| **Section and Topic** | **Item No** | **Checklist item** | **Reported on Page Number/Line Number** | **Reported on Section/Paragraph** |
| --- | --- | --- | --- | --- |
| **TITLE** | | |  |  |
| Title | 1 | **Caregiver Burden of Children with Attention Deficit/Hyperactivity Disorder (ADHD): A Systematic Review** | p1 | title |
| **ABSTRACT** | | |  |  |
| Abstract | 2 | **Background:** Raising a child with attention deficit hyperactivity disorder (ADHD) is a key challenge for the primary caregiver. This systematic review aims to identify major burdens facing the primary caregiver of a child with ADHD.  **Methods:** The electronic databases CINAHL, PubMed, and Google Scholar were searched for studies published in English from 2017 to 2022 assessing the challenges facing caregivers of a child with ADHD. The Johns Hopkins Nursing Evidence-Based Practice Model was used to assess quality and risk of bias of studies identified for inclusion. Articles were synthesized by evaluating principal themes of burden to caregivers, stress of caregivers, and effectiveness of intervention programs.  **Results:** Eleven articles were included in this review and included a total of 2426 participants. Findings revealed that caregivers of children with ADHD have a poor quality of life and high stress levels. Supportive parenting programs can be effective for improved coping and adaptation mechanisms with children with ADHD. However, few interventional studies were identified, increasing potential for bias. No meta-analysis was conducted.  **Conclusion:** Caregivers of children with ADHD can benefit from strategies to improve their quality of life and reduce their stress levels. Targeted parenting programs can make a positive difference in the well-being of caregivers and children with ADHD. Additional research is needed to address the evidence-based effectiveness of parenting support programs.  **Keywords:** Attention deficit hyperactivity disorder (ADHD), caregivers, burden of care, mothers, attention deficit disorder | p1 | Abstract |
| **INTRODUCTION** | | |  |  |
| Rationale | 3 | limited attention has been given to caregivers of children with ADHD and how the burden of coordinating care may impact their quality of life. Having a child with ADHD can put parents in a demanding situation | p1/ line54-55 | Paragraph2 |
| Objectives | 4 | to identify major burdens facing primary caregivers of a child with ADHD | p2 /line78 | Paragraph3 |
| **METHODS** | | |  |  |
| Eligibility criteria | 5 | The search was limited to English peer-reviewed research articles published in academic journals. The goal of the review was to focus on the most recent five-year period, and the search was limited to articles from 2017 onward. Inclusion criteria required the focus of the research to include children only specifically diagnosed with ADHD with their primary caregivers. Research findings focused on children with ADHD combined with other conditions such as autism or mental disorders, such as patients co-diagnosed with autism, were excluded, to avoid confounding. Additional criteria limited inclusion to articles that were primary data-driven studies, thus review and opinion articles were excluded | p2/l 93-98 | Paragraph5 |
| Information sources | 6 | a literature search was conducted utilizing the databases CINAHL, PubMed, and Google Scholar. | p2/l85 | Paragraph5 |
| Search strategy | 7 | a literature search was conducted utilizing the databases CINAHL, PubMed, and Google Scholar. The search was limited to English peer-reviewed research articles published in academic journals. The goal of the review was to focus on the most recent five-year period, and the search was limited to articles from 2017 onward | p2/l85,93,94 | Paragraph6 |
| Selection process | 8 | The search was designed and conducted by two PhD-prepared nurse scientists who collaborated to identify potential articles. The lead author, who has five years of nursing experience and two years of clinical experience working with children and families experiencing ADHD, personally reviewed all the articles and made a final determination regarding inclusion. No automation used | p2/l81-84 | Paragraph4 |
| Data collection process | 9 | The articles were assessed using the Johns Hopkins Nursing Evidence-Based Practice Model to evaluate the quality and strength of evidence in healthcare research[21].The Johns Hopkins Evidence-based Practice for Nurses and Healthcare model was developed to evaluate the quality and strength of evidence in healthcare research. It is commonly used to assess the validity and reliability of studies, assess bias, and determine the level of evidence supporting healthcare practices. This model categorizes Level I research as Experimental, Level II as Quasi-experimental, and Level III as Non-Experimental concurrently evaluates the quality and risk of bias of each study according to its type, as High, Good, or Low. | p2/l99-105 | Paragraph5 |
| Data items | 10a | The search generated 558 articles. Duplicate articles were removed (n = 14) and articles not relevant to the research question (n = 496) were marked as ineligible based on a review of the abstract. Of the remaining 48 abstracts reviewed, more than half (n = 28) were excluded as they were not specific to the condition of ADHD in children and their caregivers, for example, if the analysis incorporated a comorbid condition. Twenty articles were sought for retrieval. Four of them were not retrieved. The remaining articles (n = 16) were assessed for eligibility. Three of these were excluded as they were conducted in a systematic review design, and two articles were excluded on the basis of relevance | p2/l110-116 | Paragraph6 |
| 10b | Origin country/ setting/ Aim/Sample Size and Sampling/ Method/Tools used | p5/l174 | Table1 |
| Study risk of bias assessment | 11 | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | Page 2 | Paragraph 1 and Paragraph 3 |
| Effect measures | 12 | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | Page 2 | Paragraph 4 |
| Synthesis methods | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). | Page 2 | Paragraph 3 |
| 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | Page 2 | Paragraph 4 |
| 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | Table 1 | Table 1 |
| 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | Page 2 | Paragraph 4 |
| 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | Page 2 | Paragraph 4 |
| 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | Page 2 | Paragraph 4 |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | Page 2 | Paragraph 3 |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. | Page 2 | Paragraph 4 |
| **RESULTS** | | |  |  |
| Study selection | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | Figure 1 | Figure 1 |
| 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | Page 8 | Paragraph 4 |
| Study characteristics | 17 | Cite each included study and present its characteristics. | Page 3 and Table 1 | Paragraphs 1-3 and Table 1 |
| Risk of bias in studies | 18 | Present assessments of risk of bias for each included study. | Page 3 and Table 1 | Paragraph 1 and Table 1 |
| Results of individual studies | 19 | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | Page 2 | Paragraph 4 |
| Results of syntheses | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | Page 3 and Table 1 | Paragraph 1 and Table 1 |
| 20b | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | Page 2 | Paragraph 4 |
| 20c | Present results of all investigations of possible causes of heterogeneity among study results. | Page 7 | Paragraph 1 |
| 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | Page 2 | Paragraph 4 |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | Page 3 and Table 1 | Paragraph 1 and Table 1 |
| Certainty of evidence | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | Page 2 | Paragraph 4 |
| **DISCUSSION** | | |  |  |
| Discussion | 23a | The most pronounced findings were related to the deteriorating psychological status of the caregivers and the increased burden of care while having a child with ADHD [13, 24, 26, 27, 29-31]. In general, the caregiver’s well-being and mental health are considered to affect the child’s well-being [15]. Several papers specifically focused on the mother as the primary person and the capstone for effective family function and support. In these articles, she is perceived as the person who will mainly manage to overcome conflicts and achieve balance for the child [13, 23, 25, 28, 29] | p8/179-184 | Paragraph 9 |
| 23b | a limited sample of articles are available on the topic of caregivers of children specifically with ADHD. Many of the articles initially identified by the keywords did not meet inclusion criteria, as they included children with comorbid disorders rather than concentrating on children with ADHD specifically | 8/231-233 | Paragraph10 |
| 23c | One limitation of this systematic review is that it was not registered prospectively, which may be considered to reduce the potential for bias. Thus, a recommendation would be to register prospectively for a follow-up examination as further research becomes available | 8/228-230 | Paragraph12 |
| 23d | The results of this systematic review demonstrated the necessity of identifying the burdens experienced by the caregivers of children with ADHD. This information has the potential to increase the sensitivity of healthcare providers to provide support that will enable caregivers to offer better care and understanding to their children with the condition. Further research will aid in the change and improvement in the quality of clinical care for children with ADHD and guide the inclusion of their primary caregiver or parents as an integral part of the intervention and treatment plan. This evidence calls for the incorporation of parenting programs, support groups, and education for parents of children with the condition to deliver social and functional strategies and coping mechanisms, especially for those experiencing burnout.  Despite this systematic review, there is still a knowledge gap in addressing several aspects of the burden for ADHD caregivers. For example, more research is needed specifically on the roles of other caregivers, such as grandparents. Furthermore, it is possible that the search strategy prioritized mothers as caregivers for the child with ADHD, as this was only explored in six articles of the 11 articles.  A third recommendation regards the need for randomized control trials to study to investigate the effectiveness of parenting programs on the improvement of parental attitudes and behavior in caring for a child with ADHD. Although outside the main focus of the investigation, this finding provides guidance regarding the type of intervention that should be emphasized in follow-up studies to provide support for caregivers.  This research spotlights special needs and supports the caregiver and the child with ADHD to promote an atmosphere of understanding and positive adaptation strategies and bridge a new step forward in incorporating mental health and behavioral well-being. | 7/208-225 | Paragraph8 |
| **OTHER INFORMATION** | | |  |  |
| Registration and protocol | 24a | One limitation of this systematic review is that it was not registered prospectively, which may be considered to reduce the potential for bias. Thus, a recommendation would be to register prospectively for a follow-up examination as further research becomes available | 8/228-230 | Paragraph12 |
| 24b | One limitation of this systematic review is that it was not registered prospectively, which may be considered to reduce the potential for bias. Thus, a recommendation would be to register prospectively for a follow-up examination as further research becomes available | 8/228-230 | Paragraph12 |
| 24c | Describe and explain any amendments to information provided at registration or in the protocol. | na | na |
| Support | 25 | There is no funding to report. | 8 | Paragraph14 |
| Competing interests | 26 | There are no conflicts of interest to report. | 8/249 | Paragraph14 |
| Availability of data, code and other materials | 27 | Data availability statement: The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request. | 8/245-246 | Paragraph14 |

\*As the checklist was provided upon initial submission, the page number/line number reported may be changed due to copyediting and may not be referable in the published version. In this case, the section/paragraph may be used as an alternative reference.