

Reduced Methylphenidate Use Following Dietary Modification in Adult ADHD: A Case Report

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Abstract Attention-deficit/hyperactivity disorder (ADHD) frequently persists into adulthood and is commonly managed with stimulant medications. Interest in nutritional and lifestyle interventions as potential adjunctive strategies has increased, although evidence in adults remains limited. We describe a 24-year-old man with ADHD who presented with impaired concentration and executive functioning affecting academic performance. Methylphenidate immediate release 5 mg twice daily improved focus and assignment completion and was continued without dose escalation. Over subsequent follow-up, stimulant use became less consistent. After counseling regarding diet, physical activity, and alcohol use, the patient adopted a low-carbohydrate, high-fat dietary pattern and incorporated regular walking. At later follow-up, he reported improved concentration and was using methylphenidate only occasionally as needed. He had also completed an associate degree and experienced a 25.4-pound weight reduction. Nutritional ketosis was not biochemically confirmed, and standardized serial ADHD measures were unavailable. Because reduced stimulant use had begun before the dietary intervention was clearly documented and several lifestyle changes occurred concurrently, a causal relationship cannot be established. This hypothesis-generating case describes a longitudinal association between dietary and lifestyle modification, reduced stimulant utilization, and preserved functional progress in an adult with ADHD, but it does not support generalization to routine clinical practice without prospective confirmation.

Keywords: attention-deficit/hyperactivity disorder, ADHD, methylphenidate, ketogenic diet, low-carbohydrate diet, nutrition

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1. Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by persistent symptoms of inattention and/or hyperactivity and impulsivity that can impair academic, occupational, and social functioning. Although commonly identified during childhood, ADHD frequently persists into adulthood and may continue to produce substantial functional impairment across multiple domains [1]. Pharmacotherapy remains a central component of treatment, with stimulant medications such as methylphenidate demonstrating efficacy for core ADHD symptoms in adults [2].

Alongside pharmacotherapy, increasing attention has been directed toward lifestyle and nutritional factors that may influence ADHD symptoms and overall functioning. Dietary approaches investigated in ADHD have included elimination diets, nutritional supplementation, and broader modifications in dietary patterns. However, much of this literature has focused on pediatric populations, and evidence supporting specific dietary interventions in

adults remains limited. Reviews of dietetic interventions in adult ADHD have emphasized both the limited evidence base and the difficulty of distinguishing potential dietary effects from concurrent lifestyle and behavioral factors [3].

Ketogenic and carbohydrate-restricted diets represent another emerging area of interest. Ketogenic diet therapies have an established role in epilepsy and have increasingly been used and studied in adults [4]. More recently, interest has extended to neurodevelopmental and psychiatric disorders, including ADHD. Proposed effects have been explored in relation to cellular energetics, mitochondrial function, neurotransmission, and inflammatory signaling; however, these mechanisms have not established clinical efficacy for ADHD. A recent review found the available evidence for ketogenic interventions in neurodevelopmental disorders to be limited and heterogeneous [5].

Clinical observations may therefore help identify questions warranting more systematic investigation. The present case describes an adult with ADHD who initially experienced benefit from methylphenidate and later implemented a low-carbohydrate, high-fat dietary pattern together with other lifestyle modifications. Subsequent

follow-up documented reduced stimulant use, substantial weight loss, and continued academic progress. We report this longitudinal observation while recognizing the concurrent interventions and other factors that preclude causal attribution.

2. Case Presentation

A 24-year-old man with a history of attention-deficit/hyperactivity disorder (ADHD), a historical diagnosis of Asperger syndrome as documented in the medical record, and nicotine dependence presented in March 2022 for evaluation of impaired concentration and executive functioning. He was pursuing higher education and described difficulty sustaining attention during schoolwork and conversations, with academic tasks frequently extending late into the evening and interfering with his sleep schedule. These symptoms affected his ability to complete schoolwork efficiently. The record also described longstanding social difficulties in the context of his historical Asperger syndrome diagnosis. Methylphenidate immediate release 5 mg twice daily was initiated.

At follow-up approximately one month later, he reported improved focus and a greater ability to complete assignments on time while taking methylphenidate. Treatment was continued at 5 mg twice daily, and subsequent follow-up through early 2023 did not require dose escalation. By June 2023, however, his medication use had become less consistent; he reported that he had not refilled methylphenidate for approximately three months, although he wished to retain access to the medication. Nonpharmacologic treatment options were discussed. His Patient Health Questionnaire-9 score at that visit was 0.

At the following visit, persistent concentration difficulties were documented together with regular consumption of beer and liquor. Cannabis use and nicotine

dependence were also documented during the longitudinal course and were considered relevant behavioral and substance-use variables. Counseling focused on broader lifestyle modification, including dietary changes, increased physical activity, and reduction in alcohol use. The clinical record subsequently described adoption of a low-carbohydrate, high-fat dietary pattern characterized as ketogenic, along with regular walking. By later follow-up, the patient reported walking approximately 45 to 50 minutes daily. Detailed dietary logs, formal macronutrient calculations, and biochemical measurements of serum or urine ketones were not available; therefore, sustained nutritional ketosis could not be independently confirmed.

By the November 2023 follow-up, the patient reported improved concentration and had reduced methylphenidate from regular dosing to occasional as-needed use when additional concentration was required. He had completed his associate degree and planned to continue his education at a university, with an interest in future public-service work. Across the documented interval, his weight decreased from 160 lb to 134.6 lb, representing a 25.4-lb reduction. At a recorded height of 72.5 inches (184 cm), this corresponded to an approximate body mass index decrease from 21.4 to 18.0 kg/m². Continued cannabis use and social alcohol consumption were also documented.

The longitudinal course is summarized in [Table 1](#). This report reflects a retrospective clinical observation rather than a prospectively standardized dietary intervention. The sequence is notable for an initial favorable response to methylphenidate, followed by increasingly intermittent stimulant use and subsequent implementation of dietary and lifestyle changes. Because reduced medication use had already begun before the dietary intervention was clearly documented, and because dietary modification occurred alongside increased physical activity and changes in alcohol use, the contribution of the dietary intervention cannot be isolated. Standardized serial ADHD symptom measures and objective attention testing were not obtained during the reported period.

Table 1. Clinical Course in Relation to Dietary Modification and Stimulant Use

Date	Stimulant Use	Dietary and Lifestyle Course	Clinical and Functional Outcome
03/14/2022	Methylphenidate 5 mg twice daily initiated	No specific dietary intervention documented	Difficulty with concentration, executive functioning, and academic work
04/08/2022	Continued methylphenidate 5 mg twice daily	No specific dietary intervention documented	Improved focus and ability to complete assignments
2022-early 2023	Continued methylphenidate without dose escalation	No specific dietary intervention documented	Persistent ADHD symptoms with continued medication use
06-07/2023	Methylphenidate use became less consistent but remained prescribed	Nonpharmacologic strategies discussed; subsequent counseling addressed diet, exercise, and alcohol use	Continued concentration concerns; PHQ-9 = 0
11/20/2023	Reduced to occasional as-needed methylphenidate use	Low-carbohydrate, high-fat dietary pattern and regular walking	Reported improved concentration, 25.4-lb weight loss, completion of associate degree, and plans for further education

Note. Ketosis was not biochemically confirmed; therefore, the intervention is described as a low-carbohydrate, high-fat dietary pattern rather than confirmed nutritional ketosis.

3. Discussion

The principal observation in this case was reduced methylphenidate utilization during a period that included substantial dietary and lifestyle modification. The patient initially reported benefit from methylphenidate 5 mg twice daily and continued treatment without dose escalation. By the final documented follow-up, he reported using methylphenidate only occasionally while continuing his academic progression. Importantly, medication use had already become less consistent before the dietary intervention was clearly documented. The case therefore demonstrates a temporal association rather than evidence that dietary modification initiated or caused the reduction in methylphenidate use.

Evidence regarding dietary treatment of adult ADHD remains limited [3]. Pediatric observational data provide some precedent for changes in medication use during dietary intervention; in one few-foods diet study, medication use decreased among children during the intervention [6]. However, that study involved children, used an elimination-based approach, and cannot be directly extrapolated to an adult following a carbohydrate-restricted diet. Evidence specifically examining ketogenic approaches in ADHD is even less developed. A 2024 review characterized ketogenic research in neurodevelopmental disorders as preliminary and heterogeneous [5]. A subsequent adult case report described ketogenic metabolic therapy in a patient with ADHD and several psychiatric comorbidities, but the intervention was intensive and multimodal and did not include a validated ADHD-specific outcome measure [7]. These reports support further investigation rather than establishing ketogenic dietary therapy as an ADHD treatment.

Several factors may have contributed to the course observed in the present case. Regular walking was introduced alongside the dietary changes, and exercise itself may influence executive functioning and ADHD symptoms. A recent systematic review and meta-analysis in adults with ADHD found preliminary benefits of acute exercise for inhibitory control and core symptoms, while evidence for chronic exercise remained mixed [8]. Changes in alcohol use, cannabis use, sleep, academic demands, and other behavioral factors further limit attribution to diet alone. The 25.4-pound weight reduction, corresponding to an approximate body mass index decrease from 21.4 to 18.0 kg/m², represents a clinically relevant nutritional change but does not establish improvement in ADHD. In addition, the absence of dietary records and ketone measurements prevents confirmation that sustained nutritional ketosis occurred.

These considerations are also relevant to safety and clinical implementation. Ketogenic diet therapies in adults are generally approached as structured interventions involving patient selection, nutritional assessment, biochemical monitoring, and follow-up [9]. Adverse effects are not uncommon; a 2026 systematic analysis found gastrointestinal complaints to be the most frequently reported, with metabolic and nutritional adverse events also observed [10]. In the present case, the substantial reduction in body weight further underscores the importance of monitoring nutritional status when

restrictive dietary patterns are used. Accordingly, a carbohydrate-restricted diet used therapeutically should not be viewed as a risk-free substitute for established ADHD treatment.

The extent to which this observation can be generalized is limited. It should not be extrapolated to adults with ADHD broadly or interpreted as evidence for a diet-specific effect, particularly because this patient had a historical Asperger syndrome diagnosis, nicotine dependence, cannabis and alcohol exposure, concurrent exercise changes, and an unstandardized dietary intervention. Theoretically, the case supports a hypothesis that multimodal lifestyle change may coincide with changes in stimulant utilization and functional outcomes in selected adults with ADHD, but it cannot identify whether diet contributed independently or through a specific metabolic mechanism. In practice, the observation does not support routine ketogenic prescribing or stimulant reduction. Dietary interventions should remain individualized and appropriately monitored, and medication changes should continue to be guided by standard clinical assessment of symptoms, functioning, tolerability, and patient preference.

A strength of this case is the longitudinal documentation across multiple visits, including stimulant utilization, academic functioning, weight change, and concurrent lifestyle factors. Limitations include its retrospective nature, reliance on self-reported methylphenidate use and concentration, absence of standardized serial ADHD measures, lack of pharmacy-dispensing data, absence of objective dietary or ketone measurements, and simultaneous implementation of multiple lifestyle changes. Reduced stimulant use also preceded clear documentation of the dietary intervention. Nevertheless, the record documents reduced methylphenidate utilization together with continued academic progress during a period of substantial dietary and behavioral change. Prospective studies incorporating standardized ADHD measures, objective attention testing, medication tracking, dietary assessment, and metabolic monitoring would be necessary to determine whether carbohydrate-restricted dietary interventions have a reproducible adjunctive role in adult ADHD.

4. Conclusion

This case describes reduced methylphenidate use and continued academic progress in an adult with ADHD during a period that included low-carbohydrate, high-fat dietary modification and increased physical activity. The concurrent lifestyle changes, substantial weight reduction, absence of confirmed nutritional ketosis, lack of standardized serial ADHD measures, and reduction in stimulant use before the dietary intervention was clearly documented preclude causal attribution and limit generalizability. The observation is hypothesis-generating and does not support replacing established ADHD treatment with dietary intervention or routinely reducing stimulant medication. Prospective study is needed to determine whether carbohydrate-restricted dietary strategies have a reproducible adjunctive role in selected adults with ADHD.

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