokadi, designed for people with decreased concentration. The app allows for self-assessment and symptom severity assessment. It also includes a self-help programme focused on behaviour change, emotional control, medication and mindfulness, and a psychoeducational component focusing on the causes, symptoms and treatment utilising a text message CBT format with the chatbot. The app also uses quizzes and automated alarms and allows for tracking of symptoms over time and usage patterns.

Appendix 3. Overview of reported outcomes

	ADHD symptoms	Quality of life	Depression	Anxiety	Stress	Functional impairment	Acceptability	Engagement	Other	Qualitative
Ahlers 2022	X	-	X	X	-	-	X	X	X	-
Biederman 2019	-	-	-	-	-	-	-	-	X	-
Biederman 2020	-	-	-	-	-	-	-	-	X	-
Carvahlo 2023	X	-	-	-	-	-	X	X	X	-
Dentz 2020	X	-	-	-	-	-	-	-	X	-
Flobak 2021	-	-	-	-	-	-	-	-	-	X
Gibson 2015	X	-	-	-	-	-	X	-	X	-
Glickman 2015a	-	-	-	-	-	-	-	-	-	X*
Glickman 2015b	X	X	-	-	-	-	-	-	X	X*
Jang 2021	X	-	X	X	X	-	X	-	-	X*
Kenter 2022	-	-	-	-	-	-	X	-	-	X*
Kenter 2023	X	X	-	-	X	-	X	-	-	-
Knouse 2022	X	-	-	-	-	X	X	-	-	-
Luiu 2018	-	-	-	-	-	-	-	-	-	X
Mawjee 2015	X	-	-	-	-	-	X	X	X	X*
Moell 2015	X	-	X	X	X	-	X	X	X	X*
Nasri 2023	X	X	X	-	X	-	X	X	X	-
Nordberg 2019	-	-	-	-	-	-	X	-	-	X*
Nordby 2021	X	X	X	X	X	-	X	X	-	X*
Nordby 2022	-	-	-	-	-	-	-	X	-	-
Orel 2024	X	-	-	-	-	-	-	-	-	-
Patrickson 2024	-	-	-	-	-	-	-	-	-	X
Petterssen 2017	X	X	X	X	-	-	-	X	X	-
Ravishankar 2022	-	-	-	-	-	-	-	-	-	X*
Seery 2025	-	-	-	-	-	-	-	-	-	X
Selaskowski 2022	X	-	X	-	-	X	-	X	X	-
Selaskowski 2023	X	X	X	X	X	-	-	-	X	-
Shahsavari 2024	-	-	-	-	-	-	-	-	X	X*
Shelton 2022	-	-	-	-	-	-	X	-	-	-
Stern 2016	X	X	-	-	-	-	-	X	X	-

Note: Any qualitative data that refers to the acceptability of or engagement in the interventions is recorded as “qualitative” rather than as “acceptability” data. Only studies reporting quantitative acceptability or engagement related outcomes are indicated in the “acceptability” or “engagement” columns.

** Indicates that this study was not a qualitative study but did report some qualitative data*

Appendix 4. Summary of themes and subthemes and the number and types of contributing studies

Themes and subthemes	No. of studies	Type of studies
Theme 1: Presentation of information or the intervention itself		
Visual	7	Information (n=1), psychoeducation (n=4), prototype (n=2)
Concise and easy to understand information	5	Information (n=2), psychoeducation (n=3)
Interactivity	5	Information (n=1), psychoeducation (n=3), prototype (n=1)
Tailoring	3	Information (n=1), prototype (n=2)
Theme 2: Information or intervention content		
Relating to others with ADHD	4	Psychoeducation (n=2), prototype (n=1), information (n=1)
Being well informed	4	Information (n=2), psychoeducation (n=2)
Positivity	3	Information (n=1), psychoeducation (n=2)
Theme 3: Intervention benefits		
Understanding yourself	4	Psychoeducation (n=1), prototype (n=1), information (n=1), guided self-management (n=1)
Enabling self-management	5	Information (n=1), psychoeducation (n=3), prototype (n=1)
Theme 4: Participant concerns		
Data	2	Prototypes (n=2)
Technical issues	4	Information (n=1), psychoeducation (n=3)
Negative experiences	5	Psychoeducation (n=4), cognitive training (n=1)
Theme 5: Considerations for successful engagement		
Enabling engagement	6	Psychoeducation (n=2), prototype (n=2), cognitive training (n=1), guided self-management (n=1)
Acceptability of AI and bots	3	Psychoeducation (n=1), prototype (n=1), information (n=1)
Accessibility and user friendliness	3	Information (n=1), psychoeducation (n=1), prototype (n=1)
Theme 6: Where the intervention fits in		
Where the intervention fits in	4	Psychoeducation (n=1), prototype (n=2), information (n=1)

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