

# Issues Which Marginalize Females with ADHD - A Mixed Methods Systematic Review

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Received: July 5, 2023; Accepted: July 24, 2023; Published: July 31, 2023

## Abstract

### Background

Marked disadvantages of females with ADHD were identified by previous narrative reviews. Factors side-lining females with ADHD appear to be both biological and sociological in nature. Some published systematic reviews have focused on circumscribed aspects of female ADHD. An all-inclusive systematic review of the inequities which confer a status of marginalization to females with ADHD is required, to comprehensively understand all implications of female ADHD.

### Objectives

The aim of this review was to identify and synthesize quantitative and qualitative evidence of issues which marginalize females with ADHD.

### Methods

A mixed methods systematic review following a convergent integrated approach, as outlined by the Joanna Briggs Institute's manual for evidence synthesis was undertaken. Databases were accessed through the Hydro Data Initiative platform of the University of Malta. All types of studies were considered for inclusion. Extracted quantitative findings were transformed into qualitative findings prior to synthesis. The review protocol was registered with PROSPERO CRD42022384055.

### Results

34 papers were included in the review. Synthesis led to the emergence of five themes, namely 'The gender gap in ADHD recognition, diagnosis and treatment', 'ADHD-related problems in females', 'Female ADHD and negative mental health sequelae', 'ADHD and female sexual and reproductive health issues' and 'The influence of ADHD on motherhood'.

### Conclusions

Critically appraised, synthesized findings conclude that females with ADHD are disadvantaged in a number of ways. Clinicians and policy makers have access to latest evidence on all issues marginalizing females with ADHD in this mixed methods systematic review. Recommendations for policy and practice are advanced, together with directions future research ought to follow.

**Keywords:** ADHD, females, marginalization, mixed methods systematic review, convergent integrated design

## 1. Introduction

Historically, Attention Deficit Hyperactivity Disorder (ADHD) was considered a disorder only affecting male children. Yet, accumulating research has evidenced that it often persists in adulthood, thus, efforts to promote awareness of adult ADHD and optimize adult patient outcomes have been instituted in the last two decades (Kooij et al., 2010). Moreover, Nussbaum (2012) highlighted that the disorder affects many females too, although they are likely to be diagnosed later than males. Indeed, Quinn (2005) described ADHD as a 'hidden disorder' in females, whilst Waite (2010) warned that many women with ADHD are suffering in silence.

Symptoms of inattentiveness are generally more conspicuous and problematic than those of hyperactivity and impulsivity in girls, whose resulting presentations are often labelled as 'subthreshold'. This was suggested by Quinn and Madhoo (2014) as one reason which explains why the disorder is often missed in girls. Additionally, it

has been pointed out that girls and women with ADHD may develop psychiatric comorbidities, notably depression and anxiety, which complicate ADHD recognition (Quinn, 2008). Meanwhile, an initial qualitative exploration of the experiences of women with ADHD diagnosed as seniors confirmed that the delay in diagnosis and treatment sets women up for a lifetime of struggles, and gender role expectations exacerbate the impact of ADHD on girls and women (Henry and Hill Jones, 2011).

Since gender had not been recognized as an important marker of an adult ADHD profile, Williamson and Johnston (2015) narratively reviewed the literature on gender differences in adults with ADHD. It was concluded that similarity between genders must not be presumed in view of variations in prevalence, impairments and comorbidity (Williamson and Johnston, 2015). More recently, there have been calls for ADHD research to finally start ensuring an equal representation of females in research samples (Hinshaw et al., 2022), and for studies to analyze and report data for males and females distinctly (Kok et al., 2020). Furthermore, it has been recommended that future research priorities related to this phenomenon should not only investigate precise sex differences in symptomatology and impairment, but broaden the perspective to elucidate other female specific concerns such as self-harm, challenging relationships, unplanned pregnancies and parenthood (Hinshaw et al., 2022).

In response to an emergent subset of ADHD research, indicating a marked disadvantage of females with this disorder, a Participatory Action Research Study using the Photovoice method was conceived. This current review forms part of the foundational work carried out for this ongoing project entitled “Empowering Maltese Adult Women with ADHD using Photovoice.” Being increasingly lauded as an effective method to empower marginalized communities, Photovoice was chosen to that end (Evans-Agnew and Strack, 2022).

The primary objective of this review was to situate this project within the extant research on female specific ADHD issues. To categorically ascertain that side-lining of this community is indeed a concrete phenomenon, a systematic review providing critically appraised, synthesized evidence was required. The preliminary literature search failed to locate previously published systematic reviews covering the full range of inequities which confer a marginalized status to females with ADHD.

Instead, a number of systematic reviews were identified which targeted circumscribed aspects of this phenomenon. For instance, Kok et al. (2016) reviewed the evidence pertaining exclusively to problematic peer-functioning in girls with ADHD. Similarly, Camara et al. (2021) chose the relationship between sex hormones, reproductive stages and ADHD as the focus for their review. Furthermore, the systematic review of Kok et al. (2020) targeted pharmacotherapy for female ADHD. Alternatively, Surendran et al. (2022) solely addressed treatment of ADHD in pregnant women. Attoe and Climie (2023) lately reviewed evidence centering around the issue of misdiagnosis of females with ADHD.

To date, one needed to sift through several systematic reviews, each yielding evidence pertaining to different elements, in order to gain an appreciation of all the nuances and implications of female ADHD. Increasingly, decision-making in health care is becoming complex and expeditious. This current review aimed to serve clinicians working with girls and women with ADHD, or policymakers planning services for them, by presenting a pragmatic and all-inclusive set of critically appraised, synthesized findings on the inequities of female ADHD. However, the preliminary overview of research indicated that both biological and social factors contribute to the oversight of females with ADHD in clinical and research settings. Thus, it was anticipated that both quantitative and qualitative studies would be located. This meant the resulting heterogeneity would defy the positivist model of conducting systematic reviews.

Ultimately, it was decided to undertake a Mixed Methods Systematic Review (MMSR) since it had the capacity to systematically provide evidence to ascertain marginalization of females with ADHD, whilst catering for the anticipated heterogeneity of study designs. The review question, which can be answered by both quantitative and qualitative evidence, was thus set, and reads “What are the female specific ADHD issues which render adult women with ADHD a marginalized group?”

## 2. Methodology

This MMSR was conducted in accordance with the Joanna Briggs Institute methodology for MMSRs following a convergent integrated approach (Lizarondo et al., 2020). The convergent integrated approach is indicated to answer a broad review question that can be addressed by any type of study, involves transformation of extracted quantitative data into qualitative data, or transformation of extracted qualitative data into quantitative data, and integration of transformed data (Lizarondo et al., 2020). A protocol for this review was registered with PROSPERO International Prospective Register of Systematic Reviews registration number CRD42022384055. Reporting of the review followed the guidelines of the adapted PRISMA for reporting systematic reviews of qualitative and quantitative evidence (Appendix I).

### 2.1 Information Sources and Search Strategies

An intensive search in the Hydro Data Initiative (HyDi) platform of the University of Malta was undertaken. This platform provides access to several databases including PubMed, Embase, CINAHL, Medline, BioMed Central, PsychInfo, ProQuest and Wiley Online Library. The search engine Google Scholar was subsequently accessed to supplement the HyDi search. The search was initially limited to articles written in the English Language and articles covering the period between 2012 and 2022. Moreover, a feature of the HyDi platform allowed filtering of records to identify solely those from peer-reviewed journals.

The Population, Exposure and Outcome (PEO) framework, first proposed by Khan et al. (2003), was consulted to guide selection of keywords for the search and develop eligibility criteria. This framework lent itself best to the broad review question. Table 1 illustrates components of the PEO framework and concepts they identified. Synonyms and alternative terms for concepts identified by the PEO framework were recognized to ensure a more exhaustive search. Databases were instructed to retrieve records with keywords identified from the Population and Exposure components of the PEO framework only, to determine the breath of the body of knowledge on female specific ADHD issues. Boolean Operators “AND” and “OR” were employed. Whenever possible, truncated roots were used. The number of records identified permitted a thorough scrutiny of all records, without the need to further narrow the search strategy by adding keywords identified from the Outcome component of the PEO framework. This decision guaranteed that no relevant research would have been missed because of failure to identify all possible synonyms resulting from the Outcome component of the PEO framework. Thomas and Harden (2008) argue that in conservative statistical meta-analysis bias is introduced if any relevant study is not located, whilst in MMSRs bias is imported when important concepts are not identified.

Searches were re-run just before the final syntheses (full electronic search strategies available in Appendix II). The HyDi and Google Scholar searches yielded a total of 2,334 potential records, which were loaded on the bibliographic software ‘RefWorks’. 569 of these were duplicates. A subsequent 1,657 records were removed as they were deemed irrelevant after screening through their titles and abstracts. Inclusion and exclusion criteria listed below guided screening of the remaining 108 potential records identified. Reference lists of these records were subsequently inspected to ascertain that no other relevant research had been missed.

Table 1. The components of the PEO framework (Khan et al., 2003) and the concepts and synonyms identified to guide the search

<b>REVIEW QUESTION</b>	
What are the female specific ADHD issues which render adult women with ADHD a marginalized group?	
<b>FRAMEWORK COMPONENT</b>	<b>CONCEPTS IDENTIFIED &amp; SYNONYMS</b>
<b>POPULATION</b>	WOMEN, FEMALES, GIRLS, MOTHERS, DAUGHTERS, SPOUSES, GENDER, SEX
<b>EXPOSURE</b>	ATTENTION DEFICIT HYPERACTIVITY DISORDER, ADHD
<b>OUTCOME</b>	EXPERIENCES, STRUGGLES, DISADVANTAGES, CONCERNS, ISSUES, FEELINGS
The keywords developed through this exercise: <i>women, females, girls, mothers, daughters, gender, sex, ‘attention deficit hyperactivity disorder,’ ADHD, experiences, struggles, disadvantages, concerns, issues, feelings</i>	

### 2.2 Eligibility Criteria

Studies had to indicate disadvantage of females with ADHD to be included. Inclusion was not restricted by ADHD severity or subtype of study participants. Moreover, studies where participants were minors were also considered for inclusion, since problematic female specific ADHD issues may be at play since childhood. Quantitative, qualitative, primary mixed methods studies and systematic reviews were all considered for inclusion, as were studies from all geographical and socio-economic areas. Mixed methods studies were only considered if data from their quantitative or qualitative components could be clearly extracted.

Studies were excluded if they were not from peer-reviewed journals. Studies involving only male participants or involving male and female participants without making any comparisons were excluded. Studies involving participants with ADHD with comorbid conditions other than depression, anxiety, self-harm and suicidal ideation were excluded. To ensure a manageable corpus of studies, few sensible post-hoc decisions about exclusion of

studies were made just before commencing data extraction, as advised by McKenzie et al. (2019). Thus, publication before 2015 and very low methodological quality were added to exclusion criteria. Eligibility was ascertained by the primary reviewer under the supervision of the other reviewers. Any disagreements were resolved through discussion.

### *2.3 Quality Appraisal Process*

Studies which met inclusion criteria were appraised critically for methodological quality using the standardized instrument Mixed Methods Appraisal Tool (MMAT) version 2018 (Hong et al., 2018). MMAT version 2018 was selected because it provides methodological quality criteria for quantitative, qualitative, and mixed methods research and is relatively simple and time efficient to use, since it is restricted to core criteria. The developers of MMAT version 2018 do not advise reviewers to solely present an overall score, as that would not indicate which features of the study are problematic. Therefore, an overall quality score for each study was supplemented with a descriptive outline based on MMAT version 2018 criteria. Furthermore, Hong et al. (2018) discourage exclusion of studies from a review on account of low methodological quality. However, as stated previously, it was decided post-hoc to exclude studies with very low methodological quality to ensure manageability of the corpus of studies to appraise. A cut-off overall quality score of two out of five on the MMAT version 2018 was determined. Thus, studies obtaining a score of 1 were excluded.

The JBI Checklist for Systematic Reviews and Research Syntheses was selected to appraise systematic reviews included in this MMSR, as it is congruent with the broader perspective of what constitutes evidence underpinning MMSRs. Authors of papers were contacted when the need arose to request missing or additional data. The quality appraisal process was performed solely by the primary reviewer. Uncertainties were discussed with the other reviewers, with any disagreements regarding inclusion of a paper, on the basis of methodological quality, being resolved through discussion. The level of evidence provided by each paper was appraised using the John Hopkins evidence-practice grading system for nurses and healthcare professionals (Dang et al., 2021). Results of the appraisal process were used in the synthesis to describe methodological quality and for sensitivity analysis.

### *2.4 Data Extraction*

Quantitative and qualitative data were extracted from studies independently by the primary reviewer. The other reviewers assessed the meticulousness of extraction. By means of Excel, a data extraction template was designed, after agreement among the three reviewers regarding which specific details had to be extracted was reached. As suggested by Ryan et al. (2018), refining of this template was ongoing right until completion of data extraction. For all types of studies, extracted data subsisted of specifics about the author, year of publication, country of origin, study design, study aims, population and sampling techniques, context, phenomena of interest, study methods, outcomes of relevance to the review question, recommendations, level of evidence and assessment of methodological validity.

For quantitative studies, extracted data pertaining to outcomes consisted of descriptive or inferential statistics (whether statistically significant or not). Information related to any measurement instruments employed was also extracted. With regards to qualitative studies, the recommendation of Adams et al. (2022) was adhered to, and extraction of data was undertaken in such a way so as to maintain fidelity to the themes as they were reported by the primary researchers. Moreover, all theories, models, conclusions from primary researchers and some participant excerpts were included in the outcomes category of the data extraction template. The primary outcome of interest was any female specific issue which renders adult women with ADHD a marginalized group.

### *2.5 Data Transformation*

The data extraction process described yielded quantitative and qualitative data which had to be transformed into a mutually compatible configuration prior to being integrated. For this MMSR, data conversion involved qualitzing quantitative data. This decision was made in view of considerable heterogeneity in the designs, variables and measurement instruments employed by quantitative studies. Secondly, as Pearson et al. (2015) assert, codification of quantitative data is less likely to involve errors than quantification of qualitative data.

Pearson et al. (2015), moreover, discuss considerations of rigour relating to conversion of quantitative data into qualitative themes. Following these guidelines, reviewers had to 'bracket' any pre-conceived understandings which could impinge on trustworthiness of this process. Data-based outcomes of any descriptive and/or inferential statistical tests were transformed into textual descriptions through thematic analysis by the primary reviewer. Any uncertainties were forwarded to other reviewers. Resulting discrepancies were resolved through discussion.

### *2.6 Data Synthesis*

Thematic synthesis, as expounded by Thomas and Harden (2008), was initiated by line-by-line coding of qualitative data extracted directly from qualitative studies and qualitized quantitative data. This operation was then followed by organization of these codes into categories according to similarities and differences in meaning. Until now, the review question was disregarded, and the focus was narrowed on the study findings to be coded and classified. The third and most challenging stage consisted of development of analytical themes. Here one had to go beyond the emergent categories by interpreting them with respect to the review question. The final product is a comprehensive aggregation of unified findings.

Pearson et al. (2015) suggest that rigour in the thematic synthesis of data is ensured by making sure that findings from primary studies are adequately contextualized. By outlining study aims, methods used, sampling and setting details and methodological quality assessment, the review retained the context of primary findings. Tables outlining study aims are provided in section 3. Methodological considerations of included studies are illustrated in Appendix III. Additionally, rigour throughout the process of synthesis was ascertained through continuous discussions within the reviewing team.

### *2.7 Sensitivity Analysis*

As stated previously, it was decided post-hoc to exclude studies with very low methodological quality to ensure manageability of the corpus of studies to appraise. The influence of this resolution on synthesis of findings was explored by inspecting the input of individual studies on analytical themes, as suggested by Thomas and Harden (2008). After thematic synthesis, reviewers noted whether primary studies of a lower methodological quality contributed to a lesser extent to synthesis than studies which were ascribed high methodological quality assessments. This exercise determined whether findings of the review are sensitive to inclusion or exclusion of studies with weaker methodologies.

## **3. Results**

A PRISMA flow diagram giving numbers of studies screened, assessed for eligibility and included in the review with reasons for exclusion is provided in Figure 1.

### *3.1 Study Characteristics*

The 34 papers included in this review subsisted of 26 quantitative studies, six qualitative studies and two systematic reviews. A description of main characteristics of these papers (authors, year of publication, country of study, aims, design, level of evidence, methodological quality score and categories informed by each), is provided in Tables 2, 3 and 4. Overview of methods and a detailed result of appraisal of these studies is available in Appendix III. Eventually all qualitized quantitative and qualitative findings were organized into 16 categories, which were then grouped into five themes or synthesized findings. Each synthesized finding is described in more detail in coming sections. To ensure trustworthiness, a table illustrating how findings from individual studies constructed categories, and how in turn categories built themes is provided in the text for the fifth theme.

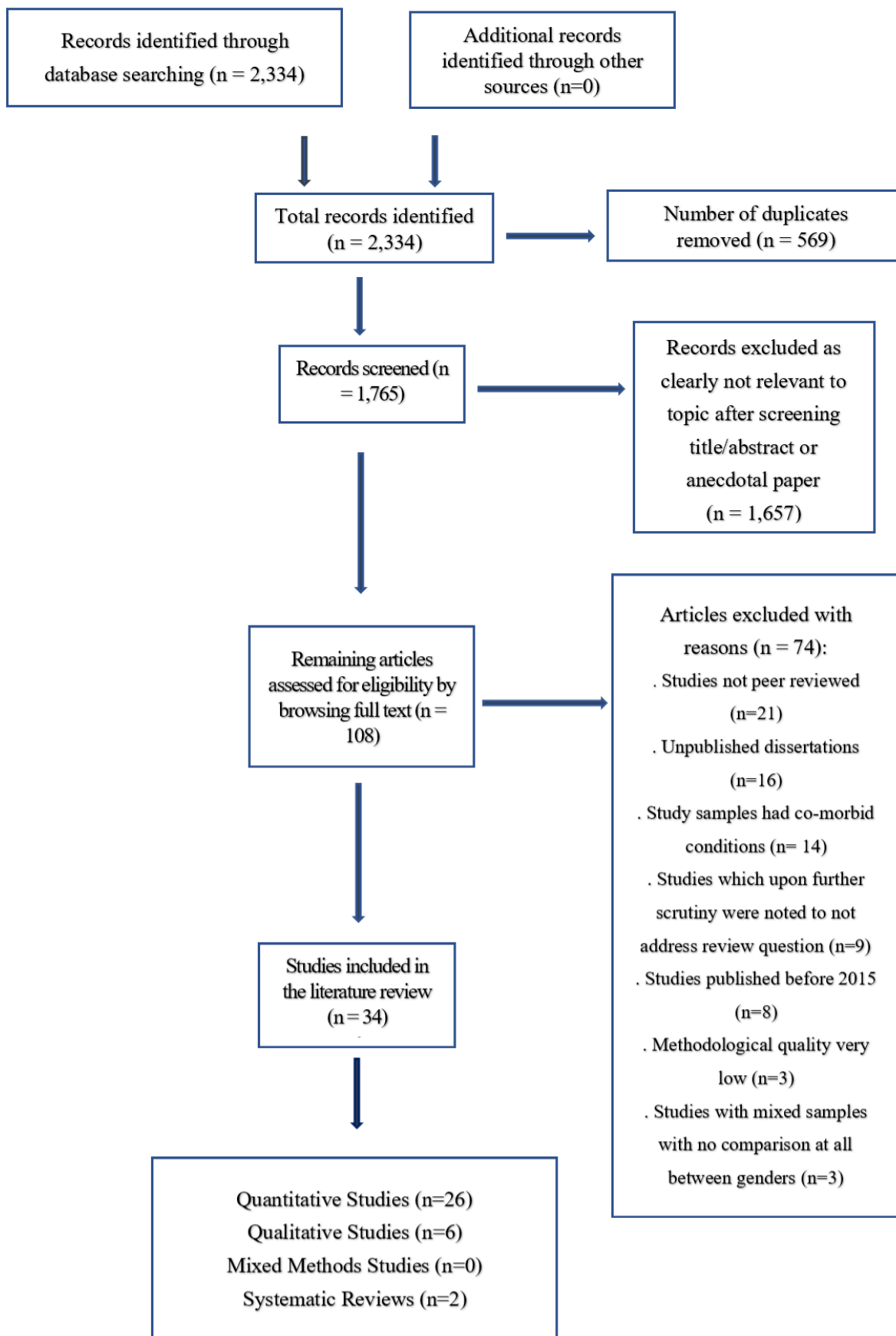


Figure 1. Flow diagram describing the screening process, modelled after Moher et al. (2009)

Table 2. Description of the main characteristics of included quantitative studies

Authors & Year of Publication	Country of Study	Aim(s)	Design	Level of Evidence	Methodological Quality	Categories informed by this study
Snyder et al. (2015)	United States	To estimate the prevalence of ADHD among a national sample of college women, to compare sexual victimization rates of women with ADHD to those without ADHD and to examine ADHD as a hypothesized risk factor of sexual victimization among college women along with commonly assessed predictors under the lifestyle/routine activities framework.	Quantitative Cross-Sectional	III	2	11
Fuller-Thomson et al. (2016)	Canada	To develop a comprehensive profile of the sociodemographic, mental health and physical health characteristics of women with an ADHD diagnosis in a nationally representative sample of Canadians.	Quantitative Cross-Sectional	III	3	1, 3, 4, 5, 7, 8, 11
Guendelman et al. (2016)	United States	To draw from a longitudinal sample of girls followed prospectively into young adulthood, comparing those with and without childhood ADHD in terms of their risk for physical Intimate Partner Violence by 17–24 years of age.	Quantitative Longitudinal Cohort Study	III	4	5
Owens et al. (2017)	United States	To ascertain adult outcomes in ten domains reflecting symptomatology, attainment, and impairment as a function of both childhood diagnosis of ADHD and persistence of ADHD symptoms across time by prospectively following grade school-aged girls with rigorously diagnosed childhood ADHD and matched comparison girls for 16 years.	Quantitative Longitudinal Cohort Study	III	4	3, 4, 5, 7, 8, 12
Jones et al. (2018)	United States	To investigate the relationship between ADHD symptom clusters (Inattention, Hyperactivity and Impulsivity) and engagement in healthy as well as unhealthy prenatal behaviours in a sample of pregnant women presenting to an urban women's clinic.	Quantitative Cross-Sectional	III	3	12
Kakuzi et al. (2018)	Hungary	To study how gender influences the risk of suicidal ideation in adult ADHD and whether the psychopathological profiles that underlie suicidal ideation differ between male and female patients.	Quantitative Case Control Study	III	4	1, 8

Martin et al. (2018)	Sweden	To examine whether in individuals who had anxiety, depression or ADHD diagnoses, females had a higher burden of ADHD genetic risk than males using polygenic risk scores.	Quantitative Cohort Study	III	3	2
Perez Algorta et al. (2018)	United States	To evaluate whether there are significant differences between biological mothers who have a child with combined ADHD and those with a child without ADHD with respect to how maternal 'Big Five' personality traits, maternal ADHD or their interaction contribute to mothers' experience of parenting stress.	Quantitative Case Control Study	III	4	15
Solberg et al. (2018)	Norway	To determine whether gender modified associations between ADHD and psychiatric comorbidities and whether the proportion of psychiatric disorders among men and women in the population that could be attributed to comorbid ADHD.	Quantitative Cross-Sectional	III	4	1, 7
Yoshimasu et al. (2018)	United States	To evaluate the psychiatric comorbidities among adults whose childhood ADHD has persisted into adulthood, with explicit assessment for gender differences in the rates and pattern of psychiatric comorbidities.	Quantitative Case Control Study	III	3	7
Ersoy & Ersoy (2019)	Turkey	To examine 'gender roles' in couples where one partner has ADHD in an attempt to find out whether gender roles mediate negative effects of ADHD on relationships.	Quantitative Cross-Sectional	III	2	3, 5
Eryilmaz & Ustang-Budak (2019)	Turkey	To examine the gender bias in recognition of ADHD by teachers at Turkish school settings.	Quantitative Cross-Sectional	III	2	2
Hayashi et al. (2019)	Japan	To investigate clinical characteristics and gender differences in adults with ADHD in a Japanese Clinical Sample.	Quantitative Cross-Sectional	III	3	2, 3, 5, 7
Mowlem et al. (2019)	Sweden	To investigate sex differences in ADHD using a large population-based sample linked to Swedish National Patient Register data on clinical ADHD diagnosis and prescribed ADHD medication.	Quantitative Cross-Sectional	III	3	1, 2
Park & Johnson (2019)	Canada	To investigate attributions for child behaviour in a community sample of mothers with mothers' ADHD symptoms assessed dimensionally.	Quantitative Cross-Sectional	III	4	14
Skoglund et al. (2019)	Sweden	To explore the prevalence of birth in young women and teenage girls	Quantitative Retrospective	III	3	3, 12



		with ADHD and to address modifiable risk factors associated with adverse obstetric & perinatal outcomes, such as smoking, BMI & substance use disorder in these women and girls.	Cohort Study			
Vildalen et al. (2019)	Norway	To investigate the Adult ADHD Self-Report Scale (ASRS) scores in female and male adults with ADHD and in the general population.	Quantitative Case Control Study	III	3	3, 7
Babinski et al. (2020)	United States	To examine prevalence of depression and suicidal behaviours among young adult men & women with and without ADHD (ages 18-25) using a large claims database. In addition, patterns of health care utilization for depression and suicidal behaviour as well as related health costs are examined.	Quantitative Case Control Study	III	4	1, 8
Meyer et al. (2020)	United Kingdom	To examine differences in parent & teacher ADHD ratings of boys and girls matched for levels of directly observed ADHD behaviours.	Quantitative Cross-Sectional	III	3	2
Babinski et al. (2020)	United States	To examine optimal ADHD symptom count cut-offs for the diagnosis of ADHD in girls & boys using ROC analysis and to compare the severity & prevalence of co-occurring internalizing & externalizing problems in girls in the sex-specific group to girls without ADHD, girls meeting DSM-5 ADHD criteria & boys with ADHD.	Quantitative Cross-Sectional	III	4	2, 7
Behesti et al. (2021)	Iran	To investigate whether ADHD is over diagnosed in Iran, whether Iranian psychiatrists reveal a gender bias when diagnosing boys and girls with ADHD and whether ADHD overdiagnosis has an impact on treatment recommendations.	Quantitative Cross-Sectional	III	2	2
Dorani et al. (2021)	The Netherlands	To gain a first insight into self-reported mood symptoms in women with ADHD during the premenstrual period, the postpartum period, and the menopausal transition. Additionally, to assess the sleep-wake rhythm preference (chronotype) in order to examine any associations between sleep characteristics, ADHD and the mood symptoms.	Quantitative Cross-Sectional	III	3	9, 12
Klefsjo et al. (2021)	Sweden	To examine if there are any gender differences in the diagnostic assessment procedure and in the received treatment prior to and after	Quantitative Retrospective Case Series	III	4	1, 2, 7

		ADHD diagnosis in Swedish Outpatient Child & Adolescent Psychiatric Units.				
London & Landes (2021)	United Kingdom	To examine ADHD prevalence rates among adults using the 2007 and 2012 U.S. National Health Interview Survey and to document inter- and intra- cohort changes in adult ADHD and examine whether they vary by gender.	Quantitative Prevalence Study	III	4	1
Szep et al. (2021)	Germany	To investigate Hair Cortisol Concentration (HCC) and mothers' perceived chronic stress in mothers of children with ADHD, while considering the effects of child ODD/CD symptoms & maternal ADHD & maternal depressive symptoms.	Quantitative Cross-Sectional	III	4	15
Zaidman-Zait & Shilo (2021)	Israel	To examine how the association between maternal ADHD symptoms and parenting varies across mothers' inhibitory control and their children's ADHD.	Quantitative Cross-Sectional	III	3	14

Table 3. Description of the main characteristics of included qualitative studies

Authors & Year of Publication	Country of Study	Aim(s)	Design	Level of Evidence	Methodological Quality	Categories informed by this study
Holthe & Langvik (2017)	Norway	To obtain in-depth understanding of complex ways in which ADHD might affect the everyday lives of adult women through exploring and illustrating how both clinical symptoms and encounters with stigma shape and translate into lived experiences.	Qualitative	III	4	2, 3, 6, 7, 13, 16
Stenner et al. (2017)	United Kingdom	To examine how women make sense of ADHD from their own perspective, but with particular attention to the situated temporal dynamics of identity change.	Qualitative Discourse Analytic Research	III	4	5, 6, 7, 8, 14, 16
Young et al. (2020)	United Kingdom	To provide guidance on presentation of ADHD in females and triggers for referral, to improve identification, treatment and support for girls and women with ADHD across the lifespan among medical and mental health practitioners.	Qualitative Expert Panel	IV	3	1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 16
Lassinantti & Almqvist	Sweden	To explore motherhood ideals as they are	Qualitative Narrative	III	4	13, 15

(2021)		experienced and negotiated by mothers with ADHD through the theoretical lens of able-mindedness and responsibility.	Research			
Lynch & Davidson (2022)	Ireland	To explore daily life and academic experiences of young women living in Ireland with medical diagnosis of ADHD.	Qualitative	III	3	2,5, 6
Wallin et al. (2022)	Sweden	To deepen the understanding of young women's own experiences of sexual and reproductive health by using a qualitative approach.	Qualitative	III	4	2, 5, 8, 10, 11

Table 4. Description of the main characteristics of included systematic reviews

Authors & Year of Publication	Country of Study	Aim(s)	Design	Level of Evidence	Methodological Quality	Categories informed by this study
Kok et al. (2020)	The Netherlands	To investigate sex differences in prescription rates, effectiveness and efficacy of pharmacotherapy treatment in girls and women with ADHD, and to identify gaps in the scientific knowledge on this topic.	Systematic Literature Review	III	8	1
Camara et al. (2022)	Canada	To identify the available evidence on the relationship between sex hormones on symptoms of ADHD, with an emphasis on the reproductive life stages, including adrenarache in males and females and menarache, menopause and postpartum in females.	Systematic Literature Review	III	7	9

Considerable discrepancy was noted within quantitative studies. As can be observed from Table 2, different aspects of female ADHD were targeted and aims varied. Even among studies addressing kindred elements of the phenomenon, primary outcomes of interest still differed extensively. Another notable difference was the use of either a clinical (Hayashi et al., 2019) or a population based (Skoglund et al., 2019) sample. As had been anticipated, there was diversity in gender and age of samples too, with some studies using an all-female sample (Dorani et al., 2021) and others comparing males to females (Vildalen et al., 2019). Likewise, some of the research studied minors (Klefsjo et al. 2021), other research studied adults (Babinski et al., 2020), whilst some followed children into adulthood (Guendelman et al., 2016). Some studies recruited professionals as participants to elicit their ability to recognize ADHD in both genders (Eryilmaz and Ustang-Budak, 2019).

Lastly, another feature of this body of knowledge which defined its heterogeneity is measurement or ascertainment of ADHD status. ADHD was measured with an array of clinician, parent, teacher and self-report rating scales for children and/or adults. Moreover, a number of studies used proxies for ADHD status (London and Landes, 2021; Solberg et al., 2018).

The few qualitative studies in this body of knowledge were published more recently than their quantitative counterparts, suggesting that qualitative discernment of this phenomenon is in its infancy. The qualitative approach employed was not specified for three studies. Heterogeneity was observed in samples and data collection procedures of qualitative studies.

### 3.2 *The Gender Gap in ADHD Recognition, Diagnosis and Treatment*

A percentage of females, particularly those with inattentive ADHD presentation, may not be clinically diagnosed early in life. Gender differences in prescription rates of ADHD medication in childhood are no longer observed for adults. Teachers, parents and mental health professionals do not always recognize the internalized presentation of ADHD in females, which is often overshadowed by emotional problems, and diagnostic criteria were not designed to capture it. Moreover, it appears females engage in more effective compensatory behaviours which hide the severity of their ADHD. Undiagnosed female ADHD keeps reaffirming that ADHD is more common among males and this belief in turn consolidates the bias in ADHD recognition. This synthesized finding subsisted of two categories.

#### 3.2.1 Category 1 – Evidence of a Gender Gap which Still Prevails but is Narrowing with Increased Awareness

The higher male to female ratios of child ADHD prevalence found in the clinical versus the population-based sample in the study of Mowlem et al. (2019), coupled with the comparatively smaller male to female ratio of ADHD noted in the adult clinical sample employed by Solberg et al. (2018), indicate that a percentage of girls with ADHD at population level may be missed and later diagnosed as adults. Supplementary evidence was advanced by Vildalen et al. (2019), who stated that within a clinical sample of Norwegian adults with ADHD, the percentage of males who were diagnosed as children was significantly higher than that of females.

Increases in adult ADHD diagnoses, observed between 2007 and 2012 by London and Landes (2021) in their prevalence study, were disproportionately larger for women and have narrowed the gender gap. Fuller-Thomson et al. (2016) corroborated the notion that awareness of female ADHD is gaining traction, by reporting that women with ADHD in Canada were more likely to be in their 20s than those without ADHD. In spite of a narrowing gender gap, retrospective review of clinical data of boys and girls eventually diagnosed with ADHD by Klefsjo et al. (2021) suggested that even when girls are diagnosed as minors, they are still older than boys when diagnosed.

As to sex differences in prescription rates of ADHD medication, a panel of ADHD experts was reported by Young et al. (2020) to have established that there is a gender gap disfavours girls too in this regard. This resonates with findings provided by a systematic review of sex differences in prescription rates, which concluded that in adulthood these rates level off (Kok et al., 2020). Indeed, Kakuszi et al. (2018) claimed that clinically diagnosed adult males and females were equally likely to be receiving methylphenidate, a stimulant medication for ADHD.

#### 3.2.2 Category 2 – Reasons for the Gender Gap

Mowlem et al. (2019) asserted that at population level significantly more females meet symptom criteria for the less conspicuous inattentive ADHD presentation, whilst the more conspicuous hyperactive ADHD symptoms were significantly higher in men as documented by Hayashi et al. (2019). Women interviewed by Lynch and Davidson (2022) explained how their hyperactivity manifests as racing thoughts which cannot be perceived by others. Primary school teachers' difficulty in recognizing vignettes describing girls with the inattentive ADHD subtype was also documented by Erylimaz and Ustang-Budak (2019).

Furthermore, Meyer et al. (2020) suggested parents in their study systematically rated girls as having less severe ADHD than boys, even when they had previously exhibited an equivalent degree of observed ADHD-related behaviour. Young et al. (2020) concluded that there may be biases in parent and teacher ADHD ratings which are interfering with referrals.

During the 2018 convention of ADHD experts, it was implied that clinicians should steer away from adhering strictly to cut-offs when using rating scales, due to compromised specificity and sensitivity of diagnostic criteria when diagnosing females (Young et al., 2020). Babinski et al. (2021) identified a sex-specific ADHD symptom cut-off for girls that was lower than the symptom threshold afforded by DSM-5 criteria.

Young et al. (2020) remarked that psychiatric comorbidities in females with ADHD are more internalized, and although they may often be secondary to ADHD itself, they may be diagnosed as primary disorders. Indeed, some women interviewed by Stenner et al. (2017) attest to being diagnosed with ADHD after seeking help for anxiety or depression. Reviewed clinical notes of girls eventually diagnosed with ADHD, disclosed that most of them had been referred for "emotional symptoms" (Klefsjo et al., 2021). Moreover, Martin et al. (2018) suggested that ADHD genetic risk more likely shows up as anxiety or depression in females.

ADHD experts noted from professional experience that girls with ADHD engage in more effective compensatory behaviours or coping strategies than boys, thus masking their ADHD (Young et al., 2020). In the same vein, lived experiences of young women with ADHD captured by Wallin et al. (2022) intimated that there was a perceived need to hide aspects of oneself to be accepted in social situations, which required a considerable and unsustainable effort in the long term.

### 3.3 ADHD-Related Problems in Females

In contrast to childhood, reported severity levels of ADHD symptoms are higher for adult females than males. Moreover, females with ADHD are more likely to experience educational underachievement and problems at work. Females with ADHD may be more likely to smoke and to be physically active, thus overall health may be affected in different ways. Additionally, ADHD symptoms were reported by females to impinge negatively on their interpersonal relationships. More research is needed to understand the extent to which ADHD is problematic to females and any interrelations between problematic domains. This synthesized finding subsisted of three categories.

#### 3.3.1 Category 3 – Overall Functioning

Inattentive and hyperactive/impulsive ADHD symptoms are allegedly more severe among females than males in adulthood (Ersoy and Ersoy, 2019; Vildalen et al., 2019). Owens et al. (2017) reported that for highest degree earned and years in education, female comparisons significantly outperformed females with ADHD. Similarly, Fuller-Thomson et al. (2016) stated that females with ADHD were less likely to hold a post-secondary degree and more likely to belong to a low-income category than female comparisons. More recently, Skoglund et al. (2019) testified that females with ADHD were more likely to have had only ten years of education or less than female comparisons (48.6% vs. 14.5%). The panel of ADHD experts endorsed the notion that females with ADHD tend to struggle with intellectual functioning and noted that these difficulties are more predictive of the inattentive subtype, which is associated with the female sex (Young et al, 2020).

Regarding functioning in relation to employment, Owens et al. (2017) concluded that although there were no differences in objective employment measures, females with ADHD significantly claimed more problems at work than female comparisons. Moreover, Hayashi et al. (2019) determined that compared to men with ADHD, the odds of not being gainfully employed full-time were nearly threefold greater for women with ADHD. The interplay between ADHD and gender roles in the employment domain was hinted at by women with ADHD interviewed by Holthe and Langvik (2017). These women argued that men were more likely to be exclusively assigned creative and stimulating tasks at work, whilst boring, repetitive tasks were added to women's workloads.

#### 3.3.2 Category 4 – Overall Health

Significantly lower Body Mass Indexes were observed among females with persistent ADHD than female comparisons, whilst differences in poor sleep quality were considered statistically non-significant (Owens et al., 2017). Contrastingly, Fuller-Thomson et al. (2016) reported a significantly higher prevalence of sleep problems in females with ADHD in comparison to those without (43.9% vs. 12.2%).

Other objective health measures for which statistically significant differences were observed disfavoured females with ADHD by Fuller-/Thomson et al. (2016) were chronic pain (28.0% vs. 8.5%) and current smoking status (40.9% vs. 21.9%). Interestingly, higher physical activity levels were reported by females with ADHD than those without, in the same study (52.8% vs. 39.7%).

#### 3.3.3 Category 5 – Relationship Difficulties

Interviewed women with ADHD consistently reported that relationships with significant others have been problematic since childhood. Participants revealed to Stenner et al. (2017) that being continuously unable to match parents' expectations made them feel they belonged to wrong families. By the same token, Lynch and Davidson (2022) imparted that adolescent women with ADHD experienced strained relationships with many teachers who thought they were not interested in learning.

The panel of ADHD experts declared that physical, socio-relational and cyber bullying is commonly seen in girls and women with ADHD (Young et al., 2020). Previous to this convention, Guendelman et al. (2016) had established that in relation to women not exposed to Intimate Partner Violence (IPV), IPV-exposed women displayed significantly more severe ADHD symptoms, and the association of IPV status and ADHD severity is significantly and partially mediated by academic achievement.

Romantic relationships and complications within them featured more actively in narratives of women with ADHD. Examples include relationships never seemed to last long or succeed (Stenner et al., 2017), relationships and sex-life got boring after the initial excitement subsided (Wallin et al., 2022), and emotional impulsivity resulted in partners feeling hurt by insensitive comments and participants feeling guilty for saying whatever comes to mind (Holthe and Langvik, 2017). Notwithstanding purported concerns about romantic relationships, Owens et al. (2017) revealed differences in dissatisfaction with current romantic relationship between women with ADHD and those without did not reach statistical significance.

### 3.4 Female ADHD and Negative Mental Health Sequelae

Evidence suggests that in comparison to females without ADHD and males with ADHD, females with ADHD are more likely to develop psychiatric comorbidities, particularly depression and anxiety. Internalization of negative feedback and having gone undiagnosed for longer may partially explain this increase in prevalence. Suicidal behaviour is likewise more common in females with ADHD than females without ADHD and males with ADHD, and preliminary evidence suggests it may be rooted in problems with self-concept. This synthesized finding subsisted of three categories.

#### 3.4.1 Category 6 – Negative Feedback and Self-Concept

Recollections of school days were imbued with experiences of ongoing negative feedback among women with ADHD (Lynch and Davidson, 2022; Stenner et al., 2017). Hyperactive behaviour is considered more deviant in girls than boys, therefore girls with ADHD likely receive more negative feedback than boys with ADHD (Young et al., 2020). Holthe and Langvik (2017) suggested internalization of negative feedback may have lasting effects, as adult women interviewed admitted to being highly critical of themselves with issues like procrastination.

Kakuszi et al. (2018) report that for adult women with ADHD, suicidal ideation was most closely associated with scores on the self-concept subscale of the Conners' Adult ADHD Rating Scales (CAARS; Conners, 1999), whilst for men the strongest association was with scores on the impulsivity subscale. This suggests internalization of negative feedback is more deleterious to women with ADHD. ADHD professionals stressed ADHD treatment for teenage girls must include psychological interventions to unpack ways in which ADHD has become embedded in their self-concept (Young et al., 2020).

#### 3.4.2 Category 7 – Anxiety, Depression and other Comorbidities

In comparison to females without ADHD, females with ADHD were reported to have twice the odds of having a substance use disorder or a major depressive disorder at some point in their lives, and four times the odds of developing generalized anxiety disorder (Fuller-Thomson et al., 2016). Owens et al. (2017) confirmed there were statistically significant differences between females with ADHD and those without for depression. However, differences for substance abuse did not reach statistical significance.

Higher overall psychiatric comorbidity rates for women in comparison to men with ADHD were extensively reported (Hayashi et al., 2019; Solberg et al., 2018; Vildalen et al., 2019; Yoshimasu et al., 2018). Two studies analyzed the combined effect of the two exposures (ADHD and gender). Solberg et al. (2018) report prevalence differences for all disorders were significantly larger for women with ADHD, with the exception of schizophrenia and substance use disorder. Yoshimasu et al. (2018) revealed statistical significance for dysthymia in women with ADHD.

Interviewed women with ADHD confirm anxiety and depression have permeated their lives, but also clearly articulate how living with ADHD precipitates these conditions. Holthe and Langvik (2017) explain how inability to settle into routines means one never feels in control of situations or of oneself and this provokes anxiety. Additionally, the hopelessness which ensues from putting in a lot of effort and never being able to manage ADHD symptoms casted participants into depressive states. Likewise, Stenner et al. (2017) relays that women with ADHD feel depressed because they perceive their lives as a course of consecutive futile attempts and fiascos. Young et al. (2020) suggests girls and women with ADHD may go to great lengths to compensate for ADHD symptoms, to the extent that perfectionism and anxiety develop.

#### 3.4.3 Category 8 – Self-Injury and Suicidal Behaviour

After employing psychometrically evaluated tools, Owens et al. (2017) report self-injury was present in 66.0% of females with persistent ADHD and 24.4% of comparison females. Statistical significance was not reached for suicide attempts possibly because of small cell sizes. Fuller-Thomson et al. (2016) concluded that females with ADHD had more than four times the odds of having considered suicide, from replies to one question asking participants if they ever considered suicide.

Babinski et al. (2020) inspected the effects of ADHD and sex on suicidal behaviour employing commercial claims data among a large sample of adults with ADHD and matched comparisons. Whilst a significant ADHD by sex interaction was not observed for suicide attempts, one for suicidal ideation emerged. The magnitude of the association between ADHD and suicidal ideation was greater for women (odds ratio of 2.21) than men (odds ratio of 1.61). Kakuszi et al. (2018) used one item from the Beck Depression Inventory (BDI; Beck et al., 1975) as standalone measure for suicidal ideation among adults with ADHD and matched controls. The study reported a 16-fold increase in likelihood of suicidal ideation for females with ADHD in comparison to controls. Contrastingly, in males the modest increase failed to reach statistical significance.

### 3.5 ADHD and Female Sexual and Reproductive Health Issues

Reviewed evidence indicates females with ADHD are at risk for teenage/unplanned pregnancies and sexual victimization. Females with ADHD find it harder to engage in healthy prenatal behaviours and this can precipitate adverse perinatal outcomes. Preliminary evidence suggests there may be a bi-directional relationship between ADHD and hormonal shifts during female reproductive life stages. Moreover, research to ascertain categorical safety or otherwise of ADHD medication during pregnancy and breastfeeding is needed. When specifically probed, some females with ADHD talked about engaging in casual sex and the shame it provokes. Future studies should be designed to encourage females with ADHD to discuss their sexuality. This synthesized finding subsisted of four categories.

#### 3.5.1 Category 9 – Sex Hormones

In 2018, ADHD experts advised ADHD symptoms in females may be exacerbated by hormonal fluctuations during certain stages of the menstrual cycle, in the perinatal period and during menopausal years (Young et al., 2020). A few years later, Dorani et al. (2021) reported that prevalence of premenstrual dysphoric disorder and postpartum depression and severity of climacteric mood symptoms were higher in a sample of females clinically diagnosed with ADHD, than those previously reported for the general population in other publications (Barentsen et al., 2001; Gavin et al., 2005; Gelaye et al., 2016; Hylan et al., 1999).

Camara et al. (2022) set out to identify evidence exploring the relationship between sex hormones in both males and females and ADHD. Few papers were located, indicating this area of research is still in its infancy. ADHD symptoms were noted to worsen before menses in a clinical case study involving one patient, and it was proposed that ADHD treatment may result in improved management of pre-menstrual syndrome (Quinn, 2005, as cited in Camara et al., 2022, p. 3). Aside from this, a weak association between early pubertal onset in females and difficulties with attention and emotional regulation and a propensity for risky behaviour was reported (Ostojic and Miller, 2016, as cited in Camara et al., 2022, p. 3).

#### 3.5.2 Category 10 – Casual Sex

The guidance provided by the ADHD expert consensus statement mentions that girls with ADHD may become sexually active earlier, have more sexual partners and be more prone to aftermaths in the matter of sexually transmitted diseases and teenage pregnancies (Young et al., 2020). Young women with ADHD intimate they engage in casual sex because of substantial difficulty in resisting sexual desire, as an outlet for channeling extra energy and because they have given up on long-term relationships. Casual sex evoked shame and a resentment towards a society which does not tolerate this behaviour among women. Health services may not be approached for screening tests pertaining to sexually transmitted diseases because of this shame (Wallin et al., 2022).

#### 3.5.3 Category 11 – Sexual Victimization

Snyder et al. (2015) concluded that in comparison to college women without ADHD, those with ADHD had 1.41 greater odds of being touched in an unwanted manner and 1.85 greater odds of being raped. Correspondingly, Fuller-Thomson et al. (2016) determined that females with ADHD had a significantly higher likelihood to have sustained sexual abuse before the age of 16 years, than those without ADHD (35.8% vs 10.9%). Young women with ADHD claimed inattentiveness creates inability to recognize sexual innuendos or to perceive danger cues, whilst impulsivity dictates an intrinsic tendency to rush into action without any prior deliberation (Wallin et al., 2022).

#### 3.5.4 Category 12 – Perinatal Issues

Among all nulliparous females who gave birth in 2014 in Sweden, those receiving ADHD medication had a six-fold increased risk of being younger than 20 years when giving birth (Skoglund et al., 2019). Owens and her colleagues in 2017 had already established that females with persistent ADHD had higher rates of unplanned pregnancies than comparisons (39.2% vs. 10.6%).

Jones et al. (2018) reported a significant and negative relationship between inattentive ADHD symptoms and healthy eating during pregnancy, a significant and negative relationship between hyperactivity symptoms and prenatal vitamin use, and a positive and significant relationship between impulsivity and emotional lability and physical strain and poor eating during pregnancy. Skoglund et al. (2019) reported that pregnant women with ADHD had twice the odds of having a body mass index more than 40.00 and more than six times the odds of smoking in the third trimester of pregnancy, in comparison to women without ADHD.

Dorani et al. (2021) stated that out of a sample of women clinically diagnosed with ADHD, 40.7% had had at least one child and 62.4% of the latter reported perinatal or obstetric complications. Young et al. (2020) report that in

view of inconclusive evidence, ADHD medication is by and large not recommended during pregnancy or breastfeeding.

### 3.6 The Influence of ADHD on Motherhood

Gender role expectations are harder to keep up with for some mothers with ADHD, who struggle to maintain structure and find childcare and household tasks boring. Preliminary evidence suggests that variation in maternal inhibitory control, in the context of maternal ADHD, determines negative and supportive parenting behaviours. Mothers with ADHD reported feeling inadequate as parents upon comparisons to other mothers. In multiplex families, mothers may feel guilty for passing on ADHD to children and experience considerable stress. Research still has to elucidate to what degree maternal and child ADHD each contribute to maternal stress. This synthesized finding subsisted of four categories.

#### 3.6.1 Category 13 – Managing Motherhood Tasks

Mothers with ADHD explained children aggravate an already innate problematic distractibility with spontaneous and continuous interruptions. The absence of externally imposed structures in the home context, as opposed to a workplace, was vexing because it meant they had to struggle to institute some order and routines themselves (Holthe and Langvik, 2017). Moreover, gender role expectations were reported to place heavier childcare demands on women, whose responsibility to their families is described as ‘omnipresent’ (Lassinantti and Almqvist, 2021).

#### 3.6.2 Category 14 – Parenting Behaviours

Park and Johnson (2019) suggest impulsive mothers with ADHD may struggle to regulate parenting responses for children’s negative behaviours and inattentive mothers may not be attuned to positive behaviour. This finding may shed some light on strained relationships in multiplex ADHD families (families where multiple individuals are affected by ADHD). However, Zaidman-Zait and Shilo (2021) concluded that maternal inhibitory control buffers the effect of high maternal ADHD symptomatology on negative parenting. This protective effect was such, that higher scores of maternal ADHD and maternal inhibitory control predicted increased supportive parenting during observations.

#### 3.6.3 Category 15 – Parenting Stress

Mothers of children with ADHD self-reported higher adult ADHD scores than comparisons, supporting the belief that ADHD is a highly heritable disorder which often runs in families (Perez-Algorta et al., 2018). Intriguingly, in the same study, maternal ADHD was reported to exacerbate perceived parenting stress of comparison mothers but not of mothers of children with ADHD. Correspondingly, Szep et al. (2021) concluded that maternal ADHD does not moderate the association of child ADHD with maternal perceived chronic stress. However, Szep et al. (2021) compellingly also observed that maternal ADHD and depressive symptoms were more predictive of maternal perceived chronic stress, than child ADHD and oppositional defiant disorder symptoms.

#### 3.6.4 Category 16 – Parenting Guilt

Lassinantti and Almqvist (2021) reported mothers with ADHD compared their own untidy home to an imagined uncluttered home environment maintained by a good, organized mother. Correspondingly, women with ADHD interviewed by Holthe and Langvik (2017) put themselves down for only managing to fit in a bare minimum of necessary activities with their children in their schedules. Zaidman-Zait and Shilo (2021) revealed that when interactions of mothers with ADHD and their children were observed, it transpired that the mothers’ previous self-reports of negative parenting behaviours overestimated these behaviours. Holthe and Langvik (2017) also uncovered how mothers with ADHD may keep tormenting themselves for having passed on ADHD to their offspring, thus condemning them for life with this challenging condition.

Table 5. Findings, categories and synthesized findings for the fifth theme

Synthesised finding	Categories	Findings
Gender role expectations are harder to keep up with for some mothers with ADHD who struggle to maintain structure and find childcare and household tasks	Category 13 – Managing motherhood tasks	-Swedish mothers with ADHD reported they resist traditional gendered expectations and sometimes find tasks typically assigned to fathers more stimulating than repetitive and boring chores (Lassinantti & Almqvist, 2021). -Swedish mothers with ADHD resented the fact that responsibility is omnipresent for mothers and their executive functioning resources get depleted, while fathers get more time away from the family unit for themselves (Lassinantti & Almqvist, 2021). -Norwegian mothers with ADHD explained that the responsibility for establishing structure and routines at home with their children rests solely on them unlike in a work environment (Holthe



<p>boring. Preliminary evidence suggests that variation in maternal inhibitory control in the context of maternal ADHD determines negative and supportive parenting behaviours. Mothers with ADHD reported feeling inadequate as parents upon comparisons to other mothers. In multiplex families, mothers may feel guilty for passing on ADHD to children and experience considerable stress. Research still has to elucidate to what degree maternal and child ADHD each contribute to maternal stress.</p>		<p>&amp; Langvik, 2017).</p> <ul style="list-style-type: none"> <li>-Norwegian mothers reported that children continuously distract them from the task at hand and they struggle to return back to a task once interrupted (Holthe &amp; Langvik, 2017).</li> <li>-Expert ADHD panel concluded that parenting and household duties may overwhelm mothers with ADHD (Young et al., 2020).</li> </ul>
	Category 14 – Parenting behaviours	<ul style="list-style-type: none"> <li>-Canadian mothers with ADHD offered less child-responsibility attributions for positive child behaviour and more child-responsibility attributions for negative behaviour than mothers without ADHD (Park &amp; Johnson, 2019).</li> <li>-Canadian mothers with more ADHD symptoms showed a weaker relationship between valence of child behaviour and child behaviour attributions given (Park &amp; Johnson, 2019).</li> <li>-Maternal ADHD symptoms were positively associated with self-reported overreactive parenting and self-reported lax parenting in an Israeli cross-sectional study (Zaidman-Zait &amp; Shilo, 2021).</li> <li>-Self-reported overreactive parenting of Israeli mothers with ADHD was not supported by observed parenting negativity during mother-child conflict discussions (Zaidman-Zait &amp; Shilo, 2021).</li> <li>-Inhibitory control served as a protective factor against parenting negativity in the context of high maternal ADHD symptoms in the Israeli cross-sectional study (Zaidman-Zait &amp; Shilo, 2021).</li> <li>-Higher levels of maternal inhibitory control and maternal HA/IM symptoms predicted increased supportive parenting in the Israeli cross-sectional study (Zaidman-Zait &amp; Shilo, 2021).</li> </ul>
	Category 15 – Parenting stress	<ul style="list-style-type: none"> <li>-US mothers of children with ADHD rated themselves higher on adult ADHD self-rating scales than mothers of children without ADHD in a case control study (Perez Algorta et al., 2018).</li> <li>-Maternal ADHD did not exacerbate the perceived stress of parenting a child with ADHD in the case control study conducted in the US (Perez Algorta et al., 2018).</li> <li>-Maternal ADHD symptom level had a significantly stronger association with parenting stress for the US mothers of children without ADHD than for mothers of children with ADHD in the case control study (Perez Algorta et al., 2018).</li> <li>-Maternal perceived chronic stress positively correlated with child and maternal ADHD in a cross-sectional study conducted in Germany (Szep et al., 2021).</li> <li>-Maternal ADHD and maternal depressive symptoms were more predictive of maternal perceived chronic stress than child ADHD and child Oppositional Defiant Disorder &amp; Conduct Disorder symptoms in the cross-sectional study conducted in Germany (Szep et al., 2021).</li> <li>-Maternal ADHD did not moderate the association between child ADHD symptoms and maternal perceived chronic stress in the cross-sectional study conducted in Germany (Szep et al., 2021).</li> </ul>
	Category 16 – Parenting guilt	<ul style="list-style-type: none"> <li>-Expert ADHD panel concluded that mothers with ADHD may experience feelings of guilt over perceived inadequacy as a parent (Young et al., 2020).</li> <li>-Mothers from the UK reported reminding themselves they knew no better when they start feeling guilty about how they parented differently before they were diagnosed (Stenner et al., 2017).</li> <li>-Swedish mothers reported they compare their messy homes with ‘ideal homes which are tidy’ and themselves with ‘good mothers which are organized’ (Lassinantti &amp; Almqvist, 2021).</li> <li>-Norwegian mothers reported they wished they knew how to find time to plan more activities for their children like other mothers (Holthe &amp; Langvik, 2017).</li> <li>-Norwegian mothers reported feeling guilty for passing on ADHD to their children (Holthe &amp; Langvik, 2017).</li> </ul>

### 3.7 Results of Sensitivity Analyses

The contribution of the four studies (Behesti et al., 2021; Ersoy and Ersoy, 2019; Eryilmaz and Ustang-Budak, 2019; Snyder et al., 2015) with a methodological assessment score of 2 on synthesized findings was evaluated. Ersoy and Ersoy (2019) and Snyder et al. (2015) provided important contributions to synthesized findings that were endorsed by few other studies. The review was, therefore, partially sensitive to inclusion of studies with low methodological quality. Subsequently, exclusion of studies which had a methodological assessment score of 1 may have biased synthesized findings.

## 4. Discussion

A description of integration of quantitative and qualitative evidence, an outline of the contribution of this review and an acknowledgement of its limitations are dealt with in this section.

#### *4.1 Integration of Quantitative and Qualitative Findings*

Quantitative and qualitative findings were markedly supportive of each other. There was only one instance when one paradigm discredited the other. This rebuttal was presented by Owens et al. (2017), who quantitatively concluded there was no statistical difference in satisfaction with current relationship between females with ADHD and those without. Meanwhile, females with ADHD had confided in most of the included qualitative studies that romantic relationships were highly problematic for an array of reasons.

The review is additionally replete with cases where the qualitative evidence not only confirms quantitatively derived results but extends, refines and deciphers them. The most notable examples include women describing how they experience their hyperactivity as racing thoughts which cannot be controlled (Lynch and Davidson, 2022). This revelation explains why symptoms of hyperactivity, as captured by rating scales which typically ask about always being on the go and fidgetiness, are significantly higher in men than women with ADHD, as reported by Hayashi et al. (2019). Another illustration is provided by the narrative of a woman with ADHD interviewed by Stenner et al. (2017), who shed light on the relationship between low self-concept and suicidality in females with ADHD. This relationship was quantitatively advanced by Kakuszi et al. (2018). The woman recalled how self-criticism and self-destruction began to feed off each other in her youth, until they climaxed into serious attempts to take away her own life.

The categories for which quantitative testing was not complemented by qualitative explorations were overall health, sex hormones, perinatal issues and parenting behaviours. Conversely, the casual sex category was derived exclusively from findings extracted from qualitative studies. This implies quantitative inquiries are required to consign width to the depth already attained for this category. A less discernible, but arguably more important, implication is the realization that more qualitative research may unearth aspects of female ADHD which have never been recognized by quantitative researchers.

#### *4.2 Contribution of the Review*

The question set for this review read “What are the female specific ADHD issues which render adult women with ADHD a marginalized group?” There was an ethical commitment towards the community of females with ADHD to ascertain that extant research affirms their disadvantage, prior to embarking on a photovoice project to empower them. A preliminary search had also established that inequities arise both from biological and social factors. Therefore, an MMSR was chosen because it could provide critically appraised, robust evidence to verify concrete marginalization if it existed, whilst at the same time capturing all the nuances of the phenomenon through integration of quantitative and qualitative findings. These two imperative aims were achieved. Synthesized findings presented are useful to clinicians working with girls and women with ADHD or policy makers planning services for them. To this end, a set of recommendations for policy and practice have been proffered hereunder.

Increased awareness on the inattentive ADHD subtype, particularly among girls, is sorely needed among health care professionals and educators. The failure to recognize the predominantly inattentive subtype is unacceptable, considering that it has been officially recognized in DSM-IV since 1994 (APA, 1994). Additionally, clinicians must be cognizant of the fact that girls may report their ADHD symptoms as emotional problems and experience hyperactivity as an internal restlessness.

Similar to how age-specific ADHD symptom criteria were introduced in DSM-V, indicating how symptoms manifest differently in adulthood (APA, 2013), DSM guidelines ought to consider providing sex-specific criteria. Until these guidelines are made available, Young et al. (2020) advise females should be screened for ADHD using rating scales inclusive of female norms. In the absence of the latter, a stronger reliance on collateral information from parent or school reports is essential.

Earlier recognition of ADHD in girls ensures educational school support, which is required to attenuate negative educational outcomes reported by literature. Moreover, Guendelman et al. (2016) hinted that lower academic achievement may in turn predispose girls with ADHD to subsequent negative outcomes, possibly through interference with their self-confidence and social empowerment. A negative self-concept has furthermore been associated with suicidal behaviour in females with ADHD (Kakuszi et al., 2018). Consequently, timely recognition of female ADHD may disrupt the cascading effect of a series of chain events which is impinging on the quality of life of women with ADHD.

Psychiatric comorbidity is so pervasive among females with ADHD, that it is advocated that all females diagnosed with ADHD should be routinely screened for anxiety and depression. Conversely, females struggling with treatment resistant anxiety or depression or presenting with these issues in the context of a family history of ADHD, should be screened for ADHD. In particular, Babinski et al. (2021) allude that among girls with subthreshold levels

of ADHD, symptoms of depression or oppositional defiant disorder may be considered indicators which prompt for further screening.

Camara et al. (2022) suggest evaluation of hormonal status in females with ADHD should be a component of holistic treatment plans. Dorani et al. (2021) propose dosage of ADHD medication might need to be adjusted during the premenstrual week and perimenopausal years. Females attending their first antenatal visit should be routinely asked if they have ADHD. Midwives providing antenatal care ought to be mindful and non-judgmental of challenges this client group may face in adhering to prenatal health behaviours.

Programmes and interventions for young female adults with ADHD targeting issues such as low self-esteem, social skills, risk of victimization in interpersonal relationships and contraceptive counselling would be beneficial. Psychoeducation for mothers with ADHD should stress the value of avoiding comparisons with neurotypical mothers, delegating tasks to supportive persons in one's social network, accepting one's limitations and attenuating guilt, addressing inhibitory control and boosting supportive parenting by training oneself to be on the lookout for positive behaviour from children.

#### *4.3 Limitations*

Conducting this MMSR required significant methodological skill for which clear and universally approved guidance is not available to date. Petticrew et al. (2013) purport the interpretative process embedded in a MMSR is highly iterative and subsequently reproducibility is compromised. In this case, this was aggravated by the fact that the whole process was tackled primarily by one reviewer. The other reviewers oversaw the venture and actively participated by pondering uncertainties, which were eventually resolved through discussion.

Although efforts to limit publication bias were made, its actuality cannot be ruled out. Studies providing results which did not reach statistical significance or findings which had antagonistic implications were not excluded. That being said, inclusion and exclusion criteria set a priori and post hoc may have contributed to publication bias. Developers of the MMAT version 2018 recommend it requires subsequent validation research (Hong et al., 2018). Moreover, periodically it was observed that the tool's five questions for each study design did not always fully capture all the methodological considerations worthy of note.

In view of the convolutedness involved in synthesizing evidence derived from studies with different epistemological foundations, Lizarondo et al. (2020) indicate that currently the practice of assessing certainty of evidence using approaches such as GRADE (Terracciano et al., 2010) or ConQual (Munn et al., 2014), is not recommended by the JBI manual of evidence synthesis. Although, this circumstance was beyond the agency of the reviewers, it is being acknowledged as a limitation, which further stresses the evolving nature of MMSR development.

### **5. Conclusion**

Females with ADHD have been side-lined not only clinically but also in research settings, with almost all research on ADHD focusing on boys and men up until recently. Quantitative research endeavours have been predominantly cross-sectional, and comparisons have been hampered because of considerable variation in measures assessing ADHD status. Additionally, control groups from the general population have not been consistently recruited in studies comparing males and females with ADHD. This renders conclusions questionable as differences may be attributable exclusively to gender. A conspicuous dearth of qualitative explorations among women with ADHD persists.

Future investigations need to include longitudinal, prospective studies to inspect gender differences in developmental aspects of ADHD symptomatology. The existence or otherwise of a genuine sex difference in ADHD onset requires ascertainment. A necessity for mediation analyses research, to distinguish any mediators and moderators involved in significant associations reported in this review, subsists. There is an urgency for more research on ADHD medication for girls and women, particularly on its interaction with female sex hormones, as proposed by Camara et al. (2022). Optimal, female-specific doses need to be identified together with clear guidelines on how they can be adjusted during periods of hormonal fluctuations. Safety or otherwise of ADHD medication during pregnancy and breastfeeding requires categorical determination.

Mothers with ADHD have been studied primarily with the intent of ensuring they can help their children with ADHD experience better outcomes. However, the needs and wellbeing of mothers with ADHD ought to also be investigated with the sole resolute of garnering findings which can inform psychoeducational programmes tailor made specifically for them, apart from their children. Research still has to identify to what extent child ADHD and maternal ADHD contribute to maternal stress in multiplex families. Szep et al. (2021) refer to the work of Psychogiou et al. (2008) as the origin of the similarity-misfit and similarity-fit hypotheses. These respectively

propose that either a child's ADHD augments the stress of mothers with ADHD, or shared traits between mothers and children with ADHD result in enhanced mutual understanding. These hypotheses require further testing and exploration.

Disadvantage of females with ADHD has been ascertained by this MMSR. Factors side-lining females with ADHD with respect to their male counterparts include the way the disorder manifests itself differently, biases in diagnostic processes, risks of psychiatric comorbidities, hormonal influences and gender role expectations. Intriguingly, the way the social marginalization, interfering with access to treatment and missed opportunities, is mirrored in perceptions women with ADHD have of themselves, transpired very strongly. A problematic self-concept emerged as a predicament females with ADHD grapple with from a young age. Moreover, mothers with ADHD were noticed to engage in comparisons with neurotypical mothers and fathers with ADHD, and to overestimate their negative parenting behaviours. This MMSR has, therefore, warranted empowerment of this population.

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## Appendices

### I – Adapted PRISMA for reporting systematic reviews of qualitative and quantitative evidence

Section/topic	Description
<b>TITLE</b>	
Title	<ul style="list-style-type: none"> <li>Propose a short take-home title. The title should explicitly state that the review included different type of evidence.</li> </ul>
<b>ABSTRACT</b>	
Structured summary	<ul style="list-style-type: none"> <li>Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.</li> </ul>
<b>INTRODUCTION AND OBJECTIVES</b>	
Rationale	<ul style="list-style-type: none"> <li>Describe the rationale for the review (e.g., a health problem) in the context of what is already known (e.g., an existing literature review paper or a reference book chapter).</li> </ul>
Objectives	<ul style="list-style-type: none"> <li>Formulate questions and/or objectives (qualitative, quantitative or both) being addressed by your review.</li> </ul>
<b>METHODS</b>	
Protocol and registration	<ul style="list-style-type: none"> <li>Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.</li> </ul>
Justification	<ul style="list-style-type: none"> <li>Justify the use of a review of qualitative and quantitative evidence.</li> </ul>
Eligibility criteria	<ul style="list-style-type: none"> <li>Specify the inclusion and exclusion criteria and the rationale for supporting these criteria.</li> </ul>
Information sources	<ul style="list-style-type: none"> <li>Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.</li> </ul>
Search	<ul style="list-style-type: none"> <li>Present full electronic search strategy for at least one database (e.g., in an appendix), including any limits used, such that it could be repeated.</li> <li>Describe the process for removing duplicates.</li> <li>Specify the involvement of a librarian, if applicable.</li> </ul>
Study selection	<ul style="list-style-type: none"> <li>Describe the process for selecting studies (e.g., screening based on titles and abstracts, and eligibility based on full-text, number of reviewers, software used).</li> </ul>
Data collection process	<ul style="list-style-type: none"> <li>Describe the method of data extraction from included studies (e.g., number of reviewers involved, piloted forms, etc.).</li> <li>List the data extracted.</li> <li>If applicable, state any processes for obtaining and confirming data from investigators of included studies (e.g., initial email to the first author and reminder email).</li> </ul>
Appraisal	<ul style="list-style-type: none"> <li>Describe the process for appraising included studies (e.g., tools used, number of reviewers involved), and specifically for assessing the methodological quality or risk of bias of included qualitative, quantitative, and mixed methods studies.</li> <li>Specify how results of this appraisal are used in the synthesis. For example, for descriptive purpose (include all studies with description of their methodological quality or risk of bias) or for analytical purpose (contrast synthesis of 'lower quality' studies vs. 'higher quality' studies using sensitivity analysis).</li> </ul>
Synthesis	<ul style="list-style-type: none"> <li>Describe the synthesis design used.</li> <li>Describe and justify the synthesis method(s) used (e.g., quantitative content analysis, meta-analysis, thematic synthesis, etc.).</li> </ul>
Additional analysis	<ul style="list-style-type: none"> <li>Describe methods of additional analyses (e.g., sensitivity or subgroup analyses), if done.</li> </ul>
<b>RESULTS</b>	
Study selection	<ul style="list-style-type: none"> <li>Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each</li> </ul>

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	<ul style="list-style-type: none"> <li>stage.</li> <li>Summarize in a flow diagram (see Appendices).</li> <li>Give numbers of quantitative, qualitative and mixed methods studies included.</li> </ul>
Study characteristics	<ul style="list-style-type: none"> <li>For each study, present characteristics for which data were extracted (e.g., tables of characteristics of included studies – see Appendices) and provide the citations.</li> <li>Specify common information across all included studies.</li> <li>Describe the studies including their heterogeneity (variability associated with differences between studies).</li> </ul>
Result of appraisal	<ul style="list-style-type: none"> <li>Present data on the methodological quality or risk of bias of included studies based on the appraisal done.</li> </ul>
Results of synthesis	<ul style="list-style-type: none"> <li>Present results of synthesis.</li> <li>If qualitative synthesis:                             <ul style="list-style-type: none"> <li>In the text, briefly summarize the main themes or categories and refer to the appendix.</li> <li>Appendix (table, figure, or matrix): For each study, present the themes or categories identified.</li> </ul> </li> <li>If quantitative synthesis:                             <ul style="list-style-type: none"> <li>In the text, briefly summarize the data and refer to the appendix.</li> <li>Appendix (table, figure, or matrix): For all key variables, present, for each study: (a) simple summary data for each intervention group and (b) effect estimates and confidence intervals, ideally with a forest plot.</li> </ul> </li> <li>If qualitative and quantitative syntheses:                             <ul style="list-style-type: none"> <li>Present both</li> <li>If applicable, present the results of the integration of both syntheses.</li> </ul> </li> </ul>
Additional analysis	<ul style="list-style-type: none"> <li>Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses).</li> </ul>
<b>DISCUSSION</b>	
Summary of evidence	<ul style="list-style-type: none"> <li>Provide an overall summary of results (take-home messages) from the qualitative and/or quantitative synthesis.</li> <li>State the main results for each main theme or category, and/or key process/outcome variable.</li> <li>Consider their relevance and importance for knowledge users (e.g., health care providers, managers, and decision/policy makers).</li> <li>Take into account the methodological quality across studies (when applicable).</li> <li>Describe insight gained from the integration of qualitative and quantitative evidence.</li> </ul>
Contribution	<ul style="list-style-type: none"> <li>Describe the contribution of the review (compared to what is already known) with respect to:                             <ul style="list-style-type: none"> <li>Review methods,</li> <li>Scientific knowledge,</li> <li>Practice, program planning and evaluation, policy making, or else.</li> </ul> </li> </ul>
Limitations	<ul style="list-style-type: none"> <li>Specify any element that may affect the cumulative evidence.</li> <li>Discuss limitations at the study and process/outcome levels (e.g., lack of rich data for qualitative synthesis, methodological quality/risk of bias, and their potential consequences on the results).</li> <li>Discuss limitations at the review level (e.g., dependent reviewers, incomplete retrieval of relevant studies - selective publication of reports regarding studies with positive results), and limited reporting (selective reporting of information about included studies), and their potential consequences on the results.</li> </ul>
Conclusions	<ul style="list-style-type: none"> <li>Provide a general interpretation of the results in the context of other evidence, including implications for knowledge users (e.g., major recommendation).</li> <li>State implications for future research.</li> </ul>
<b>ACKNOWLEDGEMENTS</b>	
Acknowledgements	<ul style="list-style-type: none"> <li>Describe sources of funding and other support (e.g., supply of data) and the role of funders in the review.</li> <li>Acknowledge any information about potential conflict of interest.</li> </ul>

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REFERENCES	
References	<ul style="list-style-type: none"> <li>List all the references cited in the text.</li> </ul>
APPENDICES (tables, figures, boxes, ...)	
Flow diagram	<pre> graph TD     A[Records identified through database searching (n=)] --&gt; B[Records after duplicates removed (n=)]     C[Additional records identified through other sources (n=)] --&gt; B     B --&gt; D[Records screened (n=)]     D --&gt; E[Records excluded (n=) reasons]     D --&gt; F[Full-text papers assessed for eligibility (n=)]     F --&gt; G[Full-text papers excluded (n=) reasons]     F --&gt; H[Studies included in the synthesis (n=)]     H --&gt; I[Quantitative studies (n=)]     H --&gt; J[Qualitative studies (n=)]     H --&gt; K[Mixed methods studies (n=)]                     </pre>
Table of characteristics of included studies	<ul style="list-style-type: none"> <li>Summarize key characteristics of the included studies in a table such as:                             <ul style="list-style-type: none"> <li>Source (first author, year),</li> <li>Study design,</li> <li>Number of participants and participants (e.g., age, sex, other),</li> <li>Setting (e.g., types and number of organizations),</li> <li>Intervention/exposure (if applicable), or relevant considerations for non-intervention studies,</li> <li>Outcomes (if applicable), or relevant considerations for non-intervention studies,</li> <li>Quality rating (if applicable),</li> <li>Further comments on key characteristics of the study (according to the review question),</li> </ul> </li> <li>Different tables may be needed: For example, tables for quantitative studies, for qualitative studies, and for mixed methods studies.</li> </ul>
Tables and figures on results of the synthesis	<ul style="list-style-type: none"> <li>Provide illustrations for results of the synthesis such as:                             <ul style="list-style-type: none"> <li>Quantitative synthesis: statistical summary, descriptive table, forest plots, etc.</li> <li>Qualitative synthesis: list of categories, list of themes and subthemes, concept maps, framework, etc.</li> </ul> </li> </ul>

Adapted from: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000  
<http://toolkit4mixedstudiesreviews.pbworks.com/w/page/66154236/Report%20mixed%20studies%20reviews> 3

II – Search Strategies

HyDi Platform Search Strategy		
Filters Applied-		
<ul style="list-style-type: none"> <li>Publication date within the last 10 years</li> <li>Records in the English Language only</li> <li>Records only from peer-reviewed journals</li> </ul>		
Keywords	Records Yielded	Links (last re-run on 14/04/2023)
adhd AND women OR female* OR girl*	139	<a href="https://hydi.um.edu.mt/primo-explore/search?query=title,contains,adhd,AND&amp;query=title,contains,women,OR&amp;query=title,contains,adhd,AND&amp;query=title,contains,female*,OR&amp;query=title,contains,adhd,AND&amp;query=title,contains,girl*,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortBy=rank&amp;vid=356MALT_VU1&amp;facet=tlevel,i nclude,peer_reviewed&amp;lang=en_US&amp;mode=advanced&amp;offset=0">https://hydi.um.edu.mt/primo-explore/search?query=title,contains,adhd,AND&amp;query=title,contains,women,OR&amp;query=title,contains,adhd,AND&amp;query=title,contains,female*,OR&amp;query=title,contains,adhd,AND&amp;query=title,contains,girl*,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortBy=rank&amp;vid=356MALT_VU1&amp;facet=tlevel,i nclude,peer_reviewed&amp;lang=en_US&amp;mode=advanced&amp;offset=0</a>
attention deficit hyperactivity disorder AND women OR female* OR girl*	93	<a href="https://hydi.um.edu.mt/primo-explore/search?query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,women,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,female*,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,girl*,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortBy=rank&amp;vid=356MALT_VU1&amp;facet=tlevel,i nclude,peer_reviewed&amp;lang=en_US&amp;mode=advanced&amp;offset=0">https://hydi.um.edu.mt/primo-explore/search?query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,women,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,female*,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,girl*,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortBy=rank&amp;vid=356MALT_VU1&amp;facet=tlevel,i nclude,peer_reviewed&amp;lang=en_US&amp;mode=advanced&amp;offset=0</a>
adhd AND mother* OR daughter* OR spouse*	108	<a href="https://hydi.um.edu.mt/primo-explore/search?query=title,contains,adhd,AND&amp;query=title,contains,mother*,OR&amp;query=title,contains,adhd,AND&amp;query=title,contains,daughter*,OR&amp;query=title,contains,adhd,AND&amp;query=title,contains,spouse*,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortBy=rank&amp;vid=356MALT_VU1&amp;facet=tlevel,i">https://hydi.um.edu.mt/primo-explore/search?query=title,contains,adhd,AND&amp;query=title,contains,mother*,OR&amp;query=title,contains,adhd,AND&amp;query=title,contains,daughter*,OR&amp;query=title,contains,adhd,AND&amp;query=title,contains,spouse*,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortBy=rank&amp;vid=356MALT_VU1&amp;facet=tlevel,i</a>

		nclude,peer_reviewed&lang=en_US&mode=advanced&offset=0
attention deficit hyperactivity disorder AND mother* OR daughter* OR spouse*	73	<a href="https://hydi.um.edu.mt/primo-explore/search?query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,mother*,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,daughter*,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,spouse*,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortby=rank&amp;vid=356MALT_VUI&amp;facet=tlevel,i">https://hydi.um.edu.mt/primo-explore/search?query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,mother*,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,daughter*,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,spouse*,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortby=rank&amp;vid=356MALT_VUI&amp;facet=tlevel,i</a> nclude,peer_reviewed&lang=en_US&mode=advanced&offset=0
gender AND adhd OR attention deficit hyperactivity disorder	134	<a href="https://hydi.um.edu.mt/primo-explore/search?query=title,contains,adhd,AND&amp;query=title,contains,gender,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,gender,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortby=rank&amp;vid=356MALT_VUI&amp;facet=tlevel,i">https://hydi.um.edu.mt/primo-explore/search?query=title,contains,adhd,AND&amp;query=title,contains,gender,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,gender,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortby=rank&amp;vid=356MALT_VUI&amp;facet=tlevel,i</a> nclude,peer_reviewed&lang=en_US&mode=advanced&offset=0
sex AND adhd OR attention deficit hyperactivity disorder	126	<a href="https://hydi.um.edu.mt/primo-explore/search?query=title,contains,adhd,AND&amp;query=title,contains,sex,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,sex,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortby=rank&amp;vid=356MALT_VUI&amp;facet=tlevel,i">https://hydi.um.edu.mt/primo-explore/search?query=title,contains,adhd,AND&amp;query=title,contains,sex,OR&amp;query=title,contains,attention%20deficit%20hyperactivity%20disorder,AND&amp;query=title,contains,sex,AND&amp;pfilter=lang,exact,eng,AND&amp;pfilter=creationdate,exact,10-YEAR,AND&amp;tab=default_tab&amp;search_scope=all&amp;sortby=rank&amp;vid=356MALT_VUI&amp;facet=tlevel,i</a> nclude,peer_reviewed&mode=advanced&offset=0

### Google Scholar Search Strategy

#### Filters Applied-

- Publication date within the last 10 years
- Records in the English Language only

Keywords	Records Yielded	Links (last re-run on 14/04/2023)
adhd AND women OR female OR girl	182	<a href="https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=women+female+girl&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=women+female+girl&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>
adhd AND women OR females OR girls	249	<a href="https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=women+females+girls&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=women+females+girls&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>
attention deficit hyperactivity disorder AND women OR female OR girl	109	<a href="https://scholar.google.com/scholar?as_q=attention+deficit+hyperactivity+disorder&amp;as_epq=&amp;as_oq=women+female+girl&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=attention+deficit+hyperactivity+disorder&amp;as_epq=&amp;as_oq=women+female+girl&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>
attention deficit hyperactivity disorder AND women OR females OR girls	122	<a href="https://scholar.google.com/scholar?as_q=attention+deficit+hyperactivity+disorder&amp;as_epq=&amp;as_oq=women+females+girls&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=attention+deficit+hyperactivity+disorder&amp;as_epq=&amp;as_oq=women+females+girls&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>
adhd AND mother OR daughter OR spouse	56	<a href="https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=mother+daughter+spouse&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=mother+daughter+spouse&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>
adhd AND mothers OR daughters OR spouses	238	<a href="https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=mothers+daughters+spouses&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=mothers+daughters+spouses&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>
attention deficit hyperactivity disorder AND mother OR daughter OR spouse	25	<a href="https://scholar.google.com/scholar?as_q=attention+deficit+hyperactivity+disorder&amp;as_epq=&amp;as_oq=mother+daughter+spouse&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=attention+deficit+hyperactivity+disorder&amp;as_epq=&amp;as_oq=mother+daughter+spouse&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>

attention deficit hyperactivity disorder AND mothers OR daughters OR spouses	214	<a href="https://scholar.google.com/scholar?as_q=attention+deficit+hyperactivity+disorder&amp;as_epq=&amp;as_oq=mothers+daughters+spouses&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=attention+deficit+hyperactivity+disorder&amp;as_epq=&amp;as_oq=mothers+daughters+spouses&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>
adhd AND gender OR sex	276	<a href="https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=gender+sex&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=adhd&amp;as_epq=&amp;as_oq=gender+sex&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>
attention deficit hyperactivity disorder AND gender OR sex	190	<a href="https://scholar.google.com/scholar?as_q=gender+OR+sex&amp;as_epq=attention+deficit+hyperactivity+disorder&amp;as_oq=&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5">https://scholar.google.com/scholar?as_q=gender+OR+sex&amp;as_epq=attention+deficit+hyperactivity+disorder&amp;as_oq=&amp;as_eq=&amp;as_occt=title&amp;as_sauthors=&amp;as_publication=&amp;as_ylo=2012&amp;as_yhi=2022&amp;hl=en&amp;as_sdt=0%2C5</a>

### III – Overview of Methods and a Detailed Result of Appraisal of Included Studies

#### Methodological considerations of the included quantitative studies.

Authors, Year of Publication & Design	Sample & setting	Study Methods	Methodological Comments Based on MMAT
Snyder et al. (2015)  Quantitative Cross- Sectional Study	-Secondary analysis of data from the American College Health Association's national bi-annual survey of college students. -For the current study the sample was limited to females aged 18 to 24 years (n=14,816) within 22 educational institutions located in the Northwest, Midwest, South and Western parts of the US. -Schools in the sample used randomly selected campus classrooms for paper administration of survey and randomly selected students for web-based surveys.	-The survey employed the National College Health Assessment (NCHA-II) tool. -The tool included items to measure the following variables: Exposure to risky situations (such as binge drinking), proximity to motivated offenders (such as relationship status), ADHD status and sexual victimization (unwanted sexual touching in the past 12 months & attempted or completed rape in the last 12 months). -Capable guardianship (receipt of sexual assault, violence and injury preventive information) was not measured by the original survey, so a measure was created for this study. -Bivariate analyses tested whether women with ADHD were sexually victimized at significantly higher proportions than women without ADHD. -A binary logistic regression model estimated effects of ADHD, lifestyles/routine activities & demographic characteristics on unwanted sexual touching and rape conducted.	-Large nationwide sample. Random selection of classrooms & students from selected schools. Sample described in detail but information on how it compares to strata in the general population not provided. -For all measures, variables were dichotomized (Yes/No replies). This binary system may not fully capture respondents' answers. -ADHD status measured from 1 self-report item. -Information on existence of any missing data not provided. -Confounders not accounted for in analysis.
Fuller-Thomson et al. (2016)  Quantitative Cross- Sectional Study	- Secondary analysis of data from the 2012 Canadian Community Health Survey. -Women aged 20 to 39 years with complete data on all variables of interest recruited as sample to current study. -107 reported being diagnosed with ADHD, 3801 reported not being diagnosed.	-Face to face or telephone interviews during which participants were asked questions about sociodemographic characteristics, health related behaviours, coping strategies, health related outcomes and adverse childhood experiences. Depression and anxiety measured as meeting the WHO-CIDI lifetime criteria. -Chi-Square tests to compare sociodemographic and health profile of women with ADHD in comparison to those without. -Logistic regression analyses calculated for	-Large nationally representative survey. -Measurement of exposure (ADHD diagnosis) relied on self-report of a health professional's diagnosis only. -Each logistic regression analysis controlled for race, age, education and household income. -All percentages and p-values were weighted to take into account the probability of selection & non-response.

		7 outcomes: lifetime substance abuse, sleep problems, limitations in activities of daily living, chronic pain, lifetime suicidal ideation, lifetime major depressive disorder and lifetime generalized anxiety disorder.	
Guendelman et al. (2016)  Quantitative Longitudinal Cohort Study	-Secondary analysis of data from the Berkeley Girls with ADHD Longitudinal Study (BGALS). -Present study included 193 girls (114 with ADHD & 79 matched comparisons) with data on physical Intimate Partner Violence (IPV) at Wave 3.	-Physical IPV measured from a) single question from the Health & Sexual Behaviour Questionnaire, b) clinician post-interview summary and c) year by year information sheet filled by parents & participants. -Childhood ADHD measured by parent-reports of the (DISC-IV; Shaffer et al. 2000) & (SNAP-IV; Swanson, 1992) scales. -Persistence/Remittance of ADHD measured at different waves using the (DISC-IV; Shaffer et al. 2000) scale. -Following measures also assessed: externalising behaviour, internalising behaviour, academic achievement and covariates (IQ, Socioeconomic status, etc.). -Chi-Square test & parallel logistic regression to assess group differences among young women with persistent ADHD, transient ADHD or lifetime non diagnosed comparison group.	-Ecologically valid sample described in detail. -Physical IPV determined via a single self-report question plus chart review not a standardized instrument. -Retention rate very good. Reasons why some participants from original sample were lost given. -Covariates well accounted for in design & analysis. -Change in exposure status (ADHD persistence) measured and accounted for.
Owens et al. (2017)  Quantitative Longitudinal Cohort Study	-140 girls with ADHD from San Francisco, US, aged 6 to 12 years were recruited. -88 comparison girls without ADHD and matched to ADHD sample on age and ethnicity recruited. -Measures taken in four waves: W1 (baseline), W2 (5 years from baseline), W3 (10 years from baseline) and W4 (16 years from baseline).	-ADHD diagnosis measured using parent and participant self-report on the (DISC-IV; Shaffer et al. 2000) & the (SNAP-IV; Swanson, 1992). At W4, age-specific criteria were adopted. -At different waves, scales were administered to measure the following: externalising & externalising problems, depression, substance use, self-injury, overall impairments, academic achievement, BMI, overall sleep quality, social relationships and driving behaviour. The following covariates were also measured: family socioeconomic status, child IQ, comorbid diagnoses and stimulant medication use. -Computed 35 ANOVAs and 8 Chi-Squared tests regarding the 43 dependent measures at W4 by the independent variable (ADHD status & persistence).	-Findings generalisable to population of urban & suburban community-referred girls of various ethnicities & family income status. -Measures clearly defined, valid & appropriate. -Retention rate very good. Retained sample evaluated to ascertain representativeness. -Covariates considered. -Change in exposure status (ADHD persistence) measured and accounted for.
Jones et al. (2018)  Quantitative Cross-Sectional Study	-198 participants (aged 18 to 43 years) recruited from women's health clinic located on medical campus of university in South-eastern US. (n=198) -Inclusion criteria - currently patients at the clinic, older than 18 years of age, pregnant and proficient English speakers.	-Current ADHD symptoms measured via the (CAARS-S:S; Conners et al., 1999). -Frequency & degree of general health behaviours & pregnancy-specific health behaviours assessed via the (PHBS; Lobel, 1996). -Depressive symptoms (confounder) assessed via 2 items of the (PHQ-2; Kroenke et al., 2003).	-No mention of how many participants were eligible, therefore no indication of non-response bias. -No information provided re any missing data. -Confounders identified through previous literature considered in analyses. -Pregnancy could have been an

		<p>-Pearson product moment correlations performed to investigate univariate associations among ADHD symptom clusters &amp; prenatal health behaviours.</p> <p>-Multivariate relations among all variables examined with a multivariate path model, using all 3 ADHD symptom clusters as predictors of all 7 prenatal health behaviours in one simultaneous analysis.</p>	<p>unexpected co-exposure affecting CAARS scores, since participants' previous ADHD status not known.</p>
<p>Kakuszi et al. (2018)</p> <p>Quantitative Case-Control Study</p>	<p>-103 ADHD patients (aged 18 to 65 years) recruited from an outpatient service for adults with ADHD in Budapest.</p> <p>-103 controls matched for gender, age &amp; educational attainment recruited from the office and medical staff at Semmelweis University, Budapest and their acquaintances.</p>	<p>-Suicidal thoughts assessed via 1 item of the (BDI; Beck et al.1979) scale.</p> <p>-Severity of psychopathology described using total score on the (SCL-90R; Derogatis &amp; Cleary, 1977).</p> <p>-ADHD symptoms assessed via the (CAARS; Conners, 1999) scale.</p> <p>-Logistic regression applied with presence of Suicidal Ideation used as dependent variable &amp; grouping (ADHD vs control), gender &amp; their interaction as independent variables. Age was a covariate.</p> <p>-Also investigated whether the presence of comorbidities &amp; medication status influenced the findings.</p>	<p>-Clinically referred sample provides added strength via availability of detailed psychopathology but limits generalisability.</p> <p>-Sample size determined by consideration of statistical power.</p> <p>-Measures appropriate &amp; valid. No mention whether incomplete data was an issue.</p> <p>-Groups were matched &amp; key clinical variables controlled for.</p>
<p>Martin et al. (2018)</p> <p>Quantitative Cohort Study</p>	<p>-Participants from "The Child &amp; Adolescent Twin Study in Sweden" (CATSS) – a population study of all twins born in Sweden since 1992. Since 2008, DNA samples from saliva were collected. (n=13,472 CATSS children with genotyped samples which underwent imputation procedures).</p> <p>-Participants from "The Avon Longitudinal Study of Parents &amp; Children" (ALSPAC) – a large, longitudinal study of children from Avon, UK. (n=8,215 ALSPAC children with genotyped samples which underwent imputation).</p>	<p>-For the CATSS sample, information on ADHD, anxiety &amp; depression available from registry based clinical diagnosis and parent &amp; twin rated screening measures [(A-TAC; Larson et al. 2010), (ABCL; Achenbach et al. 2003), (SCARED; Birmaher et al. 1997) &amp; (CES-D; Radloff, 1977)].</p> <p>-For the ALSPAC sample, information on ADHD, anxiety &amp; depression only available from parent &amp; child rated screening measures [(DAWBA; Goodman et al. 2000) &amp; (CIS-R; Lewis et al. 1992)] which were used to derive algorithm-based research diagnoses.</p> <p>-Polygenic risk scores calculated for each individual by scoring number of alleles across the ADHD discovery set of Single Nucleotide Polymorphisms.</p> <p>-Associations between ADHD polygenic risk scores and sex in children with diagnosed ADHD, anxiety, depression or other disorders tested using generalised estimating equations and logistic regression models.</p>	<p>-Researchers acknowledged that sample sizes of those with psychiatric disorders were low. This limited statistical power and effect sizes were low.</p> <p>-Information from ALSPAC sample only available from screening measures and measures used not similar to both cohorts.</p> <p>-Attrition bias declared.</p> <p>-Confounders controlled for through regression.</p> <p>-Any changes to cohorts during study period not reported.</p>
<p>Perez Algorta et al. (2018)</p> <p>Quantitative Case Control study</p>	<p>-Secondary analysis of data from the Multimodal Treatment Study of Children with ADHD – (MTA Cooperative Group, 1999, 2004) including the auxiliary LNCG (Local Normative Comparative Group).</p>	<p>-Big Five personality traits assessed via the (Neo Five-Factor Inventory; Costa &amp; McCrae, 1992) scale.</p> <p>-Maternal ADHD symptoms assessed via the first 3 factors of the (CAARS; Conners et al., 1999) scale.</p> <p>-Maternal stress was measured via the (PSI-</p>	<p>-Participation in original study required considerable effort, so mothers in this study may not be representative of mothers from ADHD families.</p> <p>-Baseline measures for the two groups occurred 2 years apart.</p>

	<p>-MTA children were 7 to 9.9 years old &amp; diagnosed with ADHD. LNCG children were recruited from the same schools as MTA children &amp; matched for sex &amp; grade.</p> <p>-430 MTA mothers &amp; 237 biological LNCG mothers filled out measures at baseline.</p> <p>-31 LNCG children were later excluded because they had ADHD.</p>	<p>Short Form; Abidin, 1995) scale.</p> <p>-Hierarchical regression analyses used to see whether maternal personality traits and/or maternal ADHD interact with the relationship between mothers' group (MTA/LNCG) &amp; parenting stress.</p>	<p>-For the MTA group, (n=57) had incomplete CAARS data, however multiple imputation procedure was employed, imputing 5 sets of values for all measures.</p> <p>-Significant sociodemographic moderators were considered as potential confounders in analyses.</p>
<p>Solberg et al. (2018)</p> <p>Quantitative Cross-Sectional Study</p>	<p>-Cross-sectional analysis of a cohort of adults in Norway performed by linking information from 4 national population-based registries.</p> <p>-Study included all individuals born between 1967-1997, alive &amp; resident in Norway at record linkage in 2015.</p> <p>-40,103 adults identified with ADHD (44.4% women) through registers &amp; 1,661,103 non-ADHD adults.</p>	<p>-Two regression models ran to evaluate how risk factors for both ADHD &amp; other psychiatric disorders influenced ADHD prevalence rates. Covariates included.</p> <p>-Absolute prevalence differences of psychiatric disorders between persons with and without ADHD among men &amp; women were calculated.</p> <p>-Association between ADHD and other psychiatric disorders examined on a multiplicative scale.</p> <p>-Estimated the proportion of psychiatric comorbidities attributable to ADHD among men &amp; women with ADHD.</p>	<p>-Large sample allowed evaluation of less prevalent disorders &amp; comparison of psychiatric comorbidity in men and women with representative numbers in both groups.</p> <p>-Mandatory, prospective reporting in Norway minimized selection bias and loss to follow-up and eliminated recall bias.</p> <p>-Possibility of bias - adults with ADHD could more easily be diagnosed with other psychiatric disorders than non-ADHD adults because they are already in contact with health services.</p> <p>-Prescribed &amp; dispensed ADHD medication used as proxy for ADHD diagnosis. For those patients who do not take medication, ADHD status identified from the Norwegian Patient Registry, but data only available from 2008 onwards.</p> <p>-Registered data was available to adjust for covariates.</p>
<p>Yoshimasu et al. (2018)</p> <p>Quantitative Case-Control Study</p>	<p>-Target population consisted of 5,718 children (2,956 boys &amp; 2,762 girls) born in Rochester, Minnesota between 1976 and 1982 &amp; who still lived in Rochester at age 5 years.</p> <p>-350 childhood ADHD cases were identified &amp; accepted to participate.</p> <p>-Random sample of 801 adults from the same population-based birth cohort was invited to participate.</p>	<p>-Persistence of ADHD in adulthood &amp; presence of psychiatric disorders were determined via the (M.I.N.I.; Sheehan et al. 1998).</p> <p>-Healthcare record linkage system of all residents in Rochester was available and included a detailed history of all healthcare encounters.</p> <p>-Presence of each comorbid psychiatric disorder was compared between males and females with persistent ADHD using the Chi-Square test.</p> <p>-Logistic regression models evaluated the association of a) persistent ADHD (vs non-ADHD), b) persistent ADHD (vs non-persistent ADHD) and c) non-persistent ADHD (vs non-ADHD) with each of the comorbid psychiatric conditions for both genders combined and separately by gender.</p>	<p>-Rochester was a primarily white, middle-class community so inferences to other populations may be limited.</p> <p>-No significant differences in sociodemographic factors between participating and non-participating childhood ADHD cases.</p> <p>-Limited number of females in the study which limits comparison with males.</p> <p>-Distribution of numbers of symptoms endorsed by non-ADHD controls were used to establish cut-offs to diagnose persistent ADHD.</p> <p>-Cannot ascertain if persistent ADHD preceded the development of comorbidities.</p>

<p>Ersoy &amp; Ersoy (2019)</p> <p>Quantitative Cross-Sectional Study</p>	<p>-61 married patients (18 females &amp; 43 males) who came for ADHD evaluation &amp; treatment at the Psychiatric Department of a Turkish University Hospital were recruited together with their spouses.</p>	<p>-Gender role attitudes for patients &amp; spouses measured via the (GRAS; Zeyneloglu &amp; Fusun, 2011) scale.</p> <p>-ADHD status &amp; severity of patients &amp; spouses measured via Turgay's adult ADD/ADHD DSM-IV-Based Diagnostic Screening &amp; Rating Scale.</p> <p>-Assessment of patients' and spouses' perceptions of effects of ADHD-related behaviours on marriage via the (MIC; Robin &amp; Payson, 2002) scale.</p>	<p>-Clinic situated in culturally Westernized city of Turkey, so results not generalisable to Turkish population.</p> <p>-Moreover, the sample was clinical, included only married couples and is characterised by a disparity between genders.</p> <p>-Study lacks a comparison group – cannot determine if reported dissatisfaction of female non-ADHD spouse is attributed to ADHD or follows the general trend of women being more psychologically affected by relationship problems.</p> <p>-No information provided to allow assessment of non-response bias.</p> <p>-Confounding factors not considered.</p>
<p>Eryilmaz &amp; Ustang-Budak (2019)</p> <p>Quantitative Cross-Sectional Study</p>	<p>-Schools within reach asked to participate.</p> <p>-Sample of 103 primary school teachers from schools from 4 different regions of Istanbul city.</p> <p>-3 excluded because they had a child with ADHD.</p>	<p>-6 vignettes produced for this study based on requirement of symptoms of ADHD according to DSM-V criteria. All vignettes taken by all participants.</p> <p>-Participants answered demographic questions (experience &amp; education in relation to ADHD) together with questions about recognition, referral and intervention.</p> <p>-Chi Square Tests performed to analyse recognition of ADHD.</p>	<p>-Small sample size limits generalisability and did not allow hierarchical regression analysis.</p> <p>-Mixture of public/private schools from different regions and teachers teaching different grades.</p> <p>-First vignettes ever created based on DSM-V criteria after consultation with authors of previous vignettes (based on DSM-IV criteria).</p> <p>-Risk of non-response bias high – some schools chose not to participate.</p>
<p>Hayashi et al. (2019)</p> <p>Quantitative Cross-Sectional Study</p>	<p>-Patients who visited ADHD specialist clinic in Tokyo between April 2015 and March 2016 recruited consecutively if they fulfilled ADHD DSM-V criteria.</p> <p>- 470 eligible participants, 335 included in the study.</p>	<p>-Following data collected during assessment interview: current problems, medical history, daily living &amp; social situations, history of psychiatric consultations, history of substance misuse and current medication.</p> <p>-ADHD diagnosis ascertained via the [DSM-IV(CAADID); Conners et al. 2001] scale.</p> <p>-Current ADHD symptoms measured via the [(CAARS-S:SV-J); Conners et al. 2010] scale.</p> <p>-Between gender comparisons made using Chi-Square test and student's t-test by setting gender as independent variable &amp; other demographic/clinical items as dependent variables.</p> <p>-Candidates for explanatory variables in logistic regression analyses chosen from items that were statistically significant in univariate analysis.</p>	<p>-Clinical sample not accurately representing Japanese ADHD population (only severe cases likely to be referred).</p> <p>-Reasons why certain participants chose not to participate not explored.</p> <p>-Little detail provided re assessment interview.</p> <p>-No confounders accounted for in the analysis.</p> <p>-Study lacked a control population, and only provided an approximate comparison to national demographic statistics.</p>
<p>Mowlem et al. (2019)</p>	<p>-Participants were from "The Child &amp; Adolescent Twin Study in</p>	<p>-2 modules assessing ADHD from the (A-TAC; Larson et al. 2010) scale</p>	<p>-Large sample but findings may not be generalisable to singletons.</p>

Quantitative Cross-Sectional Study	Sweden” (CATSS) – an ongoing, prospective, longitudinal cohort study targeting all twins in Sweden born since 1992. -For present study, data from 19,804 parents of CATSS children assessed at 9 years were available for analysis.	administered to parents over the phone. -Personal identifier numbers enabled data from participants to be linked with information from the National Population-Based Registers. So, it was possible to determine if participants in CATSS had been referred to clinics and diagnosed or treated for ADHD. -Descriptive statistics used to describe ADHD symptoms in males and females with/without clinical ADHD. -Series of logistic regression models used to assess predictive associations of different ADHD symptoms with clinical diagnosis in males & females.	-Relied solely on parent ratings which may be biased by sex-specific expectations. -Risk of non-response bias not discussed. -Only a reduced number of parents completed items measuring co-occurring internalising problems. - Cluster robust sandwich estimator used to correct for inclusion of 2 study children in each family.
Park & Johnson (2019)  Quantitative Cross-Sectional Study	-79 mothers with sons aged 6 to 12 years recruited throughout Canada from advertisements on social media. -Eligibility criteria- mothers currently living with their sons & with their son’s other parent.	-Online Questionnaire. -Child responsibility attributions measured via the Attribution Rating Scale (ARS; Halligan et al., 2007) which depicted scenarios & mothers rated the reason for the child’s behaviour in the scenario. -Mothers’ ADHD symptoms measured via the (BAARS; Barkley, 2011) scale. -Behaviour of the mother’s own child (hyperactivity, emotional symptoms, conduct problems, peer problems & prosocial behaviour) measured via the (SDQ; Goodman, 2001) scale. -Multilevel modelling examined relations among mothers’ ADHD symptoms & mothers’ attribution scores controlling for mothers’ ratings of their own child’s behaviour.	-Results not generalizable to clinical populations, fathers, parents of girls or single parent families. -BAARS typically used as screening tool for adult ADHD & not as a diagnostic measure. -Response times were correlated with mothers’ ADHD symptoms to check whether those with ADHD were impulsively rushing through questionnaire. -It was reported there were no missing data. -Other psychopathologies of mothers may have been important confounding variables which were not measured.
Skoglund et al. (2019)  Quantitative Retrospective Cohort Study	-All Swedish nulliparous females who gave birth in 2014 identified from the Medical Birth Register and included in the study (n=384,103). -From the Prescribed Drug Register, females with ADHD treated with medication for ADHD between 2005 & 2014 were identified (n=6410). -All other females in the cohort served as control group (n=377,693).	-Maternal age at birth, BMI, smoking habits, clinical variables, demographic data, information on reproductive history, complications during pregnancy, birth & perinatal period identified from the Medical Birth Register. -Information on psychiatric comorbidities collected from the Patient Register. -Antidepressant treatment use identified from the Prescribed Drug Register. -Maternal education data identified from the Education Register. -Logistic regression models were used to estimate magnitude of associations between age at first pregnancy, risk factors for adverse obstetric/perinatal outcomes, psychiatric comorbidities and ADHD diagnosis - presented as odds ratio (ORs) with 95% CI. -Differences in risk factors explored in distinct age at birth subgroups of females with ADHD (<20yrs vs > 20 yrs.)	-Large nationwide sample. Findings may not be generalisable to populations outside Swedish/Nordic context which are characterized by a very low rate of teenage pregnancies. -Retrospective analysis of registers circumvented issues with non-response. -Prescribed ADHD medication used as proxy for ADHD status – this may have underestimated true ADHD prevalence. -Missing data were excluded from analysis but no indication of amount of missing data. -Emphasis was on total burden of disease & no adjustments for psychiatric comorbidities were made.
Vildalen et	-682 adults with ADHD recruited	-Severity of Inattentive &	-Large sample but no mention of



al. (2019) Quantitative Case-Control Study	from the national registry of adults diagnosed with ADHD in Norway from 1997-2005. -882 controls randomly recruited from the Medical Birth Registry of Norway.	Hyperactive/Impulsive ADHD symptoms measured via subscales of the (ASRS; Kessler et al. 2005). -Main effects of gender and group and their interaction effect on the symptom scales investigated by univariate ANCOVA's. -Significant effects were followed by independent sample t-tests. -Chi-Square statistics used to investigate gender differences in dichotomized ADHD reports (severe vs not severe) within the ADHD & control group.	efforts to ensure representativeness or procedures to explore why eligible participants refused to be included. -Lack of formal diagnostic procedure may have resulted in some possible cases within the control group. -Incomplete data was not an issue. -Control group not matched for age and gender, but age included as one of the covariates in the analysis.
Babinski et al. (2020) Quantitative Case-Control Study	-387,968 adults with ADHD aged 18 to 25 years were identified within the 2014 MarketScan Commercial Claims and Encounters database maintained by Truven Health in the US (162,263 females & 225,705 males). -An age and sex matched group of young adults without ADHD was also constructed. -Claims contained information on inpatient, outpatient and prescription drug service use, as well as age, gender, geographic location and type of health insurance plan.	-Using claims data from 2014, depression and suicidal ideation were identified by ICD-9 codes. Psychiatric treatment delivered in 2014 and costs were examined. -Logistic regression models to examine effects of sex & ADHD on the prevalence of depression & suicidal behaviour included ADHD diagnosis & sex, as well as ADHD by sex interaction. -Chi-Square tests and t-tests were used to compare service utilization and cost between young adults with and without ADHD.	-Large sample with high statistical power. Matched control group. -Use of claims data may have excluded people with ADHD who cannot maintain a full-time job (although ADHD prevalence from claims data was consistent with that of general population). -Impossible to ascertain whether diagnoses of ADHD or other psychopathologies were done using best practices. -Only claims data from 2014 used. -Analyses were conducted controlling for socioeconomic variables.
Meyer et al. (2020) Quantitative Cross- Sectional Study	-Secondary analysis of data from another study (assessing effects of food additives on children) using 2 samples of 3/4-year-olds (n=153,79 male) and 8/9-year-olds (n=144,75 male) from Southampton, UK.	-Samples divided in 3 groups based on observed ADHD behaviours using the measure Classroom Observation Code (COC; Abikoff & Gittelman, 1985). -These groups then compared on parent & teacher ADHD reports using various clinical rating scales. -Tested if there were different proportions of males and females in COC groups and whether sexes differed in levels of observed ADHD once allocated to a COC group. -Sex & COC group entered as independent variables in four 2-way ANOVAs with parent & teacher ratings as dependent variables.	-Secondary analysis – data not collected with this analysis in mind. -Sample representative of socio-economic background of community as number of participants receiving free school meals (index of disadvantage) was proportional to city as a whole. -A greater focus on hyperactive vs inattentive behaviours was reported in COC coding. -No means of assessing possibility of non-response bias. -Statistical analyses appropriate to answer research question.
Babinski et al. (2021) Quantitative Cross- Sectional Study	-Parents/caregivers of children ages 5-12 years in the US invited to participate in online survey (n=1050). -Sample representative of US population in terms of gender, race, income & geography.	-Parents rated their children's ADHD, ODD & Conduct Disorder symptoms via the (DBDRS; Pelham et al. 1992) scale, their overall impairment via the (IRS; Fabiano et al. 2006) scale, their depression via the (SMFQ; Messer et al. 1995) scale and their anxiety via the (SCARED; Birmaher et al. 1997) scale. -ROC analyses then conducted to examine optimal ADHD symptom count cut-offs for girls & boys. Criterion defined as an impairment score of 5 or more on the IRS.	-Sample representative of US population. -Only parent ratings used. -The chosen criterion variable in ROC analyses was overall impairment as captured by the IRS. So, it was not a criterion measure reflecting ADHD per se. -Respondents & non-respondents could not be compared to check if they are different on the variables of interest.

		<ul style="list-style-type: none"> <li>-Analysis conducted separately for girls &amp; boys &amp; individually for Inattentive &amp; Hyperactive/Impulsive symptoms.</li> <li>-Girls with ADHD sex specific criteria, girls with ADHD DSM-V criteria, girls without ADHD &amp; boys with ADHD compared on measures of depression, anxiety, ODD &amp; conduct disorder.</li> </ul>	<ul style="list-style-type: none"> <li>-Statistical analyses appropriate to answer the research question.</li> </ul>
<p>Behesti et al. (2021)</p> <p>Quantitative Cross-Sectional Study</p>	<ul style="list-style-type: none"> <li>-165 psychiatrists from Isfahan, Iran completed a questionnaire which was distributed during two of their monthly gatherings.</li> <li>-179 psychiatrists from Tehran, Iran completed the questionnaire which was sent to psychiatrists' offices.</li> <li>-Response rate of 44.10%.</li> </ul>	<ul style="list-style-type: none"> <li>-Each psychiatrist received 1 of 8 vignettes and a questionnaire.</li> <li>-Vignettes were constructed on ICD-10 &amp; DSM-IV criteria. Vignette 1 described a youth with ADHD with all the criteria. Vignettes 2 &amp; 3 had 2 &amp; 3 missing criteria respectively. Vignette 4 described a youth with Generalized Anxiety Disorder but no ADHD. For each Vignette there was a version for a boy and one for a girl for a total of 8 vignettes. Psychiatrists asked to determine whether youth had ADHD and whether any interventions should be recommended.</li> <li>-Chi-Square test applied to compare the proportion of false positives to false negatives.</li> <li>-Multiple logistic regression analysis applied to evaluate the role of gender in therapists' diagnostic decision.</li> </ul>	<ul style="list-style-type: none"> <li>-Non probability sampling.</li> <li>-Vignettes based on DSM-IV criteria but DSM-V criteria had already been issued. This meant that in reality vignette 2 now had one missing criterion.</li> <li>- Study had low ecological validity. In real life when unsure the psychiatrist would test further not mark "unsure" option.</li> <li>-Risk of non-response bias high.</li> </ul>
<p>Dorani et al. (2021)</p> <p>Quantitative Cross-Sectional Study</p>	<ul style="list-style-type: none"> <li>-Female patients from a psychiatric outpatient clinic for Adult ADHD in the Hague, the Netherlands in care in April &amp; May 2016 were approached (n=316).</li> <li>-Participants had to be at least 18 years of age and meet DSM-IV criteria for ADHD.</li> <li>-209 participants completed the study – Response rate of 66%.</li> </ul>	<ul style="list-style-type: none"> <li>-Premenstrual dysphoria questions from the (M.I.N.I. plus; Van Vliet &amp; De Beurs, 2007) were used to assess for Premenstrual Dysphoric Disorder.</li> <li>-Postpartum periods after the birth of the first biological child were assessed for prevalence of Post Partum Depression symptoms using the (EPDS; Cox et al. 1987).</li> <li>-Climacteric symptoms were assessed using the (GCS; Greene, 1998).</li> <li>-Norm scores from 504 women aged 45-65 years from Dutch population used for comparison (Barentsen et al. 2001).</li> <li>-Categorical variables were compared between groups using Chi-square and odds ratio. For continuous variables, t-tests and ANOVAs were used.</li> </ul>	<ul style="list-style-type: none"> <li>-Reasons why eligible participants chose not to participate not provided.</li> <li>-Measures relied on retrospective self-report so possibility of recall bias.</li> <li>-Associations between premenstrual dysphoria symptoms &amp; covariates were examined using regression analysis correcting for age and education level.</li> <li>-In the absence of a matched control group, comparisons with the Dutch general population need to be interpreted with caution.</li> </ul>
<p>Klefsjo et al. (2021)</p> <p>Quantitative Retrospective Case-Series</p>	<ul style="list-style-type: none"> <li>-100 cases (50 boys &amp; 50 girls) of registered ADHD randomly identified from 6 Child &amp; Adolescent Psychiatric Outpatients Care Units in Western Sweden.</li> <li>-Inclusion Criteria: Patients had received ADHD diagnosis &amp; were still in treatment at clinic, any ADHD subtype considered &amp;</li> </ul>	<ul style="list-style-type: none"> <li>-Following data collected: first registered ADHD subtype diagnosis, referral instance, reason for referral, age at first visit to clinic, number of visits before receiving ADHD diagnosis, age when receiving ADHD diagnosis, type of professionals involved in diagnostic procedure, received psychotherapy prior/after diagnosis, received medication prior/after diagnosis and inpatient care prior/after diagnosis.</li> </ul>	<ul style="list-style-type: none"> <li>-Random sampling but limited number of participants.</li> <li>-Retrospective nature of study guaranteed that diagnostic processes were not influenced by the study.</li> <li>-Complete data available for all cases.</li> <li>-Statistical analyses appropriate to answer research question.</li> </ul>

	<p>patients had at least one registered visit during 2015 at the age of 17.</p> <p>-Those diagnosed with ADHD prior to referral to clinic were excluded.</p>	<p>-Mann-Whitney U test used for continuous variables since data not normally distributed. Chi-Square test for independence used for categorical variables. In all 2x2 tables, Yates Continuity Correction used. In cases with a low expected cell frequency, Fishers Exact Probability test used.</p>	
<p>London &amp; Landes (2021)</p> <p>Quantitative Cross-Sectional Study</p>	<p>-Data from 2007, 2012 US National Health-Interview Survey used.</p> <p>-2007 sample (n=75,764; Response rate 87.1%). -2012 sample (n=108,131; Response rate 77.6%).</p> <p>-Participants aged 18-34 at time of study.</p>	<p>-Synthetic cohorts based on birth year were constructed &amp; individuals were assigned to an appropriate age category in 2007 and 5 years later in 2012. Thus, changes over 5 years at specific ages within each cohort could be measured.</p> <p>-Inter cohort changes compared percentage of adults of a given age who self-reported ADHD from one birth cohort to the percentage of same aged adults who self-reported ADHD in another cohort.</p> <p>-Intra cohort changes compared the percentage of adults with self-reported ADHD at a given age to that same group when they were 5 years older.</p>	<p>-Stratified random sampling.</p> <p>-Sample representative of US population.</p> <p>-ADHD diagnosis only measured as self-reported dichotomous indicator of lifetime ADHD diagnosis status.</p> <p>-ADHD measure only available for 2007 &amp; 2012 so cannot make inferences as to whether changes reported extend beyond these years.</p>
<p>Szep et al. (2021)</p> <p>Quantitative Cross-Sectional Study</p>	<p>-Data from first wave of ongoing longitudinal study used (Pauli-Pott et al. 2017, 2019; Schloss et al. 2019).</p> <p>-Community based sample recruited from childcare facilities in Marburg, Germany.</p> <p>-124 mother-child dyads.</p> <p>-40 children had scored above the lower bound of 95% CI of clinical cut-off score &amp; 84 scored below this point from the ADHD screening questionnaire (Pre-PACS; Daley 2010) rated by mothers.</p>	<p>-Child ADHD status further ascertained by parent and kindergarten teacher ratings of the (FBB-ADHS-V; Dopfner et al. 2008) scale.</p> <p>-Child ODD/Conduct Disorder assessed at 4/5 years by the (FBB-SSV; Dopfner et al. 2008).</p> <p>-Maternal ADHD symptoms assessed via the (WRI; Rosler et al. 2007) &amp; the (CAARS-K; Christiansen et al. 2014) scales.</p> <p>-Maternal depressive symptoms measured via the (CES-D; Hautzinger et al. 2012) scale.</p> <p>-Maternal perceived chronic stress measured via the (TICS-SSCS; Schulz et al. 2004) scale.</p> <p>-Mothers' hair cortisol concentrations (HCC) accessed using hair samples.</p> <p>-Hierarchical multiple regression analyses conducted with mothers' perceived chronic stress &amp; HCC as outcome variables.</p>	<p>-Cannot estimate how many participants were eligible for inclusion or non-response bias.</p> <p>-When 2 scales captured the same variable, composite scores created by summing up z-transformed scores of the scales &amp; internal validity declared.</p> <p>-Clear indication of amount of missing data. Statistical description of how variables of participants whose data were missing differed from those who had complete data provided.</p> <p>-Impact of child &amp; maternal ADHD symptoms on maternal perceived chronic stress examined while controlling for child ODD/CD &amp; maternal depressive symptoms.</p>
<p>Zaidman-Zait &amp; Shilo (2021)</p> <p>Quantitative Cross-Sectional Study</p>	<p>-141 mothers aged 29 to 52 years &amp; their 8- to 12-year-old biological children (72 boys &amp; 69 girls; 61 with ADHD &amp; 80 without) recruited.</p> <p>-Recruitment through advertisements, parent support groups, mailings to local ADHD advocacy groups, &amp; professionals working with children with ADHD &amp;</p>	<p>-2 Inhibitory Control Neurocognitive Computerized tasks given to mothers.</p> <p>-Maternal ADHD symptoms measured via the (ARS; Kessler et al., 2005).</p> <p>-Negative &amp; supportive maternal parenting measured via the (Parenting Scale; Arnold et al., 1993) &amp; observations of mother-child discussions.</p> <p>-To control for children's disruptive behaviours, mothers completed the Conduct Problem subscale of the (SDQ;</p>	<p>-Target population not delineated &amp; cannot estimate how many participants were eligible for inclusion.</p> <p>-Negative &amp; supportive maternal parenting measured using both a self-report tool &amp; observations.</p> <p>-No information provided re missing data.</p> <p>-Confounders accounted for in analysis.</p>

	families.	Goodman, 1997) scale. -To control for mothers' parenting distress, mothers completed the Parenting Distress subscale of the (PSI-SF; Abidin, 1995). -Hierarchical linear regressions to examine independent & interactive effects of maternal ADHD symptoms, maternal inhibitory control & child diagnostic status on observed and self-reported maternal parenting.	-Any maternal psychopathology could possibly have been a co-exposure.
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*Methodological considerations of the included qualitative studies.*

<b>Authors, Year of Publication &amp; Design</b>	<b>Sample &amp; Setting</b>	<b>Study Methods</b>	<b>Methodological Quality Comments Based on MMAT Criteria</b>
Holthe & Langvik (2017)  Qualitative	-5 females (32 to 50 years) diagnosed with ADHD in adulthood interviewed. -All had university degrees, all were married or in a relationship, all had one or more close relatives with ADHD & three of them were mothers and had children diagnosed with ADHD.	-Semi-structured in-depth interviews on the following topics: factors/events leading to diagnosis, most prominent symptoms, challenges, issues associated with relationships, motherhood & gender norms, experiences of stigma, helpful treatments & coping strategies and personal strengths. -Thematic analysis with combination of deductive and inductive strategies.	-Distinct qualitative approach used not specified. -Sample described in detail, so inferences re transferability can be made. -Analysis performed solely by one researcher. However, member-checking enhanced rigour. Analytical strategy described in detail. -Findings sufficiently substantiated by data & direct participant quotes.
Stenner et al. (2017)  Qualitative Discourse Analytic Research	-16 women with either a formal or a self-diagnosis of ADHD (9 self-diagnosed, 5 formally diagnosed in adulthood & 2 formally diagnosed as teenagers). -Recruited via an online support group for people with ADHD & 2 local community support groups in the UK.	-Participants chose whether to be interviewed face-to-face or by telephone. -Semi-structured interview guide asking how ADHD may have impacted their identities and lives at different moments. -Initial thematic analysis, then data subjected to "thematic decomposition" i.e. a search for interview content that speaks about transformative events & re-interpretations of the past. The outcome is a theoretically nuanced but data grounded interpretation of interview content.	-Qualitative approach used specified. -Issues of rigour not discussed. -Numerous direct participant quotes provided to justify themes. -Coherency between data sources, collection, analysis & interpretation.
Young et al. (2020)  Qualitative Expert Panel Method	-Professionals specialising in ADHD convened in London on the 30 <sup>th</sup> of November 2018 for a meeting hosted by the UK ADHD Partnership. -ADHD experts from wide range of professions attended (nursing, GPs, Child & Adolescent Adult Psychiatrists, Clinical & Forensic Psychologists, Counsellors and Educational & Occupational Specialists). Service-users & ADHD charity workers also attended.	-Meeting commenced with presentation of preliminary data from research on ADHD sex differences. -Attendees then allocated to one of three breakout groups and tasked with providing practical solutions to assigned topic. Topics were explored using lifespan perspective and comprised: Identification & assessment of ADHD in females, Interventions & treatment for ADHD in females & Multi-agency liaison. Discussions facilitated by group leader & summarised by note-takers. -Groups re-assembled & findings presented for another round of debate until consensus	-Assessment, treatment & multi-agency support features reflect clinical practice & legislature in UK & may differ in other countries. -Triangulation of methods: transcripts, small group notes and extant literature. -Member-checking enhanced rigour. -Data analysis not discussed. -Interpretation of results supported by extant research but it is not clear how

		reached. -All consensus proceedings recorded & transcribed. Notes circulated to each group leader for review & agreement. -Consensus report circulated to all authors for agreement & approval.	recommendations were derived from professional experience (excerpts were needed).
Lassinanti & Almqvist (2021)  Qualitative Narrative Research	-11 Swedish mothers with ADHD aged 35 to 49 years recruited through an association for people with neuropsychiatric disabilities. -All diagnosed with ADHD as adults & all were medicated.	-In-depth interviews guided by Narrative Interview Methodology. -Codes & themes generated abductively through reflexive thematic analysis focusing on the explicit semantic contents of the data & more latent meanings. -Analysis underpinned by concepts of able-mindedness and responsibility.	-Specific qualitative approach used & described. -Topics included in semi-structured interview guide provided. -Interpretation of findings sufficiently substantiated by data and direct participant quotes. -Issues of rigour & limitations of the study not discussed.
Lynch & Davidson (2022)  Qualitative	-Participants were 17 adolescent young women (13 to 20 years) living in Ireland with a medical diagnosis of ADHD.	-Participants interviewed in person by means of a semi-structured interview guide and additionally asked to complete an online questionnaire since they may have experienced difficulties sustaining attention throughout the interview. -Both measurements explored topics relating to daily life with ADHD, receiving a diagnosis, social experiences and future goals.	-No specific qualitative approach used. -Interviews supplemented with online questionnaire. -Analytical strategy not discussed. -Interpretation of findings supported by the data collected and excerpts included effectively.
Wallin et al. (2022)  Qualitative	-15 women aged 15 to 29 years recruited from 2 psychiatric outpatient clinics, 2 youth health clinics specialising in sexual & reproductive health & from 3 social media groups for people with ADHD. -Clinics were from different regions in Sweden.	-12 individual interviews & 1 focus grp with 3 participants. -Due to sensitive topic being discussed, a focus group was conducted online using the written chat forum & interviews were held over the phone. -Data analysed by thematic analysis.	-No specific qualitative approach was employed. -Description of how the semi-structured interview schedule evolved provided. -Data analysis process well described. -Interpretation of findings sufficiently substantiated by data and direct participant quotes. -Issues of rigour and positioning of the researcher discussed.

*Methodological considerations of the included systematic reviews.*

Authors, Year of Publication & Design	Sample & Setting	Study Methods	Methodological Quality Comments Based on JBI Checklist for SRs Criteria
Kok et al. (2020)  Systematic Literature Review	-Inclusion criteria – English Language studies, studies with an ADHD sample formally diagnosed, studies providing data explicitly sorted by sex, studies with data on prescription rates/efficacy or effectiveness of stimulant or non-stimulant treatment.	-For analysis of results on efficacy/effectiveness, effect sizes of group differences derived from original studies or calculated by hand to determine the size of between-sex differences. -For studies with all-female samples, efficacy/effectiveness investigated by	-Review question clear and inclusion criteria appropriate. -Search strategy defined & sources adequate. -Study appraisal criteria not provided & not informed how many reviewers independently appraised studies. -Recommendations provided and

	-14 articles on efficacy/effectiveness included. -7 articles on prescription rates included.	using treatment vs placebo group. -In studies on prescription rates, percentages mostly used to compare sex-differences in prescription rates.	supported by reported data.
Camara et al. (2022)  Systematic Literature Review	-Inclusion criteria – studies published in the last 30 years, studies investigating at least one group of patients with a clinical diagnosis of ADHD or an equivalent assessment and studies examining the association between sexual hormones or reproductive life stages on ADHD. -4 titles matched inclusion criteria (2 observational studies, 1 narrative review and 1 case study).	-Heterogeneity of study aims, designs and samples did not allow for any type of pooling and findings for each study were discussed separately.	-Review question & inclusion criteria explicitly stated and appropriate. -Search strategy defined and sources adequate. -Level of evidence assigned but no mention of assessment of methodological quality. -Articles screened by 2 reviewers independently, 3rd reviewer consulted in cases of disagreement. -Recommendations for practice put forward could not be fully supported by the ‘small’ synthesis of 4 heterogenous studies. Directions for future research provided were adequate.

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